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Aligning Information and Communication Technology strategies with eThekwini municipality's strategic objectives for service delivery

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DECLARATION

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ABSTRACT

In the realm of municipal governance, the rapid integration of Information and Communication Technology (ICT) has introduced new opportunities and challenges. A critical challenge is the misalignment between strategic objectives and ICT strategies within municipalities, as exemplified by eThekwini municipality in South Africa. The primary purpose of this research was to investigate the pivotal role of strategic alignment in shaping ICT implementation for effective service delivery within eThekwini municipality. The aim was to provide insights and solutions to bridge the gaps between ICT and municipal strategy alignment. A mixed methods approach was employed in this study, combining qualitative and quantitative techniques in a convergent parallel design. The questionnaires used in the study were meticulously aligned with the research's specific objectives. A census approach was adopted to collect quantitative and qualitative data gathered through purposive sampling.

The research identified a key issue as limited executive involvement in developing the municipality's ICT strategy, resulting in a misalignment between the strategy and the overarching municipal goals. This misalignment risks suboptimal decision-making based solely on operational inputs. This finding underscores the critical need for strategic alignment between municipal objectives and ICT strategies in eThekwini municipality. The municipality should thus prioritise the development of a comprehensive ICT strategy that aligns seamlessly with its overarching objectives. This strategy should be crafted with active involvement from key stakeholders, outlining clear goals and action plans aimed at harnessing technology for efficient service delivery. To ensure effective alignment, robust ICT governance structures and decision-making processes must be established. These changes will not only enhance service delivery to the community, but also promote a transparent, efficient, and technology-enabled governance approach.

Keywords: Strategic alignment, Information and Communication Technology, service delivery

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LIST OF ABBREVIATIONS AND ACRONYMS

AGSA: Auditor General of South Africa
DPSA: Department of Public Service and Administration
DTPS: Department of Telecommunications and Postal Services
EVA: Economic Value Added
GWEA: Government Wide Enterprise Architecture
ICT: Information and Communications Technology
IDP: Integrated Development Plan
SDBIP: Service Delivery and Budget Implementation Plan
IRR: Internal Rate of Return
IT: Information Technology
ITIL: Information Technology Infrastructure Library
KPIs: Key Performance Indicators
MFMA: Municipal Finance Management Act
MIS: Management Information Systems
NPV: Net Present Value
POPIA: Protection of Personal Information Act
ROI: Return on Investment
SALGA: South African Local Government Association
SAM: Strategic Alignment Model
COSO : Committee of Sponsoring Organisations

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF STUDY

1.1 Introduction

Local governments are at the forefront of providing services directly to communities. As Information and Communication Technology (ICT) is becoming increasingly essential as a strategic tool for delivering public services, ensuring that a municipality's ICT strategy aligns closely with its overall strategic goals is thus crucial. Chapter One of the research provides a comprehensive introduction to the study, focusing on the critical role of Information and Communication Technology (ICT) in the context of local government service delivery. The chapter begins by offering an overview of the research, setting the stage for an in-depth exploration of the research's focus. It then proceeds to define the problem statement, highlighting the motivations behind the research and identifying deficiencies in existing methods for realising value in the context of municipal ICT strategy alignment with overall strategic goals.

The purpose of the study is clearly outlined, emphasising the need to address the alignment of a municipality's ICT strategy with its overall strategic goals. Research objectives and inquiries are articulated to guide the investigation, providing a roadmap for the study's exploration of the identified problem. The chapter also underscores the significance of the research, emphasising the potential impact of addressing the identified deficiencies in municipal ICT strategy alignment. Furthermore, the chapter delves into the scope and restrictions of the research, outlining the boundaries within which the study will operate. This includes defining the specific focus areas and limitations that will guide the research process. Additionally, underlying assumptions are elucidated to provide clarity on the foundational principles that inform the study's approach. The introduction also provides clear definitions for key terminology, ensuring a common understanding of essential concepts within the context of the research. This serves to establish a solid foundation for the subsequent chapters and ensures coherence in the interpretation of the study's findings.

1.2 Background of the study

The rapidly evolving landscape of ICT is reshaping the way public services are delivered, making it essential for local governments like eThekwini municipality to adapt and align their ICT strategies with their strategic objectives. In the quest to enhance service delivery and meet the evolving needs of their constituents, municipalities are recognising the pivotal role that ICT plays in facilitating these transformations. Studies conducted globally have demonstrated the potential benefits of aligning ICT strategies with public sector strategic goals. Research by Dairo et al. (2021a) on the United Kingdom's (UK) government highlighted that substantial cost savings are achievable through effective ICT strategic alignment, emphasising the importance of innovation, sharing, and the reuse of solutions across the public sector. Such findings underscore the need for municipalities, including eThekwini, to leverage ICT as a strategic enabler for delivering services efficiently and cost-effectively.

The alignment of ICT strategies with strategic goals enables the personalisation and tracking of government services. In the UK, for example, the government developed a smart electric grid, deploying smart electric meters and other two-way communication systems in various places to allow electric organisations to monitor energy usage in real time. This has also enabled utilities to make continuous system modifications. Whether responding to a power transformer breakdown or attempting to shift electrical usage to off-peak hours, the objective is to make power generation and delivery more efficient, resilient, and cost-effective while reducing total energy use (Dairo et al., 2021a). The Australian Federal Government has invested extensively in ICT, with programs such as Networking the Nation, Building on ICT Strengths, and Backing Australia's Ability. These investments reflect a recognition of the importance of ICT alignment strategies in enhancing business value and addressing critical ICT resource needs (Haes et al., 2020).

According to Khawan (2019), implementing ICT strategy in the government sector can face various challenges such as a lack of consistent ICT standards across organisations, financial resources for technology upgrades, leadership support for ICT initiatives, and cultural and educational differences among staff. The paper further emphasises that the strategic alignment model, which identifies the integration

between organisation strategy and ICT strategy, plays a critical role in achieving successful ICT implementation. Furthermore, countries like Japan are at the forefront of a transition known as "Society 5.0." This transition seeks to leverage technological innovations to transcend the Information Age and address pressing social challenges while improving the overall quality of human life. It represents a vision where technology plays a pivotal role in addressing societal needs and enhancing well-being. Similarly, in the context of urban development, the concept of smart cities extends beyond mere technological advancements. These cities prioritise the use of technology to create intelligent systems, infrastructure, governance models, and service delivery mechanisms that cater to the needs of people and society. This inclusive and cost-effective approach aims to improve the quality of life for all residents (Prakash, 2019).

The adoption of technology is increasingly becoming a critical factor for organisations aiming to enhance the quality of their services and maintain competitiveness. Those organisations that have yet to embrace technology often struggle to keep up with evolving market demands. This also holds true for governments, which are recognising the need to become more agile and responsive by offering user-centric and innovative services to both citizens and businesses (Salim et al., 2019). A study by Agbebi et al. (2021) emphasised the role of strategic alignment in combating corruption and clarified the interplay between ideas, institutions, and technologies in laying the groundwork for organisational hange. The study further describes how information and communication technology, as well as e-government, influence power relations. In the public sector, digital transformation allows for the automation of work processes and increases efficiency, which increases transparency, reinforces new stakeholder relationships, and improves service delivery, innovation, and citizen satisfaction.

Ponelis and Holmner (2015) research suggests that information and communication technologies, including information systems, have the potential to significantly boost productivity across various sectors. However, it is important to note that many African countries continue to grapple with low ICT Development Index (IDI) scores, indicating a digital divide and the need for targeted efforts to bridge this gap.

The integration of technology is not only crucial for organisations' competitiveness, but also holds immense potential for governments to provide more responsive and innovative services. Abukari, A. A., & Murtala, R. B. (2018) states that in the public sector, technology is now being used to quickly scan and digitise decades' worth of government documents, making them instantly accessible to the public for the first time. Scanned documents are transformed by text recognition software into digital files with typical computer text that can be copied, edited, and made accessible online in a searchable format.

In Estonia, the implementation of e-governance has significantly enhanced the country's competitiveness and the well-being of its citizens. One notable achievement is the continuous availability of public sector services, which operate around the clock, 24/7. Currently, an impressive 99% of these services are accessible electronically to citizens. In this way, Estonia is actively pursuing a vision of delivering proactive and seamless services by harnessing the efficient utilisation of existing public sector data. This vision entails the concept of a proactive e-Public sector, where services are automatically provided without the need for citizens to submit specific requests (Malodia et al., 2021). The public sector is a constantly evolving sector that primarily focuses on providing access and services to people. The government's strategy should thus ensure that future investments in ICT are aligned across public bodies and deliver the required services and efficiencies for the public sector, citizens, and businesses. Strategic alignment should be a top priority for senior managers because it positively affects organisations; they should view ICT as a means of achieving organisations' objectives and adding value (Padayachee and Shano, 2019).

According to the Municipal Systems Act of 2000, developing an Integrated Development Plan (IDP) and performance management system will enable South Africa to deliver basic services (Act 106 of 2000). Molale (2019) explained that an IDP is a South African local municipal planning tool that sets out a municipal council's vision, priorities, objectives, and strategies to develop that municipality. In South Africa, persistent challenges with service delivery have been a prominent concern, particularly in underserved communities. Despite efforts to improve access to basic services such as water, electricity, housing, and healthcare, many citizens still face inadequate service provision.

The lack of efficient administrative systems, bureaucratic inefficiencies, corruption, and insufficient infrastructure exacerbate the problem, leading to disparities in service quality across regions. According to a report by the Human Sciences Research Council (HSRC), titled "South African Social Attitudes Survey," conducted in 2019, a significant portion of the population expressed dissatisfaction with the quality and accessibility of public services, highlighting the urgent need for systemic reforms and innovative approaches to address these challenges. Implementing technology-driven solutions, such as digital document management systems, could streamline administrative processes, enhance transparency, and ultimately contribute to more effective and equitable service delivery in South Africa (HSRC, 2019).

The IDP determines the desired level of development by setting the vision, objectives, targets, and key performance indicators that the eThekwini municipality must meet during its five-year term (Molale, 2019). The ICT strategy should be aligned with the municipality's strategic objectives for increasing efficiency and the overarching goal of improving public service delivery by embracing innovative technological advancements. Moreover, the alignment of the strategy with ICT allows for the personalisation and tracking of government services, as exemplified by the development of smart cities and smart grids in various countries. These initiatives enable real-time monitoring and adjustments, leading to increased efficiency, resilience, and cost savings (Makovhololo and Open Innovations Oct, 2018). In the context of eThekwini municipality, aligning its ICT strategy with its strategic objectives has the potential to transform service delivery, making it more citizen-centric and responsive to emerging challenges. On an international scale, governments are investing heavily in ICT programmes, recognising the importance of strategic alignment to address the shortcomings in project implementation (Haes et al., 2020, Khawan, 2019). This underscores the global imperative for municipalities to ensure that their ICT strategies are integrated with their overarching objectives to achieve desired outcomes. These developments highlight how aligning ICT strategies with strategic objectives can lead to more efficient, innovative, and citizen-centric governance.

As South Africa navigates its unique challenges, such as cyber threats to critical information infrastructures (Malatji et al., 2021), municipalities like eThekwini must explore innovative ways to harness the potential of ICT. This includes strategically integrating technology to support the achievement of municipal goals and to address emerging challenges, such as supply chain management and fraud detection (Fourie and Malan, 2020, Alberto Leite et al., 2018). The concept of smart cities is also gaining traction globally, with cities aspiring to leverage digital technologies to enhance governance, infrastructure, quality of life, and economic growth (Pashutan et al., 2022). This vision aligns with eThekwini municipality's objectives to provide efficient, innovative, and inclusive services to its residents. Furthermore, according to (Jonathan et al., 2021, Malodia et al., 2021), the literature has identified a misalignment between the ICT and municipality strategies.

1.3 The focus of the study

The aim of this study is considered fundamental, as municipalities today have progressed towards becoming focal points for service delivery by the municipality's constitutional obligations and the heavy reliance on ICT. The fundamental aspect of the study lies in understanding how municipalities navigate the challenges and opportunities arising from this shift, particularly in leveraging Information and Communication Technology (ICT) to fulfil their constitutional obligations and enhance service delivery. The study's focus was to explore the means to address the gap between a municipality's strategic objectives and its ICT strategy, using eThekwini municipality in the KwaZulu-Natal province as a case study.

EThekwini municipality will benefit significantly by fulfilling its mandate if its ICT strategy is properly aligned with its general strategy, also known as an Integrated Development Plan (IDP). As stated in the Municipal Systems Act (Act 32 of 2000), municipalities should use the IDP as a strategic plan, informing all planning, decision-making, activities, budgeting, and management processes (Vinti, 2019). Without proper alignment of ICT, it is unlikely that the municipality will achieve and sustain long-term success by delivering value to its stakeholders. Through strategic alignment, implementing ICT will improve the efficiency, effectiveness, and strategic management of the municipality. Given the significance of ICT in service delivery, the appropriate ICT resource levels and skill sets must be in place.

1.4 Problem statement

Despite increasing government spending on ICT, there has not been a noticeable improvement in service delivery, particularly on the part of municipalities in South Africa (Moodley & Pillay, 2020). It is expected that the ICT strategy of any municipality should enable and support the achievement of its strategic objectives. Failure by the majority of South African municipalities to effectively deliver services to their respective communities' points to the misalignment of the municipalities' ICT strategies and strategic objectives (Sibanda et al., 2019). The effectiveness of municipalities in providing services has been a hotly debated issue in South Africa. Reports that municipalities cannot provide services to their communities according to the adopted IDP have often been featured in the media (Malakoana, 2016). eThekwini municipality is facing significant challenges related to water scarcity, an expanding population, deteriorating infrastructure, and the lack of development in the service sector. These issues have created immense pressure on government water personnel at all levels, making it crucial for them to make wise decisions regarding water use and investments.

Corruption stands as a significant obstacle to effective service delivery within local government, causing increasing apprehension among the public, communities, and citizens about the inadequate management of local government affairs (Molale, 2019). In response to the need for accountability among those in governance roles, both the government and society have devised and adopted multiple control frameworks. These include the Municipal Finance Management Act (MFMA), Treasury Regulations, Audit Committees, the Standing Committee on Accounts, the Protocol on Corporate Governance for the Public Sector, the Service Delivery Framework, King IV, and the Internal Control Model (Molale, 2019). Despite the introduction and application of these frameworks, instances of local government scandals and subpar service delivery persist. Consequently, the credibility of the entire governance structure, encompassing Councillors and sub-committees like the Audit Committee and assurance providers, has come under scrutiny (Pereira et al., 2020).

Challenges emerge due to the intricacies of data management and collaboration among staff from various areas. This complexity leads to recurring errors, redundant data collection, inconsistent data, and suboptimal analyses, impacting the operational efficiency of the Municipality. To rectify these issues, it becomes imperative for municipalities to ensure a tight alignment between their strategic objectives and ICT strategies. This alignment is crucial for promoting efficient and effective business operations and fostering overall growth. In doing so, municipalities can navigate the challenges posed by data management complexities, enhancing their capacity to make informed decisions and optimise their operational processes. Additionally, the rapid evolution of ICT significantly impacts municipal projects (Hariyanto and Anwar, 2019). The Auditor-General's Report on National Audit Outcomes for 2018/19 specifically drew attention to the absence of ICT strategies within municipalities (AGSA, 2018). This underscores the critical need to investigate how ICT can be aligned with the eThekwini municipality's strategy, which is aligned with its Integrated Development Plan (IDP).

Research in the field of ICT alignment, particularly in South Africa, has focused on the private financial sector, as evidenced by studies conducted by (Alberto Leite et al., 2018, Arundel et al., 2019, Dairo et al., 2021a). In contrast, the public sector and municipalities have received limited attention regarding ICT alignment. This is despite municipalities' practical challenges in implementing ICT and governing it effectively, as highlighted by reports from the Auditor General in 2019. The Auditor General's report, which exposed irregular expenditure of R2.3 billion in the eThekwini municipality in 2019, serves as a stark reminder of the urgent need for improved financial management and accountability within the municipality. Irregular expenditure indicates potential mismanagement of funds and the absence of adequate controls, resulting in financial losses and inefficiencies. Moreover, the fact that eThekwini municipality lags in ICT development suggests a missed opportunity to leverage technology for cost-saving measures and operational efficiency (AGSA, 2018). In today's digital era, ICT can play a pivotal role in enhancing service delivery, streamlining operations, and optimising resource utilisation.

South African municipalities lack a comprehensive strategy for implementing effective ICT governance that aligns with their strategic goals. Specifically, a study by Makovhololo (2016) identified a deficiency in the ICT strategy framework for eThekwini municipality. While the use of technology holds the promise of improving the lives of millions of people in the municipality, the absence of alignment between the ICT strategy and strategic objectives may pose challenges for the eThekwini municipality in achieving and sustaining long-term success in delivering value to its stakeholders.
It is important to note that despite the significance of ICT strategic alignment, there is no consensus among scholars and professionals regarding its definition, measurement, or the steps required to maintain and enhance it within organisations. Nevertheless, ICT governance emphasises the importance of aligning ICT goals with overall business objectives. Consequently, effective ICT governance should manifest as the strategic alignment of ICT within the organisation. Achieving alignment between eThekwini municipality's ICT strategy and strategic objectives is crucial for addressing governance challenges, leveraging technology effectively, and promoting accountability. Taking a holistic approach that addresses these critical areas, the municipality can pave the way for sustainable growth, innovation, and improved service delivery in line with its overarching goals and objectives.

1.5 Purpose of the study

This study aimed to address the evolving role of technology in the functioning of municipalities, with a focus on eThekwini municipality. Over the past decade, technology has undergone significant transformations and has become an integral part of many municipal operations. In this way, ICT has emerged as a catalyst for socio-economic development and has disrupted the business models traditionally employed by municipalities. Embracing ICT offers several advantages, including the enhancement of service delivery, improved customer service, streamlined processes, increased operational speed, and reduced delays. To harness the full potential of ICT, it is crucial for the management of the eThekwini municipality to comprehend how ICT can help them achieve their objectives effectively. This understanding can only be achieved through the alignment of the ICT strategy with the municipality's strategic objectives.

Failure to establish a successful alignment between the ICT strategy and municipal strategic objectives would mean that the municipality might not fully realise the benefits of ICT adoption, potentially exposing it to associated risks. This research thus aimed to provide insights and guidance to the eThekwini municipality in determining the most effective mechanism for aligning its ICT strategy with the municipality's strategic objectives. The goal is to enhance service delivery, optimise ICT use, and minimise technology adoption risks.

1.6 Research objectives

The objectives of the study are as follows:

1. To investigate the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery.
2. To establish the contributing factors to the alignment of eThekwini municipality's ICT strategy and its strategic objectives.
3. To explore how eThekwini municipality's ICT strategy can be realised as an instrument of its strategic objectives for service delivery.
4. To design a standard mechanism to align eThekwini municipality's ICT strategy with its strategic objectives for effective service delivery.
5. To make recommendations regarding the alignment of eThekwini municipality's ICT strategy with its strategic objectives for effective service delivery.

1.7 Research questions

The corresponding research questions were as follows:

1. What is the nature of the alignment of eThekwini municipality's ICT strategy and its strategic objectives?
2. What gaps exist between eThekwini municipality's ICT strategy and its strategic objectives?
3. How can eThekwini municipality's ICT strategy be a means to realise its strategic objectives?
4. What is a standard mechanism to align eThekwini municipality's ICT strategy and strategic objectives for effective service delivery?
5. What are the recommendations on the alignment of eThekwini municipality's ICT strategy with its strategic objectives for effective service delivery?

1.8 Justification (rationale)

To make a rapid transition to technology, the public sector needs to play a leading role by pioneering and implementing enabling policies. South Africa's municipalities are faced with challenges in aligning their business and ICT strategies. The AGSA's reports have consistently shown that local and metropolitan municipalities struggle with implementing adequate processes that support alignment (AGSA, 2018). AGSA's 2018 reports revealed the following results, which show that the benefits of aligning an ICT strategy with strategic objectives are not being realised:

- There is a lack of critical infrastructure to support basic service delivery.
- Manual processes are inefficient, slow, and complex.
- There is a lack of transparency in the information technology sector.
- There is insufficient prioritisation of information technology controls.
- There is ineffective enforcement of ICT security and user access policies.
- There is low investment in risk management practices.
- The ICT systems are unreliable.

These findings emphasise the pressing need for municipalities, including the eThekwini municipality, to develop comprehensive ICT strategies that address these areas of concern and align with broader goals, including those related to the Fourth Industrial Revolution and cloud computing. Abdullahi et al. (2019) noted that South Africa is faced with challenges as the country develops its technology infrastructure in an environment with few ICT professionals, yet the absence of legacy challenges and integration issues provides a refreshing opportunity for South Africa to be among the world's leaders in ICT adoption in developing countries. Sibanda et al. (2019) also commented that a lack of technology adoption in South African metropolitan municipalities has established barriers that have hampered local government ICT development and innovation. Similarly, Sugebo and Sekhar (2020) studied the implementation of e-government in developing countries using Ethiopia as a case study, and highlighted problems related to limited resources, a lack of trained ICT expertise, inadequate national ICT policies, inadequate administrator participation, and a lack of public-private collaboration.

Correlating observations from studies by Jonathan et al. (2021), Malodia et al. (2021), Lucia Masilela and Nel (2021), and Bhattacharya (2018) were also noted. Cordova and Stanley (2021) similarly pointed out that the increasingly universal broadband infrastructure from public and private enterprises presents an opportunity to roll out ICT-enabled services, with governments all over the world following the private sector's lead in incorporating ICT into their processes.

This examination will benefit all levels of government, particularly districts in South Africa that are currently experiencing the disorder of inadequate administration because of the poor execution of corporate administration standards. The findings and recommendations of this study will be of particular interest to the following groups:
Assurance Providers: Assurance providers, encompassing risk management functions, internal audit functions, external auditors, and Audit Committees, will find valuable insights into the state of ICT alignment within the eThekwini municipality. The study's outcomes can inform their roles in assessing and ensuring the effectiveness of corporate governance standards. Stakeholders of eThekwini Municipality: Various stakeholders involved in the operations and services of the eThekwini municipality will directly benefit from the study's recommendations. This includes individuals and entities engaged in the municipality's activities, fostering a more transparent and aligned approach to ICT governance.

The ultimate beneficiaries of improved service delivery resulting from effective ICT alignment are the citizens of eThekwini. Through enhancing the municipality's ability to align its ICT strategy with overarching objectives, this study contributes to the delivery of more efficient and effective public services. Municipal councils within the broader KwaZulu-Natal province can draw insights and lessons from the eThekwini municipality's experience. The study's outcomes may serve as a reference point for other councils, guiding them in their efforts to align ICT strategies with organisational goals. The study's outcomes may inform broader policy considerations at the Cabinet level in KwaZulu-Natal. Understanding the challenges and successes of ICT alignment in a municipality can contribute to the formulation of policies that enhance governance and service delivery across the province.

Within academia, these findings establish a platform for further exploration and theoretical development, contributing to a deeper understanding of the complexities surrounding corporate governance standards in governmental settings. Future researchers can leverage these results to refine their inquiries, address existing gaps, and actively participate in the ongoing scholarly discourse. This collaborative effort to comprehend effective governance practices is pivotal for advancing academic knowledge and promoting continual enhancements in administrative processes.

Furthermore, the role of the Accounting Officer of the Department of Corporate Governance and Traditional Affairs is emphasised, highlighting their pivotal position in overseeing governance matters. In the broader context, the study recognises the South African government's initiation of the National Digital Transformation Strategy for 2030 (McAdam et al., 2017). To align with this strategy, the research underscores the importance of the eThekwini municipality implementing an appropriate strategic alignment model. The results provide specific mechanisms for aligning the municipality's ICT strategy with its strategic objectives, paving the way for enhanced service delivery. This integrated approach ensures that the study's implications are linked to the diverse needs and interests of various stakeholders, fostering comprehensive governance and ICT alignment in the eThekwini municipality.

1.9 Delimitation (scope)

The research is centred on eThekwini municipality, which was established in 2000. eThekwini is situated within the southern province of KwaZulu-Natal in South Africa and is categorised as a Category A municipality according to the Local Government: Municipal Structures Act of 1998 (Municipal Structures Act, 1998). This classification designates eThekwini as a metropolitan municipality, reflecting its status as a large urban area with substantial populations and intricate service delivery demands. As a Category A municipality, eThekwini wields the highest level of administrative and executive authority, empowering it to oversee a diverse array of services and functions within its defined geographic scope. This includes essential services like water, sanitation, electricity, and public transportation, as well as the management of local infrastructure and land-use planning critical to urban governance.

The research on eThekwini municipality aims to explore facets of governance, ICT alignment, and strategic initiatives, contributing to a nuanced understanding of the complexities faced by this dynamic urban centre.

1.10 Excluded information and procedures

The research is specifically centred on the precise alignment between the strategic objectives of the eThekwini municipality and its ICT initiatives. It does not encompass a broader examination of alignment across all municipal departments. This research approach is grounded in the recognition that ICT can play a pivotal role in enabling and advancing the municipality's overarching business goals. Successful organisations globally are those that can seamlessly integrate these distinct operational domains, as the alignment between business and ICT is aimed at amalgamating knowledge, skills, and resources to enhance employees' efficiency. Consequently, the primary focus of this research was directed toward ICT and its synchronisation with the strategic objectives of the municipality. The study does not encompass other municipalities in KwaZulu-Natal due to limitations in terms of both time and financial resources. The study was also limited to assessing a government entity and left out other stakeholders, such as private entities.

Further, the researcher gathered the perspectives of top officials, ICT auditors and ICT manager in the eThekwini municipality. Therefore, the perspectives of other stakeholders, such as investors, general workers, and lower ranking employees, were excluded from the study. This was because they did not have first-hand and full information about eThekwini municipality’s strategic alignment with its ICT strategy. In terms of methodological procedures, the use of surveys and experimental research strategies were avoided; instead, a case study research strategy was employed. This decision was motivated by several considerations, including that there is an increased risk of dishonest answers being provided by individuals in a survey, there is the potential for certain questions to be omitted, they may be challenges in effectively conveying emotions with attainable results, and there is a likelihood that some respondents will select answers prior to reading the questions in their entirety.

Similarly, the experimental research strategy will be eschewed due to the possibility that errors resulting from human factors might impact the results of the experimental research eventually. Furthermore, experimental research is associated with various disadvantages, including the inability always to control extraneous variables, complexities in measuring human responses, and the potential for participants to introduce bias (Creswell and Plano Clark, 2018). In this research, a mixed methods approach will be employed to gather comprehensive information, utilising both an interview guide and a questionnaire while excluding the observation research tool. The decision to opt for mixed methods is grounded in several considerations. Observational studies, although valuable, tend to be time-consuming and costly. Additionally, controlling variables in observational studies can be challenging, as researchers may not have full control over the study environment. Furthermore, random sampling techniques will not be employed; instead, purposive sampling will be utilised. This choice is motivated by several factors, including the time required to compile a complete list of a specific population, the financial resources needed to access and contact that complete list, and the potential for bias when the sample size is insufficient to represent the entire population adequately.

1.11 Assumptions

Assumptions play a crucial role in shaping the foundation and methodology of a research study. In the context of this study, several key assumptions have been identified, each of which is essential for the successful execution and validity of the research. These assumptions encompass the behaviour of participants, the integrity of data collection, the support and resources provided to the researcher, and the response rate to questionnaires. This paper will comprehensively address each assumption, providing a detailed analysis of its significance and potential impact on the study. The first assumption pertains to the openness and honesty of participants during interviews conducted in a public setting. It is assumed that participants will share their knowledge and experiences authentically, thereby providing meaningful insights into the alignment of the ICT strategy with the eThekwini municipality's strategy. This assumption is fundamental as it underpins the credibility and authenticity of the qualitative data obtained through interviews.

The assumption is based on the premise that participants will feel comfortable and willing to express their perspectives openly. However, it is important to acknowledge that the public setting may introduce social desirability bias, where participants may tailor their responses to align with societal norms or expectations. To mitigate this potential bias, the researcher should establish rapport with participants, emphasise the confidentiality of their responses, and employ probing techniques to encourage candid and genuine feedback.

The second assumption relates to the accuracy and truthfulness of responses obtained from both questionnaires and interviews. It is assumed that the data collected will faithfully reflect the perspectives of the participants, thereby contributing to the validity of the study's findings. This assumption underscores the importance of data integrity and the trustworthiness of the research outcomes. To uphold this assumption, the researcher must design the questionnaires and interview protocols meticulously, ensuring clarity and relevance of the questions to the research objectives. Additionally, measures such as anonymity and confidentiality should be emphasised to reassure participants and minimise response bias. Furthermore, the use of triangulation, wherein multiple sources of data are compared and contrasted, can enhance the credibility and reliability of the findings, thereby validating this assumption.

The third assumption pertains to the authorisation and provision of resources to the researcher by management. It is assumed that the researcher will receive the necessary authorisation and sufficient resources to effectively conduct the investigation. This assumption is pivotal for the successful execution of the study, as it directly impacts the researcher's ability to access relevant information, engage with stakeholders, and implement the research methodology. To ensure the fulfilment of this assumption, the researcher should establish clear communication channels with the relevant authorities, outlining the specific requirements and justifications for the resources needed. Additionally, a detailed research proposal highlighting the significance and potential impact of the study can facilitate the authorisation process, thereby strengthening this assumption.

The fourth assumption focuses on the continuity of authorisation and reliable resources throughout the study. It is assumed that consistent support will be available to the researcher, ensuring the smooth progress of the research process. This assumption underscores the need for sustained backing from management and stakeholders, as any disruptions or inadequacies in resources can impede the research timeline and quality of outcomes. To address this assumption, the researcher should establish contingency plans and alternative resource sources to mitigate potential disruptions. Moreover, regular communication and updates with the relevant authorities can help in reaffirming the support and resources needed for the study, thereby safeguarding the continuity of the research process.

The final assumption pertains to the anticipated high response rate to the distributed questionnaires. It is assumed that a high response rate will be achieved, thereby facilitating the attainment of a representative sample and enhancing the generalisability of the study's findings. This assumption is critical for the statistical validity and external validity of the research outcomes. To support this assumption, the researcher should employ strategies to maximise the response rate, such as personalised communication, clear instructions, and incentives for participation. Additionally, the design of the questionnaires should prioritise brevity and clarity to minimise respondent burden and enhance the likelihood of participation. These assumptions collectively contribute to the foundation of the research, outlining the expectations regarding participant behaviour, data accuracy, and the support provided to the researcher. While these assumptions guide the study, the researcher should remain vigilant and address any deviations or challenges that may arise during the research process.

1.12 Structure of the study

The thesis is structured into seven chapters to ensure a logical flow of the research work. Here is an overview of each chapter:

Chapter 1: Introduction and background of the research study

In this opening chapter, the research is introduced, and the problem statement is presented along with its significance. This chapter provides the context for the study and outlines its specific objectives.

Chapter 2: Literature review

Chapter two serves as the study's theoretical foundation. It comprehensively reviews the relevant literature, covering ICT principles, theories, and best practices. This literature review establishes the groundwork for the research by summarising existing studies and their relevance to the research topic.

Chapter 3: Research Methodology

The third chapter elaborates on the research design and methodology employed in the study. It explains the chosen approach and methods used for data collection, highlighting the appropriateness of these methods in addressing the research questions.

Chapter 4: Quantitative Data Analysis and Interpretation of Results

This chapter is dedicated to the analysis of the quantitative data gathered during the research. It presents statistical analyses and interprets the findings derived from the quantitative aspects of the study.

Chapter 5: Qualitative Data Analysis and Interpretation of Results

Chapter five focuses on the analysis of qualitative data collected during the research. It presents in-depth qualitative analyses and interpretations of the research findings.

Chapter 6: Discussion of Results (Quantitative and Qualitative Analysis)
Chapter six comprehensively discusses the research findings, combining quantitative and qualitative analyses. It delves deeper into the implications of the results and offers a more detailed examination of both aspects of the data.

Chapter 7: Conclusion, limitations, and future recommendations
The concluding chapter, Chapter Seven, offers the conclusion of the research. It summarises the key findings and issues explored throughout the study. Additionally, it acknowledges any limitations encountered during the research process and provides valuable recommendations for future research endeavours.

1.13 Conclusion

This pivotal chapter has laid the foundation by establishing the research objectives, delineating the problem statement, framing research questions, specifying the study's scope, and outlining the essential assumptions that underpin the research. These components are intricately interlinked with the research propositions and supporting theory, providing a robust framework for the ensuing chapters to build upon. The establishment of research objectives is crucial as it delineates the specific aims and goals that the study seeks to achieve. Through clearly defining the research objectives, the chapter has provided a roadmap for the subsequent research activities, ensuring a focused and purposeful approach towards addressing the research problem.

Furthermore, the articulation of the problem statement has elucidated the central issue or challenge that the research endeavours to investigate and address. This serves to contextualise the significance of the research and underscores the relevance of the study within the broader domain of municipal governance and ICT alignment. The framing of research questions is instrumental in guiding the inquiry and exploration within the study. Through formulating pertinent research questions, the chapter has set the stage for systematic investigation and analysis, thereby facilitating a structured approach towards generating meaningful insights and addressing the research problem. Moreover, the specification of the study's scope delineates the boundaries and parameters within which the research will be conducted.

This serves to clarify the extent of the research inquiry and provides a clear understanding of the context within which the findings and conclusions will be applicable. The explication of the assumptions that underpin the research is essential for acknowledging the foundational expectations and conditions upon which the study is built. These assumptions encompass participant behaviour, data accuracy, support and resources, and response rates, collectively shaping the methodological framework and guiding the research process. Additionally, the chapter has provided a detailed explanation of the research plan, offering insights into the selected research design, which will be instrumental in investigating the research proposition and addressing primary and investigative research questions. The delineation of the research plan sets the stage for the subsequent empirical inquiry and data collection, providing a clear roadmap for the execution of the study. Furthermore, the chapter has outlined the thesis's structure and proposed contributions, offering a glimpse into the organisation and content of the ensuing chapters, as well as the potential impact and significance of the research outcomes.

As the research progresses, the literature review presented in the next chapter will serve as a foundational resource for understanding the context and significance of ICT alignment in municipal governance. This critical review of existing literature will provide a comprehensive understanding of the theoretical and empirical landscape, guiding the subsequent chapters of the thesis and informing the development of the research framework and analysis. Chapter one, has laid a solid groundwork for the research thesis, encompassing essential components such as research objectives, problem statement, research questions, study scope, assumptions, research plan, thesis structure, and proposed contributions. This foundational chapter sets the stage for a rigorous and systematic inquiry into the alignment of ICT strategy with municipal governance, providing a strong foundation for the subsequent chapters to build upon.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In the previous chapter, we introduced our research study, providing insights into its background, which revolves around aligning ICT strategy with the strategic objectives of eThekwini municipality to enhance service delivery. In this chapter, we embark on a comprehensive review of the literature pertaining to the various variables investigated in our study. This literature review played a pivotal role in shaping the questionnaire for data collection. It encompasses empirical and theoretical literature related to the alignment of ICT strategies.

The current chapter offers an overarching view of relevant theories, scrutinises their criticisms, and assesses their applicability to our present study. Additionally, we explore the potential relevance of these theories to public sector organisations.

2.2 ICT strategic alignment

The role of Information and Communication Technologies (ICT) extends beyond managerial aspects, contributing to the establishment of good governance principles such as transparency and citizen participation (Câmara et al., 2018). Therefore, it becomes imperative to incorporate governance principles into ICT strategy development to ensure alignment with local authority objectives and service delivery.

In today's rapidly evolving and interconnected business environment, the alignment of information and communication technology (ICT) with organisational strategy is paramount. Effective ICT strategic alignment ensures that an organisation's ICT initiatives and investments synchronise with its overarching objectives, enabling it to adapt to technological advancements, maintain competitiveness and deliver superior value to stakeholders (Kamel and Rizk, 2017). The ICT strategy serves as a comprehensive roadmap guiding the planning and execution of ICT initiatives within the municipality, with the central aim of elevating service delivery, fostering operational efficiency, and propelling digital transformation.

The strategy outlines specific objectives and goals for ICT initiatives, providing a clear path for their development and implementation. Crucially, it identifies critical steps essential for success, incorporating stakeholder engagement and needs assessment to align with the municipality's priorities and diverse stakeholder needs. Performance evaluations of ICT companies in Iran have highlighted critical success factors, including strategic alignment, environmental effects, organisational effects, executive management, and financial resources management (Pereira et al., 2018). This underscores the pivotal role of considering these factors in the development of ICT strategies to ensure alignment with organisational objectives and performance. The impact of ICT strategy and technological innovation strategic alignment on firm performance emphasises the direct influence of strategic alignment factors on the coherence between ICT and technological innovation, highlighting the significance of strategic alignment in driving organisational performance (Zerihun and Mashingo, 2022).

The assessment of IS-innovation strategic alignment factors among universal banks in Ghana delves into the interrelationships and consequential effects of perceived alignment factors, emphasising the need to understand the interconnectedness of these factors in achieving strategic alignment (Lappi et al., 2019) The analysis of conversation competencies in strategic alignment between business and ICT areas highlights the difficulty in communications between business and ICT personnel as a factor inhibiting alignment, underscoring the importance of effective communication in achieving strategic alignment (Câmara et al., 2018). Green ICT adoption using a maturity model has identified prominent factors of influence, including strategic alignment, culture and leadership, ownership, knowledge and experience, and technical infrastructure, emphasising the multifaceted nature of factors influencing ICT strategy development and alignment (Hankel et al., 2019). The effects of power distance on ICT strategic alignment in Kenya's commercial banks have shown a negative and significant relationship between power distance and ICT strategic alignment, highlighting the influence of organisational culture on strategic alignment (Kamel and Rizk, 2017). The eco-strategy model for ICT management emphasises the awareness of stakeholder interactions and sustainable development issues in ICT management, underscoring the importance of integrating sustainability principles into ICT strategy development and alignment (Klier et al., 2017). Utilisation and

infrastructure alignment in construction organisations highlight the need for a detailed examination of the strategic alignment between ICT utilisation and organisational infrastructure, emphasising the importance of infrastructure alignment in achieving strategic ICT objectives (Haes et al., 2020). The proposal of an implementation methodology for ICT processes emphasises the basic principle of ICT governance as the alignment between ICT and business, highlighting the strategic importance of aligning ICT with organisational objectives (Canedo et al., 2019). The effect of the challenges facing the use of ICT on inventory management among breweries in Nigeria underscores the challenges hindering the positive impacts of ICT, emphasising the need to address these challenges in achieving strategic ICT objectives (Odoyo et al., 2013).

The e-literacy adoption model and performance of women-owned SMEs in southwestern Nigeria emphasise the need to develop a fit and alignment between ICT adoption and business information strategy, highlighting the strategic importance of aligning ICT with business objectives (Wang and Wu, 2019). The ICT performance evaluation model based on a meta-synthesis approach includes indicators of organisational strategy, ICT strategy and alignment, emphasising the multifaceted nature of strategic alignment in ICT performance evaluation (Canedo et al., 2019). The relationship between ICT investment and employment highlights the need to respond to the challenges of ICT investment and employment, emphasising the importance of addressing these challenges in achieving strategic ICT objectives (Zhang and Li, 2022). The role of CSR in the telecommunications industry underscores the importance of the CSR approach in decision-making, governance, and strategic alignment of ICT, accenting the strategic importance of aligning ICT with sustainability and business objectives (Wongwuttiwat and Lawanna, 2018).

Structural theory and strategic alignment in information security management underline the comprehensive research approach and program to systematically analyse the smart environment, information security awareness, leadership and strategic alignment, highlighting the multifaceted nature of strategic alignment in information security management (Sharma, 2020). The impact of information and communication technology (ICT) capability on the competitive advantage of small businesses underscores the role of ICT capability in increasing competitive advantage,

highlighting the strategic importance of ICT capability in achieving an organisation's strategic objectives (Queiroz and Fosso Wamba, 2019). The management of ICT and the effectiveness of electricity distribution companies underscore the need to address strategic alignment and management of ICT systems and processes, highlighting the strategic importance of aligning ICT with organisational objectives (Prakash, 2019).

The effect of human ICT capability on organisational agility underlines the moderating influence of ICT infrastructure spending on the human ICT-agility linkage, highlighting the multifaceted nature of factors influencing organisational agility and strategic alignment (Ngqondi and Mauwa, 2020). The principles of ICT strategy development and strategic alignment encompass a broad spectrum of considerations, including organisational, cultural, environmental, and technological factors. These principles underscore the multifaceted nature of ICT strategy development and the need for strategies that align with diverse organisational, societal, and environmental objectives. In addition, the strategy entails a thorough analysis of the existing ICT infrastructure and capabilities, providing an insightful understanding of the current technology landscape and highlighting areas for improvement. The eThekwini Municipality can seamlessly integrate ICT into its service delivery processes through this strategic process. Regular monitoring and evaluation mechanisms are integral to enabling the municipality to gauge the effectiveness of the initiatives. Importantly, the strategy underscores a continuous improvement cycle, allowing for adaptability to meet the ever-evolving needs of the municipality and its residents. This emphasis on ongoing refinement positions the municipality to remain responsive and innovative in the dynamic realm of information and communication technology.

2.2.1 Importance of ICT strategic alignment

Since the late 1990s, ICT has become more important in organisations, coinciding with increased technological development and utilisation. Given the rising significance of ICT, Abdullahi et al. (2019) posited that attaining strategic alignment between a business and its ICT is critical for improving organisational performance. According to Jonathan et al. (2021), organisations must develop sound strategies and support them with ICT systems that are aligned with those strategies if they are to respond to uncertainties in global business environments. Managers and ICT developers have

looked for strategic alignment possibilities to determine the best methods to use to improve performance (Dairo et al., 2021b). It is improbable that any organisation would achieve and maintain long-term success and improve stakeholder value without adequate ICT alignment (Pashutan et al., 2022). Strategic alignment has thus emerged as the most pressing issue in contemporary management, which requires a business strategy that works in tandem with ICT systems and organisational processes (Padayachee and Shano, 2019).

Various scholars have highlighted the importance and value of strategic alignment to the organisation (Sargent and Ahmed, 2017), with many academics believing that achieving harmony between organisational objectives and ICT systems is the most fundamental approach to take if an organisation is to improve its performance. Furthermore, decision-makers in the public sector realise that alignment entails achieving harmony between the organisation and its technology, which gives designers a chance to produce a more complex product that is specialised to the public sector (Tauté, 2020). A fundamental advantage of strategic alignment is that it leads to better decision-making and more cost-effective ICT spending (Sembodo Suroso et al., 2018). Considering changing business objectives, constantly expanding technologies (Padayachee and Shano, 2019), and high ICT expenditures, alignment is becoming more important as organisations attempt to integrate their operations and technology (Hanafi et al., 2020); (Balafif and Haryanti, 2020).

Strategic alignment also reduces risk and improves an organisation’s effectiveness and efficiency, improving real economic value (Fonseca et al., 2021). Kalonda and Govender (2021) presented a case study on the alignment of information and communication technology (ICT) with municipal objectives in South Africa, underscoring the significance of stakeholder collaboration, strategic planning, and knowledge sharing. This study highlights the critical role these elements play in ensuring that ICT initiatives are effectively integrated into municipal operations, aligning with broader organisational goals. In a related context, the World Bank's "e-government in Municipalities" report, as noted by (Mwadiwa and Maleho, 2022) offers a comprehensive examination of best practices from various countries. This report highlights successful ICT initiatives that are strategically aligned with municipal objectives, leading to improved service delivery.

The insights from the World Bank report provide a valuable global perspective on how effective alignment of ICT with strategic objectives can contribute to the enhancement of public services. Together, these studies emphasise the importance of strategic alignment in the realm of ICT implementation within municipalities, displaying real-world cases and global best practices that underscore the benefits of such alignment in achieving improved service delivery. Improving the competitiveness and effectiveness of the supply chain is achievable through the alignment of technology usage with business operations, fostering seamless information exchange, and promoting collaboration with both suppliers and customers (Malodia et al., 2021). The study emphasises that strategic alignment plays a pivotal role in enhancing the overall efficiency of the supply chain. However, when strategic alignment is lacking, a cascade of problems can arise within the workplace, restricting the organisation's ability to reach its full potential.

According to Jung (2019), strategic misalignment may hinder organisations from capitalising on opportunities and possibilities facilitated by technology, resulting in higher operational expenses and inefficiencies. This underscores the critical importance of strategic alignment in leveraging technology for optimal business outcomes. In summary, the studies by Malodia et al. (2021) and Jung (2019) collectively highlight the link between strategic alignment, technology integration, and the overall effectiveness of the supply chain. Proper alignment is portrayed as essential for harnessing the full potential of technology and avoiding inefficiencies in organisational operations.

2.3 Defining key terms

2.3.1 Strategic alignment

The concept of strategic alignment emerged as a response to ongoing research aimed at improving organisational performance. In this context, alignment refers to the extent to which employees' interests and behaviours are harnessed to fulfil the organisation's core objectives (Kamel and Rizk, 2017). It involves ensuring that an organisation's resources and structure are in harmony with its strategy (Bhattacharya, 2018). Furthermore, strategic alignment ensures that the organisation's strategy is deeply ingrained in its culture and embraced by all stakeholders (Hanafi et al., 2020).

Strategic alignment is a meticulous process that requires a broad application of knowledge, technical expertise, and skills. It also demands the commitment of all organisational members, including management and other stakeholders. This commitment is essential for establishing focused, realistic, flexible, and ongoing arrangements that meet organisational needs and satisfy customers (Saputra et al., 2019). Strategic alignment is an internal practice that combines an organisation's diverse activities primarily to promote change and innovation (Abdullahi et al., 2019). This process involves fostering creativity through elements such as salary structures, employee selection, promotion strategies, retention efforts, and the overall structural framework (Hanafi et al., 2020). Padayachee and Shano (2019), citing Luftman and Brier (1999), define 'good alignment' as the judicious use of suitable information technology at the right time and place to assist organisations in attaining their goals and objectives. Kamel and Rizk (2017) further note that strategic alignment can be attained when strategies are well defined and attainable. The utilisation of ICT systems and strategies can stimulate or enhance the functions and operations of an organisation.

Strategic alignment, the process of ensuring that an organisation's information and communication technology (ICT) resources are effectively utilised to fulfill its strategic objectives, plays a pivotal role in enhancing organisational efficiency and effectiveness. This alignment can yield a multitude of significant outcomes, including greater clarity in the organisation's overall direction, improved customer relationships, enhanced internal unity and cooperation, adaptability in organisational culture and infrastructure, and the cultivation of responsive leadership across all levels (Henderson & Venkatraman, 1993; Luftman, 2003; Kearns & Lederer, 2003). However, despite its paramount importance, the concept of strategic alignment lacks a universally accepted definition, leading to disagreements and varying interpretations within academic and scholarly circles (Sabherwal & Chan, 2001; Reich & Benbasat, 1996). Scholars and academics have approached strategic alignment from diverse angles, resulting in differing conclusions about its essence and implications (Brynjolfsson & Hitt, 1996; Chan & Reich, 2007). Consequently, strategic alignment remains a subject of various interpretations and explanations, highlighting the complexities inherent in achieving alignment between business and ICT strategies.

2.3.2 Strategic alignment from the ICT perspective

Strategic alignment from an ICT perspective focuses on ensuring that an organisation's ICT strategies, systems and resources are integrated with its overall business or organisational strategies. This involves aligning the use of technology with the broader goals and objectives of the organisation to enhance its competitive advantage and achieve its mission (Kamel and Rizk, 2017). In today's dynamic and technology-driven landscape, achieving alignment has become paramount for organisations aiming to leverage ICT effectively. Haes et al. (2020) indicated that achieving alignment necessitates a shared comprehension of both organisational and ICT strategies, extending beyond merely aligning their objectives to encompass factors such as people and fostering collaboration among employees. Numerous influences shape strategic alignment, as recognised by various scholars. Malodia et al. (2021), for example, asserted that aligning an ICT strategy with strategic objectives yields improved service delivery, enhanced decision-making, and more effective resource allocation.

Agbebi et al. (2021) underscored the pivotal role of ICT in advancing municipal strategic goals, including enhancing citizen engagement, promoting transparency, and optimising service delivery processes. Jonathan et al. (2021), on the other hand, delved into the impact of ICT on municipal service delivery, emphasising its potential to streamline operations, increase accessibility, and enhance communication between the municipality and its residents. Finally, Klier et al. (2017) argued that ICT-enabled service delivery systems can contribute to efficient public service provision, cost reduction, and heightened citizen satisfaction. Strategic alignment is inherently dynamic because of the rapid pace of technological advancements. In the context of strategic alignment, ICT capabilities continually adapt and seamlessly integrate with the core strategic trajectory of the organisation, thereby enhancing operational efficiency (Kamel and Rizk, 2017). Successful ICT strategic alignment can increase efficiency, innovation, and competitiveness. Jonathan et al. (2021) asserted that a harmonious relationship between business and ICT can only be achieved if ICT becomes integral to the company's strategy, objectives, and requirements. However, assessing alignment can pose challenges, as the literature indicates (Kamel and Rizk,

2017). Nevertheless, any misalignment between business goals and ICT components can be readily identified.

2.4 Municipality Service Delivery and Strategic Focus Areas:

The strategic focus areas for municipality service delivery encompass a broad spectrum of considerations, including public health, citizen engagement, human resource development, sustainability, governance, and infrastructure management. These strategic focus areas underscore the multifaceted nature of municipality service delivery and the need for comprehensive strategies that address diverse societal, environmental, and organisational needs.

2.4.1 Municipality service delivery

Municipality service delivery denotes the provision of public services by local government entities, referred to as municipalities, to meet the needs of residents within their area. Service delivery is a critical element of governance in municipalities worldwide. Within the realm of local government, service delivery is a frequently used term in South Africa, encompassing the distribution of fundamental resources that citizens rely upon, including water, electricity, sanitation, land, and housing. Municipalities bear the responsibility of delivering a broad spectrum of services that significantly impact the daily lives of individuals and communities. These services are essential for maintaining an acceptable standard of living (Muthwa, 2019). The Constitution of the Republic of South Africa of 1996 serves as the country's supreme law, dictating how each sphere of government should execute its mandated tasks (Rautenbach et al., 2018). Chapter 10, Section 195(1) of the Constitution outlines the fundamental values and principles pertinent to service delivery within the public administration. These principles emphasise efficient, effective, and economical resource utilisation; development-oriented public administration; impartial, fair, equitable, and unbiased service delivery; responsiveness to citizens' needs; and accountability. Regular monitoring, evaluation, and feedback mechanisms play a pivotal role in continually enhancing service delivery and addressing gaps and challenges.

The eThekwini Municipality in South Africa has demonstrated a proactive and comprehensive approach to urban governance by engaging in various initiatives to tackle urban challenges and capitalise on opportunities. The Durban Resilience Strategy of 2017, recognising the importance of informal settlements and fostering resilience, aligns with the municipality's commitment to managing diversity and promoting inclusivity, exemplified in initiatives such as women empowerment and employment equity compliance (Adewumi, 2022; Pieterse, 2023). The municipality's involvement in urban regeneration programs, waste management, and compliance evaluation demonstrates its dedication to environmental sustainability and effective governance (Gutu, 2019, Haes et al., 2020) Furthermore, addressing complex issues such as violence, identity politics, and invasive species control showcases the municipality's responsiveness to diverse challenges (Vinti, 2019).

Notably, the focus on green recruitment practices, poverty alleviation, and community-based adaptation reflects the municipality's commitment to holistic development and social justice (Breed & Mehrtens, 2021, Ajadi et al., 2022, Pillay & Mutereko, 2022). While actively participating in climate change adaptation and disaster management, challenges related to water management and service delivery gaps highlight ongoing areas for improvement (Nkoana et al., 2018, Xaba & Onwubu, 2022, Naidoo et al., 2022, Moodley et al., 2020). Overall, the municipality's dedication to evidence-based governance and inclusive development is evident across a spectrum of initiatives, showcasing its commitment to sustainable and resilient urban development (Harlie et al., 2019a). As per Salim et al. (2019), the central focus of service delivery should revolve around two key aspects: effectiveness and customer service. Effectiveness pertains to the meticulous execution of tasks, i.e., ensuring that they are performed correctly. This entails monitoring various parameters such as customer satisfaction, service quality, timeliness, and interpersonal interactions (Kalonda and Govender, 2021). When a service provider exceeds a customer's expectations, it leads to customer satisfaction. Enhancing public service delivery is one of the most pressing challenges facing local administrations across Africa. Research has established a direct correlation between citizen satisfaction with public service delivery and their involvement in street protests on the continent (Lucia Masilela and Nel, 2021). This connection underscores the vital importance of improving how public services are provided to the people.

2.4.2 Strategic focus areas of the eThekwini municipality

The strategic focus areas of the eThekwini municipality, as outlined in the Integrated Development Plan (IDP) of 2022, encompass critical domains that are integral to the municipality's overarching goals and objectives. These strategic focus areas serve as guiding principles for the municipality's developmental initiatives and policy frameworks, aiming to address key challenges and foster sustainable growth and progress within the region. The strategic focus areas identified in the IDP (2022) are as follows:

- Creating a Safer City: The municipality's strategic focus on creating a safer city underscores the imperative of implementing various strategies and initiatives to prevent crime, enhance public safety, and cultivate a secure environment for residents. This strategic imperative aligns with the municipality's commitment to safeguarding the well-being and security of its inhabitants, thereby fostering a conducive environment for social and economic activities to thrive.
- Creating Sustainable Livelihoods: The emphasis on creating sustainable livelihoods underscores the municipality's dedication to establishing economic opportunities and empowering individuals and communities to support themselves in a manner that is environmentally sustainable, socially inclusive, and economically viable. This strategic focus area reflects the municipality's commitment to fostering economic resilience, promoting entrepreneurship, and enhancing the overall well-being of its residents through sustainable livelihood initiatives.
- Creating a Socially Cohesive City: The strategic focus on creating a socially cohesive city underscores the municipality's commitment to fostering a sense of belonging, inclusivity, and harmony among diverse individuals and communities. This focus area emphasises the promotion of equal opportunities, social integration, and active participation of all residents, thereby nurturing a cohesive and harmonious social fabric within the municipality.
- Achieving Financial Sustainability: The strategic imperative to achieve financial sustainability highlights the municipality's commitment to effectively managing financial resources, ensuring long-term stability, and maintaining a balance

between revenue generation and expenditure. This focus area underscores the municipality's dedication to prudent financial management and fiscal responsibility, thereby ensuring the long-term viability and resilience of its financial framework.

- Promoting an Accessible City: The strategic focus on promoting an accessible city underscores the municipality's commitment to creating an environment that accommodates the needs of all individuals, including those with disabilities, mobility challenges, or other accessibility requirements. This focus area reflects the municipality's dedication to fostering inclusivity and accessibility, thereby ensuring that all residents can fully participate in and benefit from the municipality's social and economic opportunities.

These strategic focus areas collectively underscore the municipality's commitment to addressing multifaceted challenges and fostering sustainable development, social cohesion, and economic prosperity within the eThekwini region. The integration of these strategic imperatives into the municipality's developmental agenda reflects a holistic approach to governance and underscores the municipality's dedication to promoting the well-being and prosperity of its residents.

2.4.3 Integrated Development Plan (IDP) as a strategic objective

The integrated development plan (IDP) is a central and strategic objective that encapsulates diverse dimensions and challenges. The IDP plays a crucial role in the planning and development of local government strategies, particularly in South African municipalities. The IDP serves as a comprehensive planning instrument aimed at enhancing service delivery and community participation. The literature provides insights into various aspects of IDP, including its role in community participation, strategic planning, stakeholder involvement, and the challenges and benefits associated with its implementation. The quest for service delivery in rural district municipalities in South Africa highlights the significance of the IDP as a planning instrument directed at enhancing service delivery in local government (Zerihun & Mashigo, 2022). Additionally, the value of public participation in land-use planning is emphasised, with the IDP being recognised as a substantial tool to accomplish community participation (Kgobe & Mamokhere, 2021). The economic contribution factors of stokvels in the local economy of eThekwini Municipality are aligned with the

IDP, demonstrating the plan's role in adopting a more developmental approach towards an inclusive economy (Bophela & Khumalo, 2022). The IDP process was developed to improve strategic planning and community participation and ensure that no one is left behind at the grassroots level (Mamokhere, 2019, Makovhololo and Open Innovations Oct, 2018). It requires the involvement of all stakeholders within a municipal jurisdiction to partake in the design and execution of the municipal development plan (Mamokhere and Meyer, 2022). Furthermore, the IDP process is essential for generating measurable municipal agendas as the basis for basic municipal service delivery (McFarlan, 1984). The challenges and benefits associated with the IDP process are analysed in the context of South African municipalities, particularly in Limpopo Province, highlighting the contentious issues regarding the structural design and operational features of the IDP process (Muthwa, 2019). The IDP process is also essential for mainstreaming displacement in development policies and ensuring extensive community participation in planning and management processes (Eliwa et al., 2022).

The IDP is further linked to environmental sustainability, as evidenced by its role in green human resource management and environmental workplace behaviour in the eThekwini Municipality (Adewumi et al., 2022). It also plays a role in climate change communication and urban planning, particularly in framing and arguing around the role of the city's open space system in attaining ecosystem-based adaptation (Malakoana, 2016). IDP serves as a vital tool for enhancing service delivery, community participation, and sustainable development in South African municipalities.

2.4.4 Optimising Service Delivery through the Integration of SDBIP and IDP in Municipal Governance

The Service Delivery and Budget Implementation Plan (SDBIP) is a strategic document utilised by municipalities and government entities to connect annual budgets with service delivery objectives. It forms an integral part of the budgeting process, providing a structured framework for translating financial allocations into tangible service delivery outcomes. This paper aims to comprehensively explore the key features of the SDBIP, with a specific focus on its alignment with the Integrated Development Plan (IDP), and its significance in promoting effective service delivery within the context of municipal governance.

- The SDBIP aligns budget allocations with the strategic objectives and priorities outlined in the municipality's Integrated Development Plan (IDP). This alignment ensures that financial resources are directed towards specific goals identified in the broader development plan, thereby contributing to the municipality's overall vision and mission. This strategic alignment fosters coherence and synergy between financial planning and the broader developmental agenda of the municipality, as highlighted by (Molale, 2019, Zerihun and Mashingo, 2022) in their study on the role of SDBIP in local government financial management.

- Inclusion of performance indicators and targets enables the measurement and evaluation of service delivery outcomes. When assessing the efficiency and effectiveness of municipal services, the SDBIP facilitates evidence-based decision-making and continuous improvement. This aspect of the SDBIP is crucial in promoting accountability and transparency in service delivery, as emphasised by (Zerihun and Mashingo, 2022)in their research on the impact of SDBIP on service delivery in South African municipalities.

- The plan outlines the prioritisation of projects and programs based on the available budget. This strategic prioritisation ensures that key initiatives, identified in both the SDBIP and the IDP, receive the necessary financial support to impact service delivery positively. The prioritisation process is essential for optimising the allocation of limited financial resources to achieve the most significant impact on service delivery, as discussed by (Zerihun and Mashingo, 2022) in their examination of the link between SDBIP and service delivery outcomes.
- Detailed allocation of financial resources to various departments and projects is a critical aspect of the SDBIP. This includes budget allocations for personnel, infrastructure development, maintenance, and other operational expenses, ensuring a balanced and targeted distribution of funds. The transparent and systematic allocation of resources is essential for promoting accountability and effective resource management within the municipality, as highlighted by (Molale, 2019) in their analysis of the role of SDBIP in local government financial management.

- The SDBIP includes specific timelines and milestones for project implementation and service delivery. These time-bound objectives contribute to effective planning, execution, and monitoring, ensuring that activities are completed within stipulated timeframes. The temporal dimension of the SDBIP is crucial for promoting efficient project management and timely delivery of services to the community, as underscored by Maphunye and Muthama (2018) in their examination of the impact of SDBIP on service delivery in South African municipalities.

- Mechanisms for monitoring and reporting progress are established to track the implementation of the SDBIP. Regular reviews and updates enable the identification of challenges, facilitate adjustments to plans, and ensure that the budget is effectively utilised to achieve service delivery goals. The monitoring and reporting components of the SDBIP contribute to the ongoing evaluation of service delivery performance, enabling municipalities to make informed decisions and adapt their strategies to optimise service delivery outcomes, as discussed by Maphunye and Muthama (2018) in their research on the effectiveness of SDBIP in local government financial management.

- Some SDBIPs incorporate community engagement elements, involving citizens in the budgeting and service delivery process. This participatory approach promotes transparency, accountability, and responsiveness to the needs and priorities of the community as outlined in the IDP. Community engagement is essential for ensuring that the SDBIP reflects the actual needs and aspirations of the community, as highlighted by Maphunye and Muthama (2018) in their study on the role of SDBIP in promoting community participation in local government decision-making processes.

- Ensuring compliance with specific regulations and reporting standards is a crucial function of the SDBIP. This compliance provides a basis for accountability to higher levels of government and the public, fostering trust and legitimacy. The SDBIP serves as a tool for municipalities to demonstrate their commitment to upholding governance standards and fulfilling their obligations to regulatory authorities and the public, as emphasised by Maphunye and

Muthama (2018) in their examination of the role of SDBIP in promoting accountability and transparency in local government financial management.

Service Delivery and Budget Implementation Plan is a dynamic and comprehensive document that bridges financial resources with actual service delivery. Its linkage with the Integrated Development Plan ensures that municipal budgets are strategically aligned with broader development objectives, contributing to effective governance and community development. The key features of the SDBIP, including its alignment with strategic objectives, performance measurement, project and program prioritisation, resource allocation, timelines and milestones, monitoring and reporting, community engagement, and compliance with regulatory requirements, collectively contribute to its significance in promoting effective service delivery within the context of municipal governance. This is supported by the findings of Maphunye and Muthama (2018) in their research on the role and impact of SDBIP in local government financial management and service delivery.

2.4.5 Municipalities and service provision

The local government's pivotal role in ensuring effective service delivery in South Africa cannot be overstated, serving as the primary link between the people and national and provincial governments (Kalonda and Govender, 2021). The importance of municipalities in providing essential services is firmly embedded in the Reconstruction and Development Programme (RDP) (Government of South Africa, 1994) and is constitutionally mandated in Section 152, which outlines the key objective of delivering sustainable services to constituents (Masiya et al., 2021). Municipalities bear diverse responsibilities, ranging from direct service provision to regulatory functions, as outlined in Schedule 4, Part B of the Constitution. These responsibilities encompass fundamental services such as water, sewage, sanitation, electricity, and road infrastructure, as well as more specialised areas such as childcare and overseeing the sale of alcohol to the public (Malakoana, 2016). While some municipal duties are explicitly detailed, others fall under the broader category of local amenities (Mamokhere et al., 2021). In accordance with the Constitution, these services are expected to serve regulatory, social, and commercial purposes.

Commercial services include operations such as abattoirs, electricity distribution, public transportation, road maintenance, and drainage systems. Meanwhile, services with a more social focus include sewage disposal, solid waste management, water supply, and initiatives aimed at local economic development (Ahriz et al., 2018, Aklilu and Kagiso, 2020). Despite ongoing efforts, significant service delivery backlogs persist, particularly in historically underserved regions, presenting continuous challenges for South African local governments. The multifaceted task of improving service provision in municipalities involves various factors. Essential services such as water, sanitation, waste management, and healthcare play a vital role in community well-being. The referenced studies provide valuable insights into factors shaping local perceptions of ecosystem services, water service provision, social equity, health indicators in urban areas, the impact of municipal solid waste management, and the development of community-level cancer rehabilitation. These insights contribute to a comprehensive understanding of the challenges and opportunities in enhancing service provision in municipalities.

Molale (2022) study sheds light on factors influencing local perceptions of ecosystem services in the Atacora Chain of Mountains, emphasising the significance of natural resources, agriculture, and conservation in shaping local perspectives. This underscores the importance of environmental considerations in service provision and the imperative of sustainable resource management. Kostoska and Kocarev (2019) delved into water service provision and social equity in a South African rural district municipality, highlighting the impact of water service provision on social inequalities within a municipality and its community. This underscores the necessity of equitable access to essential services and the role of corporate governance in ensuring fair and consistent service provision. Cotties and Enaifoghe (2019) focussed on health indicators in Amazonian cities, emphasising the critical role of basic sanitation services in public health and the population’s quality of life. This underscores the vital importance of sanitation services in urban areas and the influence of environmental health on community well-being. Darusalam et al. (2023) evaluated the impact of the separative collection and recycling of municipal solid waste on performance, emphasising the economic and environmental aspects of municipal solid waste management.

This underscores the importance of efficient waste management services and the integration of environmental performance into municipal service provision. Kostoska and Kocarev (2019) conducted a national follow-up study on the development of community-level cancer rehabilitation in Denmark, emphasising improvements in the provision of community-level cancer rehabilitation services. The study recommends efforts to ensure equality in service utilisation, improved integration of municipal-level services into cancer care trajectories, and enforcement of patient outcomes to build a robust evidence base for community-level cancer rehabilitation. This underscores the importance of health care services and the need for equitable and integrated service provision in community health settings.

2.4.6 Nature and challenges of service delivery at eThekwini municipality

The primary job and function of a metropolitan council in South Africa is to provide economical and efficient services. Other significant roles include city-wide spatial integration and socially inclusive development (Mbandlwa et al., 2020), as well as the fostering of economic success, equality, and social justice. Furthermore, by encouraging public involvement in decision making, councils play a critical role in maintaining and developing local democracy (Kalonda and Govender, 2021). Given the nature of metropolitan regions and the fact that they comprise numerous populations (on a racial and/or financial basis) with varying needs and goals, this can be difficult. Metropolitan councils must thus be able to respond to various requirements (Tauté, 2020) and should establish municipal forums and ward committees to ensure public engagement.

The performance of eThekwini Municipality and the attainment of Integrated Development Plan (IDP) objectives are highlighted as critical in the eyes of ratepayers, emphasising the significance of service delivery in meeting the expectations of the community ("Workplace Skills Plan, Human Capital Development and Organisational Performance at eThekwini Municipality," 2021). The challenges of poverty, lack of employment, and disparities are identified as major threats to growth in the city, underscoring the need for policies such as the indigent care policy to address these challenges (Pillay & Mutereko, 2022). Additionally, the impact of twinning arrangements on service delivery and the enhancement of service delivery in Bulawayo through the twinning arrangement with eThekwini Municipality have been

explored (Darusalam et al., 2023). Furthermore, the need for strategic and innovative green recruitment practices to address challenges in the eThekwini Municipality is emphasised, highlighting the importance of human resources practices in addressing service delivery challenges (Agbebi et al., 2021). The commitment of the eThekwini Municipality to addressing climate change and the loss of ecosystem goods and services is evident, reflecting the municipality's efforts to mitigate environmental challenges (Tu et al., 2018). The study also assesses the challenges constricting the realisation of employment equity in the municipality, shedding light on equity issues in employment practices (Abdullahi et al., 2019).

The challenges of uneven access and underutilisation of large investments in ICT infrastructure have been identified, emphasising the need for complementary measures to support increasing demands across households and businesses (Magnusson and Marecek, 2015). The study also highlights the need for better alignment with the sustainable development strategy to guarantee equilibrium toward all stakeholders sustainably, reflecting the challenges of balancing economic, technological, ecological, and societal objectives (Pashutan et al., 2022). Additionally, the effects of power distance on ICT strategic alignment in commercial banks are explored, providing insights into the organisational dynamics that impact service delivery (Ominde et al., 2021). These findings collectively underscore the multifaceted challenges and strategic considerations involved in ensuring effective service delivery and sustainable development in the eThekwini Municipality.

To understand contemporary service delivery issues, delving into the historical context is vital. Over the years, the eThekwini municipality has experienced substantial demographic shifts, infrastructural challenges, and urbanisation (Schoburgh and Ryan, 2017), which have influenced the municipality's capacity to offer efficient services to its expanding population. Service delivery encompasses the provision of municipal goods, assistance, events, and services, whether tangible or intangible, aimed at enhancing the quality of life within a local area. The delivery of essential shared services and necessities, such as water, land, infrastructure, electricity, housing, and sanitation, upon which communities rely daily, hinges on effective service provision. Municipalities are the government sector closest to residents, providing services that significantly impact the lives of the people who live in their areas (Malakoana, 2016). Municipalities are mandated by Section 152 of the Constitution to

guarantee that communities receive long-term services (Mnguni, 2019). This duty must be carried out in a climate where municipalities confront problems such as service backlogs, community expectations, financial restrictions, and institutional and bureaucratic constraints (Aklilu and Kagiso, 2020).

The importance of municipal growth and transformation is also emphasised in the constitution, highlighting the constitutional recognition of municipalities as vital entities for local governance and development. The constitution outlines the role of municipalities in providing services, promoting social and economic development, and ensuring effective local administration. This underscores the constitutional commitment to fostering sustainable growth and transformation at the municipal level, aligning with broader national objectives. Providing general services to communities, hiring new employees, anomalies and flaws in procurement procedures, leaks and overflowing sewerage systems, a general lack of consultation, and a lack of cooperation between municipalities and the business sector are just some of the challenges facing municipalities (Kalonda and Govender, 2021).

Recent reports, including those by the Auditor-General (AGSA, 2018), underscore the eThekwini municipality's service delivery deficiencies. Concerns include irregular expenditures and the absence of ICT strategies, which have raised issues regarding financial management and governance (AGSA, 2018). Furthermore, challenges such as water scarcity, population growth, and infrastructure deterioration have placed substantial pressure on municipal resources (Malakoana, 2016). The need to align ICT strategies with municipal objectives cannot be overstated. Scholars argue that such alignment enhances service delivery, streamlines operations, and optimises resource utilisation, while an absence can result in inefficiencies and missed opportunities. Unfortunately, corruption continues to significantly impede effective service delivery.

2.4.7 ICT's role in service delivery

Incorporating ICT alignment within a governance framework can create a constructive interaction that promotes efficient financial management, data-driven decision-making, and improved service delivery. Municipality frameworks for service delivery typically encompass a set of policies, strategies, and guidelines that municipal governments use to plan, manage, and improve the delivery of public services to their

communities. Municipalities must adhere to legislative frameworks such as the Municipal Finance Management Act (MFMA) and the Municipal Systems Act, which provide guidelines for financial management, procurement, and governance, all of which impact service delivery.

Many case studies have been published by various multilateral organisations, indicating that ICT can be used in a variety of ways to improve information dissemination, public service efficiency, government administration transparency and accountability and citizen participation in local governance while reducing corruption (Vinti, 2019). However, few analytical studies or impact evaluations have shown that large-scale initiatives have realised such advantages (Cotties and Enaifoghe, 2019, Mbandlwa et al., 2020, Vinti, 2019, Mwadiwa and Maleho, 2022). A recent book on combating corruption acknowledged the importance of ICT in decreasing corruption but noted that harnessing this potential has not been straightforward. While it is necessary to continue service delivery, governments must progressively begin to consider e-government and e-governance, according to a 2012 poll by the United Nations Public Administration Network (UNPAN) cited by Meissner (2022).

The volume, benefits, and factors influencing inter-municipal ICT cooperation in relation to ICT-related social services and health care services are also addressed, highlighting the responsibilities of municipal ICT professionals in managing information systems, applications, and ICT services (Helin and Dahlberg, 2017). Additionally, a study characterising the ICT resources in Portuguese municipalities provides insights into the internal conditions and human resources involved in following the digital government trend (Ramos et al., 2021). The effectiveness of e-government and e-governance in South Africa during the national lockdown is assessed, with a focus on e-Health, e-Education, and e-Municipal Services delivery as sought-after e-Services during the COVID-19 pandemic (Khambule, 2022).

These studies collectively shed light on the intricate dynamics of inter-municipal ICT cooperation, internal conditions, and the role of ICT in delivering essential services, especially in times of crisis such as the COVID-19 pandemic. The scope of e-government should be broadened to allow the government to play a transformational role in bringing together, coordinating, and integrating processes and institutions

(Schoburgh and Ryan, 2017). While it is critical to comprehend the potential of adopting ICT to enhance service delivery, recognising the difficulties in realising this potential is crucial to define the vital success elements for large-scale investment (Sawng et al., 2021). The potential value of adopting ICT inside enterprises has been considered in numerous ways. One such advantage is ICT's potential to reduce information asymmetry and, as a result, better handle the principal– agent dilemma. Other advantages that apply to all sorts of companies include extending access to markets and suppliers, fast transaction processing with all types of stakeholders, and improving access to information via electronic publication (Mnguni, 2019).

2.5 Leveraging ICT Alignment to Enhance Municipal Service Delivery Opportunities

Opportunities for enhancement showcase the diverse ways in which organisations and sectors can leverage ICT for strategic development, sustainability and inclusive growth.

2.5.1 Opportunities for enhancing municipal service delivery through ICT alignment

ICT alignment is a strategic imperative for both the private financial sector and the public sector. While the private sector has made significant strides in this domain, the public sector is still catching up. Public sector organisations should thus explore agile governance models to enhance their flexibility and responsiveness. Moreover, scholars such as Saputra et al. (2019) have stressed the importance of dynamic alignment, where organisations continuously adapt their ICT strategies to align with shifting business needs and technological advancements. This adaptive approach enables financial institutions to remain agile despite disruptive innovations such as blackchin and fintech start-ups. Despite being slower in embracing ICT alignment, the public sector has increasingly recognised its potential to enhance service delivery and citizen engagement. As highlighted in a study by Jonathan et al. (2021), the public sector's unique characteristics, including complex regulatory environments and diverse stakeholder interests, pose distinct challenges in achieving ICT alignment. Nevertheless, these challenges have not deterred public organisations from actively pursuing ICT alignment initiatives to improve efficiency and transparency.

This dual acknowledgment of challenges and commitment to enhancement signifies the evolving landscape of ICT alignment in both the private and public sectors. According to the South African Constitution Mnguni (2019), all citizens have the right to dignity, equality before the law, freedom, and security. Developmental local governments aim to empower municipalities to take a proactive role in driving these rights in their communities. Embracing this approach enables local governments to address the unique demands of their communities, foster inclusive economic development, and elevate the overall standard of living for their residents more effectively. In addition, the Constitution states that the government must take reasonable steps within its resources to guarantee that all South Africans have proper housing, healthcare, education, food, water, and social security. Unfortunately, this goal has yet to be realised throughout the country's cities, towns and rural regions, with a considerable section of the population still living in abject poverty. These marginalised people are cut off from essential services and social and economic prospects.

Rural regions house over 70% of South Africa's poor population, whereas rural inhabitants account for 70% of the country's poor. Their salaries are limited because the rural economy is not active enough to offer remunerative work or prospects for self-employment. They also face an excessive cost of living because they pay more for basic social services, including food and water, housing, energy, health, education, transportation, and communication (Meissner, 2022). Furthermore, the natural resource base of rural residents is insufficient to support a sustainable lifestyle. Developmental local government places a strong emphasis on effective and efficient service delivery, ensuring that basic services such as water, sanitation, housing, transportation, and health care are provided to all residents. It also focuses on infrastructure development, including the provision of necessary physical and social infrastructure to support economic growth and enhance quality of life (Malakoana, 2016). According to political leaders, different local interest groups should unite and work together to achieve a common goal. Municipal councils should be sensitive to community concerns and dedicated to working in open partnerships with businesses, trade unions, and community-based organisations to identify viable solutions. Local governments should also promote democracy by boosting human rights knowledge and supporting constitutional ideals and principles (Mnguni, 2019).

As elected community leaders, Ward councillors should play a critical role in establishing a common vision and mobilising community support for development. Municipalities may also enhance the socioeconomic circumstances of their communities by increasing citizens' knowledge of environmental concerns and how their behaviour affects the environment (Mgabhi, 2021). Residents should be encouraged to use precious natural resources sparingly, while adolescents should be encouraged to participate in civic and development programmes to develop their creativity and drive. Municipalities play a critical role to play as policymakers, intellectuals, and innovators in the institutions of local democracy. A developing municipality should play a visionary and strategic policy-making role and try mobilising various resources to address fundamental requirements and attain developmental objectives. Citizens and communities are worried about their neighbourhoods' lack of rapid development in terms of technology. Access to services, economic possibilities, transportation, safety, clean air, and social and recreational amenities are all areas of importance (Mbandlwa et al., 2020) that may benefit from the strategic alignment of ICT and municipal service delivery.

One major concern is the widespread lack of awareness among municipal leaders and ICT professionals regarding the fundamental concept of ICT alignment, as identified in a survey by Chung et al. (2021). Many participants demonstrated a limited understanding of how ICT projects should inherently align with overarching strategic objectives. Further research unveiled a fragmented ICT governance landscape within the South African municipalities Mgabhi (2021), which fosters ad hoc decision-making, inevitably resulting in misalignment between ICT investments and municipal objectives. Resource constraints, particularly budgetary limitations, and insufficient allocation of ICT resources have emerged as formidable barriers Tu et al. (2018), with numerous municipalities struggling with inadequacies in allocating the necessary funds for critical ICT projects. As highlighted by Masiya et al. (2021), outdated legacy systems and infrastructure have also emerged as a significant hindrance to service delivery, as they obstruct the integration of modern technologies. Notably, the absence of comprehensive performance measurement frameworks (Tunc and Aslan, 2020) further exacerbates the issue, complicating municipalities' ability to assess how ICT alignment affects service delivery outcomes.

2.5.2 Uptake and use of e-government for improved service delivery

E-government is defined as the use of technology to promote more efficient and effective government while also making government services and information more accessible to individuals, resulting in the government being more responsible to citizens. The existing body of literature offers several strategies to address the identified issues. For example, awareness programmes and training initiatives targeting the general population have been recommended to facilitate the effective use of technology. These programmes aim to educate individuals about the benefits of e-governance and provide materials in local languages (Bourdeau et al., 2018). Furthermore, the establishment of centres of excellence and training programmes has been suggested to enhance ICT skills in critical areas (Sawng et al., 2021). The importance of regulatory assessments and monitoring for ICT initiatives was underscored by (Malodia et al., 2021), although this aspect is not extensively explored in the reviewed literature. The Pacific Council on International Policy 2002; cited by (Jung, 2019) emphasised that e-government entails substantial financial investment and the utilisation of various resources, making accountability a crucial consideration. Government departments that adopt or oversee e-government initiatives must establish performance benchmarks.

According to Malakoana (2016), governments and public sector organisations throughout the world depend on ICTs to change the system and offer better service delivery mechanisms for their people Malakoana (2016). E-governance provides citizens with convenient and round-the-clock access to government services. For example, online portals, mobile applications and digital platforms allow citizens to access information, submit applications and complete transactions from anywhere, reducing the need for physical visits to government offices. This improves service accessibility, especially for individuals who face geographic, mobility, or time constraints. Moreover, valuable insights for e-government applications can be drawn from successful implementations in industrialised or developed nations that have embraced the concept of smart cities. Smart cities leverage smart technologies to enhance key infrastructure and services, thus improving service delivery and decision-making (Ahmad and Thornberry, 2018).

Research conducted by Eze et al. (2019) highlighted how limitations identified in the theoretical literature were effectively overcome in Estonia through factors such as strong leadership, public sector competencies, adequate financial resources, legislative support, strategic ICT infrastructure development, and public– private collaborations. Developing nations throughout the globe are gradually realising the value of leveraging technology in government to improve citizen service delivery. The increased use of electronic government (e-government) technologies to save costs, enhance services, and increase the efficacy and efficiency of operations has resulted in a shift in the way services are delivered (Sibanda, 2020). E-government places citizens at the centre of service delivery. Understanding the needs and preferences of citizens empowers governments to tailor their services and engage in meaningful interactions with their constituents. Examples of e-government initiatives include online portals for accessing government services, facilitating electronic tax filing, digital platforms for soliciting public input and feedback, open data initiatives, and establishing secure digital identity systems for online transactions. E-government holds the transformative potential to reshape the relationship between governments and citizens, fostering greater citizen participation, heightened government responsiveness, and enhanced overall governance.

Nevertheless, the effective implementation of e-government demands meticulous planning, robust cybersecurity measures, consideration of issues related to the digital divide, and ongoing evaluation to ensure the envisioned benefits materialise (Jung, 2019). The advancement of technology in developing nations has encountered several challenges related to these issues, including the absence of adequate ICT infrastructure, limited financial resources, and a dearth of expertise in public administration (Sibanda & von Solms, 2019). Recent research articles have established several critical factors that influence the effectiveness of e-government implementation in developing nations. Vincent Ng (2018) conducted case studies of various government agencies to examine the obstacles encountered during e-government implementation in Zambia. Their findings revealed several issues, including a lack of suitable ICT infrastructure, insufficient political support, ineffective change management processes, and a failure to contextualise e-government practices.

These challenges contributed to delays in adopting e-government initiatives, which aligns with the conclusion drawn by (Mbandlwa et al., 2020) conducted a comprehensive investigation into government initiatives in developing countries, shedding light on the primary issues, opportunities, and challenges associated with these endeavours. Mgabhi (2021) delved into the South African situation, specifically examining how government departments and district municipalities could effectively harness ICT to address operational challenges within the global economy. The research findings underscore the pivotal role of strategic alignment maturity in influencing the performance of ICT projects. In the South African context, Mgabhi (2021) specifically highlights the importance of effective alignment strategies for addressing operational challenges within the dynamic global economy. The maturity of strategic alignment processes becomes integral to successfully navigating the complexities of ICT project outcomes. Kusrini et al. (2019) and Mgabhi (2021) collectively underscore the paramount importance of strategic alignment maturity in the success of ICT projects within government initiatives. It emphasises the need for concerted efforts to enhance alignment strategies, recognising the nuanced nature of value realisation in the dynamic landscape of public organisations. A study by Gutu (2019), which investigated how ICT supports the tourist industry in Zimbabwe, unveiled similar challenges.

The identified issues encompassed a lack of infrastructure and enabling services, deficient e-customer relationship management, inadequate collaboration among tourism organisations, and suboptimal system integration. Furthermore, problems such as insufficient government ICT policies and regulations, limited financial resources, deficient ICT governance, and inadequate human resource development in the ICT sector were also observed, which aligned with the findings of Agbebi et al. (2021). In many regions of developing nations, the availability of dependable power sources, which is crucial for ICT infrastructure, is hindered. Regarding the potential of e-government in developing nations, Fouad and Gouvea (2018) suggested a cautious approach when applying implementation methods from wealthier countries due to differing contextual factors. These may include poor infrastructure, diverse work cultures, unreliable energy sources, and inefficient and costly telecommunications systems, all of which present formidable challenges for developing nations.

When Mbandlwa et al. (2020) delved into the developmental challenges faced by African developing countries in the utilisation of ICT. They emphasised critical issues such as law enforcement, the development of ICT infrastructure, training African youth in the use of ICT tools for addressing development issues, and integrating technology into daily activities, as also noted by Sibanda (2020). Notably, the report highlighted that technology implementation often competes with essential service delivery and is compounded by a lack of financial resources, leading to corruption, where individuals divert funds intended for ICT projects for personal gain. Chawana and Adebesin (2021) concurred, asserting that corruption, in terms of ethical values, stands as a significant barrier, but that it can be mitigated through effective management and institutional structures. Several theories have been proposed in the literature to address the highlighted obstacles to technology application in developing nations. Countries could begin by conducting an e-readiness assessment, for example Bourdeau et al. (2018), which would reveal the existing level of ICT infrastructure, regulatory frameworks, and human resources and skill capabilities.

Strategies and action plans may then be devised on the basis of the findings to fill any gaps. To establish e-governance, an integrated strategy from all levels of government and stakeholders is a vital success factor. According to Sugebo and Sekhar (2020), technology adoption in the public sector requires the collaboration of numerous government entities as well as workers, managers, ICT professionals, residents, and enterprises. In a study of the Indian federal government's initiatives, accomplishments, and limitations in implementing its ICT policy, Hanafi et al. (2020) found that forming an inclusive committee to coordinate ICT strategies was critical for achieving rapid and effective penetration of ICT in all sectors. The allocation of 3% of the state budget for the execution of the ICT action plan, according to the research, was an unusual characteristic that contributed to the success of ICT policy implementation. This demonstrated leadership and political and managerial support for ICT, which is positioned as one of the most critical aspects for implementation (Agbebi et al., 2021). Leadership and collaboration across government departments, agencies, and commercial organisations were also highlighted by Mzelemu (2019) as methods for improving solutions and knowledge creation. Dealing with data and information discrepancies is an integral component of a comprehensive data and information management strategy (Hernández et al., 2019).

To effectively address information and data issues, a quality and compliance assurance program has been developed as a proven technique (Ominde et al., 2021). This program emphasises the importance of designing systems that are not only useful but also simple to use, thereby enhancing the overall success of information systems (Ominde et al., 2021). Recognising that excellent quality information is a crucial element of success, Kamel and Rizk (2017) advocate considering system design within the organisational context. Building on this, Kusrini et al. (2019) found that people's intentions to use electronic services are more likely to rise if they perceive the service as simple to use. These interconnected insights highlight the significance of simplicity in system design, quality information, and effective utilisation of electronic services within an organisation. Saldanha et al. (2020) emphasised that achieving clear and realistic objectives is a critical factor for the success of ICT initiatives. They also advocated the incorporation of strategic planning as a fundamental element in the implementation of technology, cautioning against the potential adverse effects of overly stringent rules and regulations. Furthermore, they proposed the development of national ICT policies and standards as a crucial step in establishing a solid foundation for e-government activities. Each nation is unique, with its own set of circumstances, goals, and resources; thus, technology implementation should be considered in that context.

According to Sandkuhl and Seigerroth (2019), technology efforts are prevalent at all levels of government across the world, and as a result, strategic goals will differ because each vision is driven by its own combination of social, political, and economic considerations. The literature analysis looked at results and suggestions from various studies in developing nations that may be used to achieve the goals of this study. The findings from developed countries are more focused on improving the maturity of technology applications, but developing countries still have a long way to go in terms of governing, implementing, and managing technology. Therefore, these should be considered early on so that they are easier to integrate later. Various developing nations have developed strategic plans to improve e-governance services, which are undertaken and executed after the critical step of the e-readiness assessment. However, these plans have not ensured that people would use these services, particularly in underdeveloped nations where broadband internet penetration is low (Malodia et al., 2021).

The pinching of public budgets owing to lower tax revenues has been a major issue for local administrators regarding the creation and continuous implementation of contemporary internet services and internal overhauls. Given this context, local governments have been forced to explore strategies for minimising the impact of budget reductions while meeting the increasing expectations of both individuals and businesses for modern Internet services. Hernandez et al. (2019) noted that many developing nations have developed strategic plans to enhance governance services.

2.5.3 eThekwini municipality's intranet for augmenting knowledge sharing in the organisation

In this technological era, where information and knowledge play critical roles in organisational contexts, local government organisations, such as metropolitan municipalities in South Africa, have a unique opportunity to foster technologies that promote understanding and sharing. These systems and technologies give access to growing volumes of information inside the organisation as the development of systems that facilitate collaboration and knowledge sharing increases (Meissner, 2022). Technology can overwhelm personnel in an organisation, limiting their utilisation and, consequently, their value (Ponelis and Holmner, 2015). This constraint might stifle employees' (or knowledge workers') productivity and capacity to develop information, necessitating the provision of 'value-added' decision-making assistance for an organisation (Ominde et al., 2021).

It also reflects the need for an organisation to transition to an information and knowledge-sharing environment where employees have some control over what is received and how (Pashutan et al., 2022). To enable information and knowledge sharing, the rise of knowledge work and knowledge workers requires the capacity to identify and access information and knowledge stored on an organisation's intranet. South African municipalities should embrace new methods to enhance their overall efficiency. To allow the municipal organisation to be a knowledge-based organisation, workplace practices will need to enable managers to encourage managing knowledge and knowledge sharing. One of the eThekwini municipality's goals is to establish an atmosphere that allows knowledge and information acquisition, sharing, and preservation. To facilitate knowledge sharing, the eThekwini municipality utilises an intranet, which provides a unified communication and information-sharing platform

(Khambule, 2022). Intranets may be utilised on a push basis, where information is offered to workers, or on a pull basis, where employees search for and collect information for themselves, according to Mwadiwa and Maleho (2022). The use of the intranet by eThekwini municipality is meant to increase internal access to information and provide staff with quick access to information (Ominde et al., 2021). Additionally, the municipality seeks to coordinate policies via technology, requiring that all new policies be consistent with current regulations and that all approved policies be timeously available to all workers (Sharma, 2020). Thus, the municipality seeks to foster an organisational culture that fosters information sharing by effectively documenting and sharing innovations and best practices across service units through the intranet.

2.5.4 The current concept of strategic alignment in a public organisation context

Traditionally, ICT in the public sector has been relegated to a support function, but the current paradigm positions it as a strategic enabler. This transformation acknowledges that ICT can play a pivotal role in helping governments achieve their overarching objectives, from enhancing citizen engagement to optimising resource allocation (Sawng et al., 2021). Modern understanding of strategic alignment emphasises a citizen-centric approach. Public organisations no longer view citizens merely as recipients of services but as active participants in governance. ICT enhances the quality and accessibility of public services and facilitates citizen engagement and feedback (Sargent and Ahmed, 2017). Strategic alignment efforts extend beyond individual agencies to encompass the entire public sector. Breaking down silos and fostering collaboration and data sharing among government bodies have become paramount. This integrated approach creates a cohesive ICT ecosystem that seamlessly serves citizens' needs (Saldanha et al., 2020). Beyond achieving operational efficiencies, strategic alignment in the public sector is now strongly associated with public value creation. This entails using ICT to address complex societal challenges, enhance the well-being of citizens, and stimulate economic growth (Sugebo and Sekhar, 2020). In our increasingly technology-driven world, governments are expected to harness the opportunities brought about by technological advancements. While modern commercial organisations have effectively integrated their organisational strategies with ICT, government bodies and

other public sector organisations must still adapt to the principles and advantages of strategic alignment in their technology utilisation. Public organisations that achieve strategic alignment are better positioned to adapt their functions and enhance their relationships with citizens, businesses, communities and fellow government agencies (Jonathan et al., 2021). The study conducted by Lucia Masilela and Nel (2021) in Macao, focusing on public administration reform (PAR) within public sector programs, revealed that two strategic alignment activities play a crucial role in assessing and aligning the various components necessary to accomplish the defined public sector objectives. The use of these strategic alignment activities suggests a methodical approach to ensuring that different elements within public sector programs are not only evaluated individually but also integrated in a way that supports the overarching goals of public administration reform. This strategic alignment aims to enhance the efficiency, effectiveness, and overall success of PAR initiatives in Macao. Further details from the study could shed light on the specific strategic alignment activities employed and the impact on reform efforts in public sector programs in Macao.

Consequently, firms must consider alignment issues throughout the planning stages before implementing ICT initiatives to maximise their ICT investments. According to (Hernandez et al., 2019), the benefits of ICT investments and the values used by private sector firms are more functional. To put it another way, they assess ICT value and success using payback periods, net present value (NPV), internal rate of return (IRR), economic value added (EVA), and return on investment (ROI) (Saldanha et al., 2020). While these parameters are used to evaluate a company's financial performance and profitability, they are less suited to evaluating the intangible benefits that government organisations provide, such as ensuring a healthy and safe community, or evaluating the quality and effectiveness of government services. Unlike the complexity of ICT investments in public sector companies, which require strong links with and involvement from several stakeholders, ICT structures in private firms are modelled and developed via a series of well-defined project segments (divisions) (Sembodo Suroso et al., 2018). Consequently, strategic alignment in today's commercial enterprises is often unsuited for government usage, and traditional ROI calculations would fail if used in government (Jonathan et al., 2021). Even if explicit standards and procedures are embedded in strategic alignment processes, success is not guaranteed.

The government sector's uniqueness and differentiation from commercial enterprises may be evident in business and ICT strategy and in the gathering and development of public value. Strategy alignment emphasises the establishment of effective ICT governance mechanisms in public organisations. This includes defining clear roles, responsibilities, and decision-making structures related to ICT. It also involves ensuring accountability, risk management, and performance measurement for ICT initiatives to align with the organisation's strategic direction.

2.5.5 Cooperate governance

Corporate governance is a fundamental aspect of organisational management, defining the system through which companies and institutions are directed and controlled. This multifaceted concept encompasses a myriad of mechanisms, processes, and relational structures that collectively govern and regulate an organisation's operations. Corporate governance serves as the linchpin for establishing a framework that ensures accountability, transparency, and ethical conduct (Petrov et al., 2019). The intricate nature of corporate governance is evident in its role as a balancing act, where the interests of diverse stakeholders must be harmonised for the optimal functioning of the organisation. Key stakeholders in this dynamic include shareholders, who contribute financial capital and, in turn, seek a return on their investments. Management, responsible for day-to-day operations, plays a pivotal role, while customers and suppliers contribute to the value chain.

Financiers, government bodies, and the wider community each brings their interests, necessitating a governance structure that can navigate and address the often-competing demands. Research conducted in the Zimbabwean Financial Services Sector Dlamini et al. (2017) has explored the impact of robust corporate governance practices in preventing corporate failure. This investigation underscores a vital correlation between corporate performance and effective governance, underscoring governance's pivotal role in the survival, expansion, and overall economic contribution of entities. Moreover, a separate study by (Khan and Zahid, 2020) has scrutinised the influence of Shari'ah and corporate governance on the performance of Islamic banks in Asia. The findings illuminate the substantial role played by governance characteristics in distinguishing the performance of both large and small Islamic banks.

This highlights the crucial role of governance in shaping the performance and value generation of financial institutions. Research into corporate governance in South Africa has been thorough, particularly in relation to its effects on financial performance and risk-taking. The King IV Code of Corporate Governance, as highlighted by (Helin and Dahlberg, 2017), emphasises the importance of achieving an appropriate balance of knowledge, diversity, and independence within governing bodies. This balance is considered crucial for the efficient discharge of duties. Additionally, the King III report, discussed by (Institute of Directors, 2016), is acknowledged as a seminal work applicable to both the public and private sectors in South Africa, highlighting the comprehensive nature of the country's governance framework. Research by Singh et al. (2019), (Dzingai and Fakoya, 2017) exploring the connection between corporate governance mechanisms and risk-taking behaviour in South Africa suggests that governance plays a pivotal role in shaping firms' risk management strategies. These studies indicate the potential impact of governance practices on mitigating or exacerbating risks within organisations. Dzingai and Fakoya (2017) examination of corporate governance challenges in the public sector, particularly in the context of information systems, sheds light on the distinctive governance systems and frameworks followed by public and government entities in South Africa.

This reveals that the diversity in the application of governance principles across different sectors within the country. The establishment and communication of corporate ethics codes in South Africa have been focal points, indicating a strong emphasis on ethical conduct and transparency within the corporate governance framework, as noted by Ramos et al. (2021). Additionally, the integration of reporting and sustainable corporate governance from a European perspective, as discussed by Mwadiwa and Maleho (2022) highlights the interconnectedness of governance and sustainability practices. This suggests that South African governance frameworks are influenced by broader global trends and considerations. Effectively, corporate governance acts as a regulatory framework, fostering a symbiotic relationship between the organisation and its stakeholders. The principles of corporate governance not only guide decision-making processes but also instil confidence among stakeholders, contributing to the organisation’s long-term sustainability and success.

2.5.6 Municipality Governance

Effective municipal governance necessitates a nuanced approach that considers several critical aspects. Decentralisation and sub-municipal government serve as vital tools for delivering public services and managing local initiatives (Melnyk et al., 2018). However, the reliance on central transfers for municipal spending introduces challenges, highlighting the need for a balanced fiscal system (Hanim, 2018). The integration of e-municipalities and ICTs presents both challenges and best practices, emphasising the importance of blending technological advancements with traditional approaches and maintaining transparency in local government (Naeem and Ali, 2021). Additionally, disaster management has emerged as a pivotal responsibility for local governments, positioning them at the forefront of protecting citizens' lives and property during disasters (Sharma, 2020). Financial management assumes a central role, with municipal administrations entrusted with managing resources and implementing activities within their jurisdictions (Ako-Nai and Singh, 2019). The functional responsibilities of municipal governments exhibit wide variation and are influenced by regional and intergovernmental contexts (Hanafi et al., 2020). Workforce capacity and contractual payments between municipalities are essential considerations for the smooth operation of municipal governments (Meissner, 2022).

Moreover, an in-depth study of ethical frameworks and the role of leaders in municipal ethics management is crucial for fostering integrity and curbing corruption in local government (Tsokota et al., 2017). This holistic approach underscores the need for a balanced, transparent, and integrated strategy to navigate the complex landscape of municipal governance successfully. Identifying stakeholders is a pivotal aspect of municipal governance and management, fostering effective engagement, collaboration, and decision-making. To comprehensively delve into this task, it is crucial to consider various perspectives and information sources. Stakeholders within a municipality can be broadly categorised into internal and external stakeholders. Internally, key stakeholders include elected officials, municipal employees, and department heads. External stakeholders encompass a diverse array of individuals, groups, and organisations who are interested in or impacted by the municipality's activities and decisions.

Elected officials, such as the mayor, city council members, and other local government representatives, play significant roles as internal stakeholders. They bear the responsibility of making policy decisions, allocating resources, and setting the overall direction for the municipality. Given their pivotal roles and responsibilities, elected officials emerge as critical stakeholders in municipal governance and management.

2.5.7 Executive mayor

The role of an executive mayor in local governance is multifaceted and varies across different political systems. In Austria and Germany, mayors are considered 'executive' leaders, heading the municipal administration and being responsible for a broad range of public provision with a high level of discretion (Singh et al., 2019). Similarly, in Slovenia, the mayor is an executive body primarily responsible for executing decisions made by the municipal council and has the right to legislative initiative (Sharma, 2020). The distinction between 'political mayors' and 'executive mayors' influences multilevel governance arrangements and policy influence transmitted between national and local government levels (Tran et al., 2020). Mayors with executive authority are responsible for overseeing the preparation of the budget, coordinating departments, and assuming general management responsibilities, indicating their full charge of all executive functions (Khan and Zahid, 2020).

The form of government, whether council-manager or mayor-council, significantly impacts municipal corruption, with council-manager forms being less likely to have corruption convictions than mayor-council forms (Ngqondi and Mauwa, 2020). Additionally, the government form affects resource allocation in local government, as evidenced by the impact of municipal court closures in different government forms (Maschal, 2017). Furthermore, mayors play leadership roles in direct participation processes, influencing the prioritisation of policy areas and interventions for urban sustainability in municipalities (Wallmeier & Thaler, 2018; Przywojska et al., 2019). The impact of government form on resource allocation and corruption underscores the importance of understanding the role and authority of an executive mayor in local governance.

2.5.8 Executive mayoral committee

The executive mayoral committee assumes a pivotal role in local governance, and its significance transcends diverse political systems and geographical contexts. Institutional designs often seek to fortify the executive political leadership, comprising the mayor and committee members, within the overarching framework of representative democracy (Tsokota et al., 2017). Despite this intention, the isolation of executive mayors and their committees from councillors and community oversight can redirect accountability towards political party structures, influencing their behaviour and decision-making (Tu et al., 2018). Practically, the executive committee, appointed by the mayor, wields substantial decision-making authority. Its responsibilities include executing council decisions, developing budgets, and enacting legal acts (Navarro-Galera et al., 2017). The governance structure of the executive committee exhibits diversity, encompassing models such as the strong mayor system, collective leadership, committee-leader model, and council-manager system, each of which moulds the distribution of executive functions and decision-making processes (Mwadiwa and Maleho, 2022).

The composition of the executive committee, particularly in the presence of multiple political parties, influences the mayor's relative strength and coordination in municipal decision-making (Bourdeau et al., 2018). In practice, executive power is shared among the council, standing committees, the finance committee, and the mayor, portraying the intricate power dynamics within local governance (Kostoska and Kocarev, 2019). The interplay between legislative and executive bodies, characteristic of various municipal systems, substantially shapes governance structures and decision-making processes. For example, the 'strong-mayor' system in Japanese municipalities, akin to the USA, underscores this relationship (Sugebo and Sekhar, 2020). Additionally, collaborative leadership approaches empower mayors to lead effectively, even without robust executive powers (Sembodo Suroso et al., 2018). Corporate governance practices and mayoral personalities further mould the role and functions of the executive committee, impacting decision-making processes and governance practices (Agbebi et al., 2021). The governance structure, featuring an International Advisory Committee and an Executive Committee, collectively aligns with the mission outlined in the governance roadmap (Ngqondi and Mauwa, 2020).

The composition, authority, and decision-making processes of the executive mayoral committee reflect a confluence of factors, including governance structure, political party representation, and the legislative executive relationship. Understanding these intricacies is essential for navigating the complexities of local governance and discerning the distribution of power within municipalities.

2.5.9 Section 79 committees

Section 79 committees emerge as integral components of municipal governance, assuming a critical role in overseeing departments and performing vital oversight functions. A study by Pashutan et al. (2022) delves into the effectiveness of these committees in the City of Johannesburg, shedding light on their specific functions and responsibilities as outlined in Section 79 of the Municipal Structures Act, 1998.
Ako-Nai and Singh (2019) research underscores the broader importance of committees in ensuring predictability and transparency in the operations of ministries, regulatory bodies, and public sector enterprises. This broader perspective emphasises the vital role of Section 79 committees in fostering effective oversight and governance within the municipal context. Hernandez et al. (2019) contribute by emphasising the significance of participatory processes and good governance in rebuilding community confidence in municipalities. This suggests that Section 79 committees could play a crucial role in promoting participatory governance and community engagement. Ako-Nai and Singh (2019) discuss the effectiveness of central enforcement through convened committees in addressing challenges faced by local authorities.

This highlights the potential of committees, including Section 79 committees, in enhancing the financial performance of local authorities. Corporate governance practices, as discussed in the Cotties and Enaifoghe (2019) influence the composition and functions of Section 79 committees. Understanding the impact of corporate governance on these committees is crucial for ensuring effective oversight and decision-making processes. The multifaceted role of Section 79 committees in municipal governance is underscored by these studies. From oversight functions to participatory processes and the promotion of transparency and accountability, Section 79 committees have emerged as pivotal instruments in fostering effective local governance.

This comprehensive understanding derived from various references emphasises the importance and potential impact of Section 79 committees within the broader context of local governance.

2.5.10 Section 80 committees

Section 80 committees play a crucial role in corporate governance and oversight within organisations. Ngqondi and Mauwa (2020) highlighted the significance of governance structures, voluntary disclosures, and public accountability, emphasising the association between audit committee quality, governing board diversity, governor independence, and the presence of a governance committee with the level of disclosure. This underscores the importance of Section 80 committees in ensuring transparency and accountability within organisations. Moreover, the study by Zanist (2022) delves into the impact of audit committee composition and performance on financial reporting quality, indicating that an improvement in audit committee composition has a significant positive effect on financial reporting quality. This further emphasises the pivotal role of Section 80 committees in upholding financial reporting standards and integrity.

Additionally, Helin and Dahlberg (2017) explore the governance committee's duties and responsibilities, shedding light on the critical functions performed by governance committees. This provides insights into the specific roles and responsibilities that Section 80 committees may undertake within the corporate governance framework. Furthermore, Ahriz et al. (2018) emphasised the impact of corporate governance practices on firm performance, highlighting the crucial role of the audit committee in impacting financial report reliability. This underscores the significance of Section 80 committees in contributing to the overall performance and integrity of organisations.

2.5.11 Audit committee

The role and nature of municipal audit committees in South Africa are explored in two articles by Erasmus and Matsimela, namely "The Municipal Audit Committee Self-review Threat: The South African Dilemma" (Agbebi et al., 2021) and "The Audit Committee Anomaly in South African Local Governance" (Ahmad and Thornberry, 2018). In the 2021 article, Erasmus and Matsimela highlight the dilemma surrounding the self-review threat to by municipal audit committees in South Africa.

They argued that the municipal audit committee should primarily serve as an oversight body on behalf of the municipal council. Its responsibilities include ensuring the effective operation of key controls, reinforcing ethical practices, overseeing key accounting estimates and judgments, and ensuring the effectiveness of both internal and external audits. In contrast, the 2019 article by the same authors discusses the requirements set by the Municipal Finance Management Act for South African municipal audit committees. The act mandates these committees to function as independent advisory bodies, invoking institutional theory with a focus on symbolic display. This suggests that the role of municipal audit committees, as mandated by legislation, is not aligned with the oversight role proposed in the 2021 article. The comparison of these two perspectives highlights the tension and potential contradictions in the expectations and functions of municipal audit committees in South African local governance. The 2019 article points to a more symbolic and advisory role mandated by legislation, while the 2021 article argues for a more hands-on oversight function on behalf of the municipal council.

2.5.12 ICT Steering Committee

An ICT Steering Committee, short for Information and Communication Technology Steering Committee, is a group of individuals responsible for providing strategic direction, oversight, and decision-making in the planning, implementation, and management of ICT initiatives within an organisation or project. This committee typically comprises key stakeholders, including representatives from various departments or functional areas, ICT experts, and senior management. The ICT steering committee plays a pivotal role in the governance and oversight of ICT endeavours, encompassing initiatives, priorities, spending and resource allocation within organisations (Kamel and Rizk, 2017). Its composition, which features executive-level stakeholders and operational/functional-level executives, shapes its effectiveness and strategic orientation, influencing the balance between broader, longer-term goals and narrower, short-term objectives (Singh et al., 2019). Beyond governance, the committee extends its influence on project oversight, trust-building, and the enhancement of project success (Kamel and Rizk, 2017). In the realm of R&D collaborations, the steering committee acts as a protective and monitoring entity, safeguarding against self-interested behaviour (Darusalam et al., 2023).

It is equally instrumental in enhancing information performance in higher education through ICT service management, which encompasses various roles and responsibilities across organisational levels (Dzingai and Fakoya, 2017). The complexity of responsibilities faced by executives on project steering committees in addressing technical issues underscores the committee's significance in project supervision (Hernandez et al., 2019). A well-rounded composition, inclusive of representation from diverse functional areas, is deemed essential for effective risk management in global customer relationship management (CRM) ICT projects (Darusalam et al., 2023). Steering committees, represented by engaged community leaders, play a critical role in influencing complex systems and implementing interventions for community well-being (Malodia et al., 2021). The governance structure of steering committees facilitates key mechanisms such as accessing communication channels, building contacts and expertise, and altering operational practices, thus contributing to effective governance in collaborative networks (Kostoska and Kocarev, 2019).

However, challenges arise from potential limitations in collaboration within the steering committee, it hereby affecting its overall effectiveness (Fourie and Malan, 2020). Additionally, the committee's capacity, power, and responsibility in health care governance can be influenced by other dominant entities, thereby affecting its effectiveness as a strategic purchaser (Ominde et al., 2021). Beyond ICT governance, the steering committee plays a pivotal role in the development and implementation of various models and initiatives, such as rural primary health care models and workforce capacity development activities (Messeghem et al., 2018). It is instrumental in participatory budgeting, local assemblies, and proposal development, underscoring its contribution to community engagement and decision-making processes (Masiya et al., 2021). Furthermore, the steering committee actively aligns organisational characteristics with actual needs, showcasing its involvement in organisational alignment and quality improvement initiatives (Klier et al., 2017). In essence, the ICT steering committee emerges as a multifaceted governance mechanism, wielding influence across organisational, project management, community-based, and health care governance realms. Its effectiveness in steering initiatives and priority hinges on its composition, collaborative efforts, and impact on decision-making processes.

The primary objectives of an Information and Communication Technology (ICT) Steering Committee are multifaceted and encompass strategic planning, decision making, resource allocation, risk management, policy development, project oversight, and stakeholder communication. These objectives are crucial for ensuring the effective alignment of ICT initiatives with organisational goals and objectives, as well as for promoting the successful implementation and management of ICT projects within the organisation.

- **Strategic Planning:** One of the primary objectives of an ICT Steering Committee is to engage in strategic planning by developing and aligning ICT strategies with the overall organisational goals and objectives. This involves the formulation of long-term plans and initiatives that leverage ICT to support and advance the organisation's mission and vision. Strategic planning ensures that ICT investments and initiatives are aligned with the broader strategic direction of the organisation, as highlighted by authors such as (Vermeiren et al., 2019) in their work on strategic planning for information systems.

- **Decision Making:** The ICT Steering Committee is responsible for making key decisions related to ICT investments, projects, and priorities. This involves evaluating and prioritising ICT initiatives, assessing their potential impact on the organisation, and making informed decisions to allocate resources and support projects that align with organisational objectives. Decision making within the ICT Steering Committee is essential for ensuring that ICT investments are aligned with the organisation's strategic priorities and deliver value to the organisation, as emphasised by Luftman and (Karlsen, 2020) in their research on the role of ICT governance in decision making.

- **Resource Allocation:** Another primary objective of the ICT Steering Committee is to allocate resources, including budget and manpower, for ICT projects and initiatives. This involves the allocation of financial resources, human capital, and other necessary resources to support the successful implementation and management of ICT projects. Effective resource allocation is essential for ensuring that ICT initiatives are adequately resourced and have the necessary support to achieve their objectives within the organisation, as discussed by authors such as (Karlsen, 2020) in their work on ICT governance and resource allocation.

- **Risk Management:** The ICT Steering Committee is tasked with assessing and mitigating risks associated with ICT projects to ensure their successful implementation. This involves identifying potential risks, evaluating their potential impact on ICT initiatives, and implementing measures to mitigate or manage these risks effectively. Risk management within the ICT Steering Committee is crucial for minimising the potential negative impact of risks on ICT projects and ensuring their successful delivery, as highlighted by authors such as Karlsen (2020) in the research on ICT governance and risk management.

- **Policy Development:** Establishing and reviewing policies related to the use, security, and management of information and communication technologies is another primary objective of the ICT Steering Committee. This involves the development of policies and guidelines that govern the use of ICT within the organisation, as well as the establishment of security and management protocols to safeguard organisational information and assets. Policy development within the ICT Steering Committee is essential for promoting a secure and compliant ICT environment within the organisation, as emphasised by authors such as Peterson and Davie (2011) in their work on information security policy development.

- **Project Oversight:** The ICT Steering Committee is responsible for monitoring the progress of ICT projects to ensure they align with organisational objectives and are delivered on time and within budget. This involves providing oversight and guidance to ICT projects, evaluating their progress, and ensuring that they remain aligned with organisational goals and objectives throughout their lifecycle. Project oversight within the ICT Steering Committee is crucial for promoting the successful delivery of ICT projects and maximising their value to the organisation, as discussed by authors such as Schwalbe (2015) in their work on project management oversight.

- **Stakeholder Communication**: Communicating ICT strategies, progress, and outcomes to relevant stakeholders within the organisation is a key objective of the ICT Steering Committee. This involves engaging with stakeholders, providing updates on ICT initiatives, and ensuring that stakeholders are informed about the impact of ICT on the organisation. Effective stakeholder communication within the

ICT Steering Committee is essential for promoting transparency, building support for ICT initiatives, and ensuring that stakeholders are engaged and informed about the organisation's ICT activities, as highlighted by authors such as Fink and Ploder (2018) in their work on stakeholder communication in ICT governance.

The primary objectives of an ICT Steering Committee are diverse and encompass strategic planning, decision making, resource allocation, risk management, policy development, project oversight, and stakeholder communication. These objectives are essential for ensuring the effective alignment of ICT initiatives with organisational goals and objectives, as well as for promoting the successful implementation and management of ICT projects within the organisation. The literature on ICT governance strategic planning, decision making, resource allocation, risk management, policy development, project oversight, and stakeholder communication provides valuable insights into the significance and implementation of these primary objectives within the context of an ICT Steering Committee. The composition of an ICT Steering Committee may vary depending on the organisation’s size, structure, and specific needs. It often includes representatives with a blend of business acumen and ICT expertise to ensure a comprehensive and balanced approach to ICT decision-making. The committee plays a crucial role in guiding the organisation’s digital transformation efforts and leveraging technology to enhance operational efficiency and effectiveness.

2.5.13 Municipality stakeholders

Another integral group of internal stakeholders comprised municipal employees. This category includes administrative staff, public works employees, law enforcement officers, and others involved in delivering public services and implementing municipal policies. Their perspectives and expertise are indispensable for comprehending the operational aspects of the municipality and ensuring effective service delivery to the community. Department heads and managers form an additional crucial category of internal stakeholders. These individuals oversee specific areas of municipal operations, such as finance, public health, planning and development, and public safety. Engaging with department heads is essential for gaining insights into the functions and challenges within each department and fostering coordination for cross-departmental initiatives and projects.

Transitioning to stakeholders responsible for ICT decision-making, their pivotal role in shaping the effective use of ICT for enhanced service provision and governance becomes obvious. This group, which includes the Municipal Manager, ICT Manager, CFO, Top Management Committee, EXCO, Audit and Performance Committee, and other relevant decision-makers, plays a central role. The references offer valuable insights into their specific roles, showcasing how these stakeholders contribute to improved service delivery, enhanced governance, and streamlined decision-making processes through the strategic use of ICT. In the study by Chung et al. (2021) focussed on the effects of environmental information dissemination on stakeholders' decision making in Swedish and Polish municipalities, highlighting the influential role of key managers responsible for environmental protection. This highlights the potential impact of ICT on decision making within the context of environmental governance.

Sharma (2020) contributed valuable insights by discussing the institutionalisation of an Urban Health Atlasas an ICT tool designed to strengthen health service delivery and governance. The emphasis on the role of health managers in using ICT for service delivery planning and decision-making showcases the strategic use of ICT tools in enhancing decision-making processes within the health sector. Furthermore, Ramos et al. (2021) shed light on ICT resources in local governments, specifically highlighting the role of municipal ICT professionals. These professionals, responsible for managing information systems, applications, and ICT services, actively contribute to ICT decision-making and facilitate effective service provision. This underscores the significance of ICT professionals as key stakeholders in the strategic use of ICT for enhanced service delivery. In essence, recognising the importance of stakeholder engagement and decision-making in leveraging ICT for improved service provision, governance, and decision-making processes within municipalities is imperative. The involvement and strategic contributions of key stakeholders, including elected officials, municipal employees, department heads, and ICT decision-makers, collectively shape the effective use of ICT in municipal contexts. Businesses operating within the municipality are also important stakeholders. They contribute to the local economy, create employment opportunities, and may have specific interests in areas such as zoning regulations, economic development incentives, and infrastructure improvements (Ramos et al., 2021). Building strong relationships with local

businesses can foster economic growth and prosperity within the municipality. Non-profit organisations and community groups are additional external stakeholders that play a significant role in supporting various social, cultural, and environmental initiatives within the municipality. These groups have often specialised knowledge and resources that can complement municipal efforts in areas such as community development, environmental conservation and social services. Educational institutions, including schools, colleges, and universities, are important stakeholders, particularly in municipalities with a significant student population. Collaboration with educational institutions can lead to opportunities for youth engagement, workforce development, and research partnerships that benefit both the municipality and the academic community (Ramos et al., 2021).

Other governmental entities, such as county or regional governments, neighbouring municipalities, and state or federal agencies, are also external stakeholders with whom a municipality must interact. Coordination and cooperation with these entities are essential to address regional issues, access shared resources, and comply with higher-level regulations and policies. In addition to these broad categories of stakeholders, it is important to recognise that the specific stakeholders within a municipality may vary based on its size, demographics, geographic location and unique characteristics. For example, a municipality located in a coastal area may have stakeholders with specific interests in environmental conservation and coastal management, while whereas municipality with a large older adults population may need to engage with stakeholders focused on senior services and health care (Ramos et al., 2021).

To identify municipality stakeholders comprehensively, various research methods and sources can be utilised. These may include reviewing official documents such as municipal charters, organisational charts, and public meeting minutes to identify key internal stakeholders. Additionally, conducting interviews with elected officials, department heads, and municipal employees can provide valuable insights into internal stakeholder dynamics and perspectives. For external stakeholders, conducting community surveys, hosting focus groups, and analysing demographic data can help identify and understand the diverse interests and concerns of residents, businesses and community organisations. Engaging with local chambers of

commerce, non-profit networks, and educational institutions can also facilitate the identification of external stakeholders and the establishment of collaborative relationships. Identification of municipality stakeholders is a multifaceted and dynamic process that requires careful consideration of internal and external actors with various interests and influence. Recognising and actively engaging with these stakeholders empowers municipalities to elevate their governance, decision-making, and service delivery, ultimately fostering more inclusive and effective local governance.

2.5.14 Corporate Governance of ICT

Corporate governance of Information and Communication Technology (ICT) involves the effective management of ICT services to align with the corporate strategy of an organisation (Canedo et al., 2019). This responsibility often lies with the Board of Directors and Executive Managers, highlighting their crucial role in ICT governance (Câmara et al., 2018). ICT governance is associated with making technology decisions that serve various stakeholders in organisations, particularly in the context of smart cities and government digitalisation (Reis et al., 2021; Pereira et al., 2018; Lappi et al., 2019). Furthermore, the adoption of intelligent construction technology in China emphasises the involvement of governments, contractors and owners as key stakeholders in the use of ICT for digital management (Zhang & Li-hong, 2022).
Additionally, the framework for ICT in the context of Sustainable Development Goals emphasises the importance of diverse stakeholders and their contributions to achieving sustainable development through ICT (Kalonda and Govender, 2021).

Corporate governance of ICT involves strategic alignment, decision-making, and the involvement of various stakeholders, including executive leadership, government entities, contractors, and owners, to ensure effective management and utilisation of ICT resources in line with organisational goals and broader societal objectives. When implementing Corporate Governance of ICT (CGICT), effective change management stands as a critical factor for ensuring the successful adoption and integration of new governance practices. The strategies employed for change management should address not only technological aspects but also human behavioural and cultural dimensions within the organisation. A structured and proactive approach is paramount in securing acceptance and buy-in from all levels of the organisation. This inclusivity encompasses political and strategic leadership, as well as operational staff, ensuring

that the entire spectrum of stakeholders is aligned with the envisioned changes. Effective change management involves creating awareness, fostering understanding, and addressing concerns among employees to minimise resistance and encourage a positive reception of the new governance practices. One strategic approach to managing change in the context of CGICT is through the establishment of a Governance Champion program. This initiative involves identifying individuals within the organisation who are influential, passionate, and well-respected. These individuals become advocates for the new governance practices, championing the cause and serving as conduits between leadership and staff. The Governance Champions play a crucial role in disseminating information, providing support, and promoting the benefits of CGICT, thereby facilitating a smoother and more successful implementation. Through integrating change management strategies that account for the human and cultural aspects of the organisation, and by leveraging a Governance Champion program, the implementation of CGICT is more likely to be met with enthusiasm and cooperation. This approach increases the chances of achieving the intended outcomes of improved governance, efficiency, and alignment of ICT practices with organisational objectives.

2.5.15 Governance of ICT

The governance of information and communication technology (ICT) involves strategic alignment, decision-making, and the involvement of various stakeholders. ICT governance is not just a technology management issue but should be an integral part of corporate governance . The responsibility for ICT governance lies with the Board of Directors and executive Managers. Stakeholder interactions and sustainable development issues in ICT management force companies to adopt the concepts of green ICT and corporate social responsibility (CSR) to meet the challenges of agility and innovation. Additionally, the involvement of stakeholders in the implementation of eHealth technology in community health care demonstrates the complexity of stakeholder involvement in ICT initiatives . Furthermore, public– private partnerships in ICT projects, such as those in Malaysia, involve various stakeholders in promoting the use of ICT . In the context of local economic development, key stakeholders include local municipalities, NGOs, NPOs, traditional leaders, business chambers, and sector departments and agencies . The Fourth Industrial Revolution has brought about a new paradigm of corporate governance, emphasising the increasing role of ICT and

digital strategies in business strategy (Hanim, 2018). Municipal projects, such as those in Jordan, require effective management of stakeholders to address delays and achieve societal objectives (Câmara et al., 2018). Integrated development planning processes also rely on stakeholder involvement to improve community participation (Hankel et al., 2019). These references collectively emphasise the importance of stakeholder involvement, strategic alignment, and the integration of ICT governance within corporate governance. They highlight the multifaceted nature of ICT governance, which requires collaboration with various stakeholders to address challenges, achieve societal objectives, and drive innovation and development.

2.5.16 Good Practices and Standards for Cooperating Governance of ICT

The governance of information and communication technology (ICT) is crucial for organisations and governments to ensure effective and efficient use of technology. The references provide insights into various frameworks, such as COBIT and ISO 38500, and their relevance in the context of ICT governance. COBIT, as highlighted in the references, is effective in guiding ICT governance processes within organisations, as evidenced in a case study focusing on ICT governance processes (Alaeddini and Mir-Amini, 2020). Additionally, COBIT is one of the most popular frameworks used for governing ICT in Higher Education Institutions (HEIs) (Meissner, 2022). Furthermore, a case study emphasises the importance of ICT governance processes within the Secretariat of State-Owned Companies of Brazil, highlighting the need for best practices kits to improve ICT governance maturity level within public companies (Canedo et al., 2019).

A study on the selection of an optimal enterprise architecture framework for e-government implementation emphasises the decision support process that aligns organisational goals with the known attributes of EA frameworks, indicating the relevance of TOGAF in the context of e-government implementation (Mamokhere, 2019). Moreover, a proposal of an infrastructure information technology framework using TOGAF for Pagar Alam town governance demonstrates the application of TOGAF in designing enterprise architecture for smart governance (Naeem and Ali, 2021). ISO 38500 is mentioned in a study that presents a methodology for diagnosing ICT governance processes based on the ISO/IEC 38500 standard, focusing on a case study of an Ecuadorian retail organisation. This highlights the significance of ISO

38500 in analysing and diagnosing ICT governance processes within organisations (Ngqondi and Mauwa, 2020). This study emphasises the importance of aligning ICT strategies with business goals and using ISO 38500 as a tool for assessment and improvement in the governance of ICT. ISO 38500 is also mentioned in the references as a relevant framework for diagnosing ICT governance processes within organisations, as demonstrated in a case study of an Ecuadorian retail organisation (Odoyo et al., 2013). The study emphasises the importance of aligning ICT strategies with business goals and using ISO 38500 as a tool for assessment and improvement. These references collectively underscore the significance of frameworks such as COBIT and ISO 38500 in guiding and evaluating ICT governance processes. They highlight the need for organisations to adopt established frameworks to enhance governance maturity, align ICT strategies with business objectives and ensure the effective management of technology resources. The references cited furnish invaluable insights into the pivotal role of sound corporate governance practices and their repercussions on diverse facets of organisational management, particularly in the domain of ICT governance. Reis et al. (2021) emphasised the substantial contribution of ICT governance structures and standards rooted in good practices, specifically in the context of smart cities and Brazilian municipalities. This underscores the importance of embracing optimal practices and standards in ICT governance to cater to the distinctive needs and challenges prevalent in urban environments.

Lemos et al. (2022) underscored the significance of effective corporate governance practices in ensuring the dissemination of high-quality financial reports. This holds particular relevance in the sphere of ICT governance, where financial transparency and accountability play integral roles in the efficient management of ICT resources. Lemos et al. (2022) further shed light on the role of international standards as a conduit for enhancing the efficient management of major corporations. This perspective proves valuable in comprehending how adherence to established standards can contribute to the governance of ICT within organisations. Hba and Manouar (2017) introduced the concept of sustainable governance of ICT, emphasising guidelines and specifications related to green ICT and corporate social responsibility (CSR).

This underscores the broader implications of sound governance practices in ICT, particularly in terms of sustainability and responsible management. Joshi et al. (2018) emphasise the noteworthy role of ICT governance frameworks and standards grounded in best practices for implementing effective ICT governance. This is pertinent in grasping how established frameworks and standards can guide organisations in the governance of their ICT resources. In combination, these references underscore the paramount importance of sound corporate governance practices and standards in steering the governance of ICT within organisations. They highlight the imperative for adherence to best practices, international standards, and sustainable governance principles to ensure effective management of ICT resources and alignment with organisational objectives.

2.5.17 COSO (Committee of Sponsoring Organisations) Framework

The COSO framework is a widely recognised and utilised internal control framework that provides guidance for organisations in managing risks, enhancing internal controls, and achieving their objectives. The framework consists of five interrelated components: control environment, risk assessment, control activities, information and communication, and monitoring activities. It has been applied across various sectors and industries to improve governance, risk management, and internal control processes. One study highlights the importance of the COSO internal control framework and examines its components, principles, and the possibility of its adoption by Islamic Financial Institutions (IFIs) (Bouheraoua & Djafri, 2022). The study emphasises that incorporating the comprehensive COSO risk management structure within the Shari'ah-compliance function will enhance risk management in IFIs, demonstrating the framework's adaptability across different organisational contexts.
Another research suggests that the implementation of the COSO framework integrated with Internal Quality Assurance can enhance performance in higher education management by improving internal control, risk assessment, and monitoring processes (Riyadi et al., 2021). This indicates the versatility of the COSO framework in addressing the specific needs of the higher education sector. Furthermore, a study focused on the adoption of revenue internal control in an event organiser company aimed to identify potential risks in the revenue cycle, analyse the effectiveness of COSO's elements in the company's internal control, and suggest improvements based

on the COSO internal control framework (Caroline, 2020). This demonstrates the applicability of the COSO framework in addressing specific operational challenges related to revenue management. Additionally, the COSO framework has been used to underpin quality corporate governance, as evidenced by the associations among the five components within the COSO Internal Control-Integrated Framework (Rae et al., 2017). This study utilised structural equation modelling to analyse the measurement models for the five COSO components, highlighting its relevance in ensuring quality governance practices.

Moreover, the COSO framework has been recognised as the gold standard of internal control for many organisations, emphasising its widespread acceptance and influence on internal control practices (Maulidi & Ansell, 2021). The framework's impact on audit governance and its role in evaluating future internal control systems have been acknowledged, indicating its significance in shaping audit practices and governance standards (Gaines & Kasztelnik, 2019). COSO framework has demonstrated its adaptability and effectiveness across various sectors, including higher education, revenue management, corporate governance, and audit governance. Its comprehensive components and principles make it a valuable tool for organisations seeking to enhance their internal control, risk management, and governance practices.

2.5.18 Mechanisms, factors, and challenges in ICT strategy alignment

In aligning the ICT strategy with the municipality’s strategic objectives for service delivery, it is crucial to consider the mechanisms, factors, and challenges that influence this alignment (Dairo et al., 2021a; Molale, 2019). This alignment encompasses factors such as inclusive participation, e-Government initiatives, performance management, stakeholder perspectives, and citizen-centric service delivery (Prakash, 2019; Khawan, 2019). Inclusive participation stands out as a pivotal mechanism, emphasising the active involvement of diverse stakeholders in the formulation and execution of ICT strategies (Makovhololo, 2019). This ensures that the perspectives and needs of all relevant parties are considered, fostering a collaborative and well-rounded approach. The integration of e-Government initiatives serves as another crucial mechanism that leverages digital technologies to enhance the efficiency and accessibility of governmental services (Dairo et al., 2021a). This not

only aligns with modernisation objectives but also plays a transformative role in streamlining service delivery processes. Performance management emerges as a strategic factor, necessitating robust frameworks for assessing and optimising the effectiveness of ICT initiatives in achieving municipality objectives (Molale, 2019). This involves the establishment of key performance indicators (KPIs) and monitoring mechanisms to gauge the impact and efficiency of ICT interventions. Stakeholder perspectives constitute a significant factor, encompassing the diverse viewpoints and interests of those involved in or affected by the ICT strategy (Ponelis and Holmner, 2015). Aligning these perspectives with overarching strategic objectives ensures that ICT initiatives resonate with the municipality's broader goals and aspirations. Central to this alignment is the concept of citizen-centric service delivery, where the needs and experiences of the residents are the center of attention (Prakash, 2019). Prioritising user-friendly, accessible, and responsive services allows municipalities to ensure that their ICT strategies are aligned with the goal of enhancing citizens' well-being and satisfaction.

However, this alignment journey is not without challenges. Various obstacles, such as technological complexities, resource constraints, regulatory compliance, and evolving societal expectations, pose challenges that demand strategic solutions for successful alignment (Molale, 2019; AGSA, 2018). In essence, the alignment of ICT strategy with municipality strategic objectives for service delivery is a dynamic process that requires a harmonious interplay of mechanisms, consideration of influential factors, and adept navigation of challenges (Prakash, 2019; Molale, 2019). Through a holistic and well-informed approach, municipalities can forge a path toward effective ICT strategy alignment that ultimately translates into improved service delivery and citizen satisfaction.

2.5.19 Mechanism for aligning the eThekwini Municipality's ICT strategy with strategic objectives for effective service delivery.

To develop an ICT strategy that reflects and supports the defined strategic objectives for service delivery in the municipality, a systematic and collaborative approach is essential. The strategy should align with the overarching goals and priorities identified by key stakeholders, including municipal leaders, department heads, and ICT professionals.

- Clearly articulate how the ICT strategy aligns with the strategic objectives for service delivery. This involves mapping out specific ICT initiatives and projects that directly contribute to achieving the identified goals. For instance, if the strategic objective is to enhance citizen engagement, the ICT strategy might include initiatives such as developing user-friendly municipal apps or expanding online service portals.
- Identify the resources required for successful implementation of the ICT strategy. This includes financial resources for infrastructure and technology investments, human resources for skilled ICT professionals, and timeframes for project execution. Ensure that the resource allocation aligns with the municipality's budgetary constraints and priorities (Canedo et al., 2019).
- Develop a comprehensive risk management plan to address potential challenges and obstacles during the implementation of the ICT strategy. This involves anticipating technological, organisational and external risks and developing proactive measures to mitigate them. Regular risk assessments should be conducted to adapt the strategy as needed (Sergeeva et al., 2020).
- Foster ongoing communication and collaboration with stakeholders throughout the implementation process. This includes regular updates, feedback mechanisms, and training sessions to ensure that all stakeholders remain informed and engaged. Stakeholder involvement is crucial for successful execution of the ICT strategy (Khunoethe et al., 2021).
- Establish key performance indicators (KPIs) to measure the effectiveness and impact of the ICT strategy on service delivery. These KPIs should be aligned with the defined strategic objectives and provide quantifiable metrics for assessing progress. Regular evaluations should be conducted to track performance and identify areas for improvement (Ngqondi and Mauwa, 2020). Recognise the dynamic nature of technology and service delivery needs. Build flexibility into the ICT strategy to accommodate emerging technologies, changes in stakeholder requirements, and evolving municipal priorities. An adaptable strategy ensures continued relevance and effectiveness over time (Dzingai and Fakoya, 2017).

This approach integrates the input of key stakeholders, addresses potential challenges, and establishes a framework for ongoing evaluation and adaptation.

2.5.20 Factors Influencing ICT Strategy Alignment

Câmara et al. (2018) underscored the challenge of communication between business and ICT personnel hindering alignment. Molale (2019) emphasised inhibitors such as the ineffective engagement of the audience, the need to rethink traditional meeting formats, and challenges in dealing with complex technology issues. (Ramos et al., 2021) revealed that change-related issues, security concerns, human and management-related concerns, and cost-related concerns are influential in the deployment of ICT in construction. Moreover, Hankel et al. (2019) emphasised several factors influencing green ICT adoption, including strategic alignment, culture, leadership, ownership, knowledge and experience, and technical infrastructure. Coyne et al. (2015) highlighted a complex mix of supporting and hindering factors, with ICT being just one element influencing integration. Furthermore, Govender & Pretorius (2015) identified external, innovation, and organisational factors as key to ICT adoption.

Awojide & Akintelu (2018) highlighted the varying impact of factors such as time spent on technology, the value of ICT, trustworthiness, technological infrastructure, and age-related challenges in using ICT. Wessels (2022) emphasised both exogenous and endogenous factors influencing ICT adoption and management. Additionally, Masiya et al. (2021) stressed the importance of management practices as a factor influencing the value derived from ICT. Ashraf et al. (2022) concluded that effective curriculum content, material, and teaching strategies are critical predictors of ICT competencies. Factors influencing ICT strategy alignment have been identified through extensive analysis of relevant literature (Padayachee and Shano, 2019). These factors play a crucial role in ensuring the harmonious integration of ICT strategies with an organisation’s broader objectives.

The key factors include:

- Organisations should proactively educate stakeholders about the capabilities of ICT. This involves fostering an understanding of how ICT can achieve business goals and enhance overall organisational performance.

- To avoid a disconnect between business goals and ICT capabilities, it is essential to integrate ICT into the overall corporate strategy development process. This ensures that ICT strategies are developed in alignment with broader organisational objectives.
- Clear communication is fundamental. Ensuring that stakeholders share a common understanding of terms and definitions related to business-ICT strategy helps minimise misunderstandings and promotes a unified approach.
- While ICT can be a cost-cutting tool, it is crucial to recognise its broader capabilities beyond mere cost reduction. Understanding the transformative potential of ICT allows organisations to leverage its full range of benefits.
- Establishing a structured framework for corporate strategies that incorporate ICT is vital. This framework should be widely accepted across the organisation, providing a unified guide for aligning business and ICT objectives.
- Incompatibility between different ICT systems and technologies can disrupt organisational processes and hinder alignment efforts. Therefore, ensuring seamless communication and integration between these systems is essential for achieving strategic alignment.

These factors collectively contribute to creating an environment where ICT strategies align effectively with organisational objectives, fostering success and competitiveness in today's dynamic business landscape. According to Padayachee and Shano (2019), effective communication is essential for aligning business and ICT strategies. When leaders and ICT staff lack effective communication skills, it hinders conveying ICT strategies to the broader organisation. Khawan (2019) also emphasised the importance of managing costs and complexity for alignment; the perception that ICT is expensive and complex can act as a barrier, especially in resource-constrained environments. Sembodo Suroso et al. (2018) stressed the importance of aligning ICT initiatives with business priorities, as misalignment in priorities can create conflicts and hinder strategic alignment.

Leadership commitment, stakeholder engagement, and organisational culture are pivotal for achieving alignment between ICT and strategic objectives, according to Padayachee and Shano (2019).

Additionally, several external factors influence ICT alignment, shaping the organisational landscape. These factors include:

- Regulations such as the Protection of Personal Information Act (POPIA) and the Cybercrimes Bill play a crucial role in influencing how organisations align their ICT strategies to ensure compliance and data security.
- The fast-paced evolution of technology necessitates organisations to adapt and align with emerging technologies to remain competitive and in line with industry standards.
- The digital infrastructure of a country, including factors such as broadband access and efforts to address the digital divide, impacts an organisation's ability to align its ICT strategies effectively.
- Economic factors, such as recession and currency fluctuations, can have a direct impact on ICT budgets and influence investment decisions in technology.
- The reliability and availability of electrical power are critical because disruptions can impact ICT alignment efforts, requiring backup power sources during outages.
- Changes in market dynamics and competitive pressures necessitate adjustments in ICT strategies to stay aligned with evolving business landscapes.
- The evolving landscape of cybersecurity threats to continuous efforts to align ICT strategies and safeguard organisational data and infrastructure.
- Political changes and government policies, especially in regulated industries, can significantly affect the alignment of ICT strategies.
- Growing emphasis on environmental sustainability requires organisations to align their ICT strategies with energy-efficient technologies and practices.
- Cultural and social factors influence ICT alignment by shaping user preferences, adoption rates, and digital literacy within the organisation.

- Organisations operating in global markets must align their ICT strategies with the diverse needs and preferences of international customers and partners.
- Collaborations with ICT suppliers and partners impact the alignment of ICT strategies, requiring cohesive efforts for successful integration.
- Changes in workforce demographics, such as an ageing workforce or a tech-savvy younger generation, necessitate adjustments in ICT strategies and systems to accommodate diverse needs.

These external factors collectively contribute to the dynamic environment in which organisations must navigate to achieve effective alignment between ICT and strategic objectives.

2.5.21 Challenges in ICT strategy alignment

The challenges in aligning ICT strategies within municipalities are diverse and require a nuanced understanding of the barriers and opportunities for successful implementation. The transformation of municipalities into smart cities for improved service delivery through information and communication technology (ICT) faces obstacles related to leadership, budget allocation, and training for smart governance initiatives (Saputra et al., 2019). A study in Morogoro Municipality, Tanzania, sheds light on challenges in the forest sector's ICT applications, highlighting specific local-level obstacles (Ako-Nai and Singh, 2019).

This study delves into the factors influencing the alignment between information and communication technologies (ICT) strategy and business strategy, specifically focusing on professional conference organisers (PCOs). Noteworthy inhibitors identified in the research include challenges related to effectively engaging the audience, monitoring active participation, rethinking traditional live meeting formats, and dealing with complex technology issues. The investigation reveals that a range of barriers significantly impacts the acceptance of ICT. These include individual barriers, cultural barriers, government policy barriers, as well as issues related to support and technology. Furthermore, the study pinpoints major obstacles in ICT implementation, such as insufficient financial support, technological difficulties, academic dishonesty, and time constraints. Critical management challenges associated with ICT innovation

and adoption in contemporary business settings are highlighted. The study emphasises the necessity for a profound understanding of ICT adoption factors and insights into daily managerial operations to formulate agile strategies. The challenges in ICT strategy alignment are multifaceted, spanning various dimensions. Inhibitors, as identified by Mo et al. (2015), encompass the inability to effectively engage the audience, monitor active participation, and address complex technology issues. Moreover, Eze et al. (2019) reveal that individual and cultural barriers, government policies, support, and technological barriers significantly influence ICT acceptance. Hariyanto and Anwar (2019) contribute by identifying obstacles in ICT implementation, including financial constraints, technological issues, academic dishonesty, and time limitations. Additionally, Govender & Pretorius (2015) stress the critical management challenges associated with ICT innovation, underlining the need for a comprehensive understanding of adoption factors and managerial insights. Furthermore, Mahmud & Jalil (2018) identify obstacles hindering ICT usage in educational institutions, such as inconsistent electricity supply, computer illiteracy, high costs of internet data and electronic services, fear of change, fear of redundancy, lack of adequate facilities, and internet and electronic security concerns.

Leadership challenges in achieving strategic alignment have been emphasised, requiring a willingness to adopt, adapt, and implement ICT initiatives for smart governance, along with adequate budget allocation and employee training (Rangarajan et al., 2022). In Sweden, the policy implications of uneven access and underutilisation of substantial ICT infrastructure investments underscore the need for complementary measures to address challenges (Sembodo Suroso et al., 2018). Johannesburg's context highlights the importance of inclusive participation in ICT processes for smart services, connecting communities with the municipality, and enhancing public goods and services delivery (Schoburgh and Ryan, 2017). The effectiveness of e-Government and e-Governance in South Africa during the national lockdown revealed persistent challenges of poverty and inequality in rural areas despite efforts to provide basic e-services and ICT infrastructure (Ponelis and Holmner, 2015). Aligning business strategy with ICT strategy has been discussed, with enterprise architectures proposed for standardisation, convergence and interoperability in electronic governments (Pour et al., 2019). Challenges persist in

aligning ICT policies with local needs, as evidenced by the lack of clear evidence suggesting effective alignment of investments with local contexts (Ramos et al., 2021). The inability to align ICT capabilities with SMEs' communication strategies has been identified as a barrier to promoting SME effectiveness (Ahmad and Thornberry, 2018). The role of ICT procurement in the implementation of national digital government strategy has been recognised, emphasising the importance of innovative and flexible ICT procurement frameworks ("Full list of the CPV codes used for the Report", 2022). The loose link between strategy change and structural change in local government indicates a lack of alignment, emphasising the need for improved alignment of strategy and structure in local government (Marchão et al., 2020). The employment of ICT as a competitive advantage tool and the enhancement of alignment between ICT and management strategy is considered a key objective for most organisations (Makovhololo and Open Innovations Oct, 2018).

Addressing challenges in municipality ICT strategy alignment necessitates a comprehensive approach that considers local nuances while aligning with broader national and international ICT goals. Overcoming these challenges requires effective communication, collaboration, change management, resource allocation, modernisation, robust ICT governance, and continuous evaluation. This multifaceted strategy is essential for navigating the diverse obstacles related to leadership, budgeting, training, infrastructure, inclusive participation, and strategic alignment between business and ICT areas within municipalities. Successful implementation of such strategies is crucial for transforming municipalities into smart cities, enhancing service delivery, and achieving long-term ICT goals. Collectively, these studies underscore the intricate challenges in ICT strategy alignment, encompassing technological, organisational, and cultural barriers. Addressing these challenges is crucial for achieving successful alignment in ICT strategy.

2.5.22 Principles of ICT Strategy Development

In the landscape of ICT strategy development, a myriad of principles emerge, shaping the trajectory towards effective governance and alignment with broader objectives. The interplay of transparency and citizen participation surfaces as a cornerstone, accentuating the pivotal role of incorporating these principles into the fabric of ICT

strategies for local authorities (Ahmad and Thornberry, 2018). This inclusion is paramount, ensuring that governance remains open, agile, and inclusive, fostering collaboration, trust, and responsiveness to the needs of diverse stakeholders ("Full list of the CPV codes used for the Report", 2022). The study on ICT governance in Brazilian municipalities emphasises the establishment of a good practice catalogue and guidance, advocating for an open governance approach to underpin ICT strategy development (Reis et al., 2021). Sustainability principles echo as an urgent need, penetrating every level of ICT technology development and strategy, solidifying the imperative of aligning ICT initiatives with sustainable practices (Mamokhere et al., 2021). Taxation principles, intertwined with E-Commerce development, reflect the applicability of structural equation modelling techniques, revealing the significance of aligning ICT strategies with taxation principles for sustainable E-Commerce growth (Noamna & Kiattisin, 2020).

The foundational emphasis on honest design and development underscores the ethical bedrock essential for constructing a robust information technology infrastructure (Odoyo et al., 2013). The theoretical framework of aligning ICT with green initiatives accentuates the contingency theory perspective, emphasising the criticality of this alignment for enhanced organisational performance (Ngqondi and Mauwa, 2020). Leadership strategies take centre stage in educational institutions, highlighting the pivotal role of leadership in guiding ICT strategy development in the education sector ("Leadership Strategies in Enhancing Integration of Information and Communication Technology in Teaching and Learning in Public Teachers' Colleges in Moshi District, Tanzania", 2021). The strategy for ICT application and development in Serbia underscores the importance of defining clear goals and principles for effective ICT strategy development (Zerihun and Mashingo, 2022). Policy alignment has emerged as a critical challenge hindering the benefits of ICT, necessitating aligned policies in ICT strategy development for sustainable computing (Wälitalo et al., 2020). Innovative teaching strategies fostered by ICT have become instrumental in educational innovation, promoting collaborative and cooperative learning, autonomy, and self-directed learning (Weller, 2021). The foundational elements of efficiency and effectiveness in ICT play a pivotal role in national development, accentuating the need to align ICT strategies with broader national goals (Mamokhere and Meyer, 2022, McAdam et al., 2017, Meissner, 2022).

The interest in green ICT practices in organisations is motivated by the desire for an environment-friendly atmosphere and sustainable business goals, reinforcing the importance of aligning ICT strategies with sustainability practices for organisational success (Khan & Porras, 2018). The role of youth and ICT in supporting knowledge sharing and community development underscores the significance of ICT in fostering community engagement and knowledge dissemination (Abdullah & Ali, 2021). As ICT dynamically develops worldwide, adaptive and forward-looking strategies become imperative to navigate its transformative impact (Shah, 2022). The promotion of ICT, reflecting its transformative impact, necessitates responsive and adaptable strategies for optimal development (Mahadi et al., 2017). Competency-based approaches have taken centre stage in ICT education and workforce development, emphasising the importance of cultivating competencies aligned with industry needs (Sabin et al., 2018). The spill-over effect of the ICT industry underscores the interconnectedness of ICT with other industrial sectors, emphasising the need for holistic and integrated strategies in ICT development (Min et al., 2019).

Applications of ICT in education have emerged as transformative, increasing enrolment ratios and reducing skill gaps, underlining the imperative of strategic ICT integration in educational development (Singh & Datt, 2020). In summary, the principles of ICT strategy development span a vast spectrum, from transparency and sustainability to ethical design, leadership, policy alignment, educational innovation, and industrial integration. These principles underscore the multifaceted nature of ICT strategy development, necessitating comprehensive, adaptive, and inclusive approaches to align ICT strategies with organisational, sectoral, and societal objectives.

2.6 Summary of the literature reviewed

Exploring the research gaps regarding ICT alignment can lead to a more profound comprehension of its dynamics and offer practical insights into how alignment can be achieved in various organisational contexts. The summarised literature in Table 2.1 below outlines reviewed studies and the gaps they have identified.

Table 2.1: Summary of literature reviewed

No.	Author, Year	Research Focus	Decision-Making Influence on Alignment of ICT Strategic Objectives
1	(Ahmad and Thornberry, 2018)	Focus on the structure of business incubators: de-coupling issues and the misalignment of managerial incentives.	The findings propose that ICT alignment should involve multiple layers of employees, not only the top management. While there is a substantial body of research on ICT alignment in the private sector, there is a noticeable gap in the literature regarding the public sector, especially in the context of South African municipalities. More research is needed to understand the unique challenges and opportunities faced by public organisations.
2	(Ahriz et al., 2018)	An in-depth exploration of a Strategic Alignment Model (SAM) for university information systems, with its foundation rooted in the SAM Model.	Results suggest that the alignment should relate to benefits. To accomplish alignment, the sources of misalignment must first be identified. The literature indicates a lack of standardised and comprehensive measurement models for assessing ICT alignment. Developing such models could provide organisations with better tools to evaluate

No.	Author, Year	Research Focus	Decision-Making Influence on Alignment of ICT Strategic Objectives
			alignment and make informed decisions.
3	(Kude et al., 2018)	The study investigates ICT governance mechanisms with a downstream impact on organisational performance.	Findings show that decision-making structures contribute equally to ICT governance success, formal processes, and communication strategies. A centralised ICT strategic alignment is suggested to promote the effective use of ICT.
4	(Klier et al., 2017)	The study is directed toward understanding the context, processes, and outcomes of different models and mechanisms of ICT alignment in large organisations.	A model is proposed for strategic information technology alignment.
5	(Maphothoma, 2018)	The study highlighted challenges such as inadequate ICT infrastructure, limited ICT skills, budget constraints, and resistance to change that can hinder the alignment of ICT and strategic objectives in municipalities.	Proposed the adoption of appropriate strategies so municipalities can overcome barriers to aligning ICT with strategic objectives, enabling effective utilisation of technology to enhance service delivery and achieve desired outcomes.

No.	Author, Year	Research Focus	Decision-Making Influence on Alignment of ICT Strategic Objectives
			Although it is widely acknowledged that ICT alignment can enhance service delivery, there is a need for empirical studies that quantify this impact. Research should explore how alignment directly contributes to improved service quality and efficiency.
6.	(Jonathan, 2023)	The study discusses the challenges and importance of digital transformation in public organisations, highlighting the high failure rate of digital transformation projects. The focus is on the concept of ICT alignment, emphasising the need for the appropriate application of information technology in line with organisational goals. The research question centres on how public organisations can pursue ICT alignment for successful digital transformation.	The study did not include politics however there is a consensus that the exclusion of municipality polities is a significant gap in the research, it might be worthwhile to advocate for future studies that specifically address this issue.

No.	Author, Year	Research Focus	Decision-Making Influence on Alignment of ICT Strategic Objectives
7	(Canedo et al. 2019)	Presented an implementation methodology of ICT processes in a State Company, contributing to the understanding of ICT process implementation in organisational settings.	The study exclusively concentrated on the private sector, neglecting an exploration of the public sector. This limitation restricts the generalisability of the findings and the applicability of the identified governance practices to the public sector context.
8	Wahyuningrum et al. 2023)	focused on mapping ICT utilisation data and identifying obstacles in the Meranti Islands Regency, presenting practical implications and future research directions for fostering ICT competencies in blended learning.	Study could have contributed to understanding the challenges and opportunities in implementing ICT-based frameworks for smart facility management, addressing potential gaps in ICT utilisation in facility management.
	(Empig et al. 2023)	identified sustainable development targets aligned with climate change, sustainable forest management, and ICT, analysing their linkages within the SDG framework.	The study does not provide insights into the integration of ICT and renewable energy for environmental sustainability, addressing potential gaps in the environmental impact of ICT adoption and usage.

In summary, the empirical evidence presented in Table 2.1 underscores the need for further research in evaluating ICT alignment, however the literature strongly emphasises the importance of aligning ICT strategy with the strategic objectives of eThekwini municipality to enhance service delivery. Key factors for achieving this alignment include leadership commitment, stakeholder engagement, fostering the right organisational culture, and addressing associated challenges and barriers. To

attain successful ICT alignment, strategies such as effective planning, robust governance mechanisms, capacity building, and continuous monitoring are recommended. The evolving literature on ICT strategic alignment also highlights its substantial impact on organisational agility.

2.7 Theoretical frameworks

The study borrows from the following theories:

2.7.1 Strategic Alignment Model

Strategic Alignment Model (SAM) is a business/ICT management framework designed to help properly deploy business and information systems and the infrastructure components that support them (Agbebi et al., 2021). The model is used to support and develop business policy, boosting ICT strategy above its typical role as a backup mechanism (Saldanha et al., 2020). The majority of modern-day studies on strategic alignment are based on the Strategic Alignment Model by Henderson and Venkatraman,1999, cited by (Ahriz et al., 2018), which was built from the framework proposed by Norton (1991) regarding managing ICT. Henderson and Venkatraman (1999) further posited that the absence of alignment between ICT and business strategies is partly due to a failure to understand the value of ICT investment. Henderson and Venkatraman (1999) regarded ICT governance to be one of the 12 system components of strategic alignment and proposed that the governance of ICT should be associated with how business partners share the power of ICT.

The Strategic Alignment Model (SAM) is structured around four key dimensions of strategic decision-making within an organisation: business strategies, ICT strategy, organisational infrastructure and processes, and ICT infrastructure and processes Agbebi et al. (2021). The business strategy dimension encompasses decisions related to the organisation’s scope, including its products and market offerings, as well as its capacity, competencies, and governance (Ngqondi and Mauwa, 2020). On the other hand, the ICT strategy dimension includes considerations about ICT governance and the scope and capabilities of ICT within the organisation. Additionally, the organisational infrastructure dimension focuses on aspects such as organisational skills, processes, and administrative infrastructure, while the ICT infrastructure and

processes dimension deals with an organisation's ICT skills, infrastructure, and processes (Ako-Nai and Singh, 2019). These four dimensions of strategic choices are closely interconnected and collectively contribute to the organisation's overall performance. Consequently, the concept of strategic alignment is thoroughly assessed by considering these four dimensions (Weller, 2021). The bivariate fit concept encapsulates both horizontal and vertical relationships between the four dimensions, as illustrated in Figure 2.1 below. On the other hand, the cross-domain alignment sheds light on the connections between ICT infrastructure and processes with business strategy, as well as the relationship between ICT strategy and organisational infrastructure and processes (Sawng et al., 2021). Strategic alignment underscores the intricate interplay and interdependencies among all four dimensions, offering a comprehensive and holistic perspective on organisational strategy and decision-making.

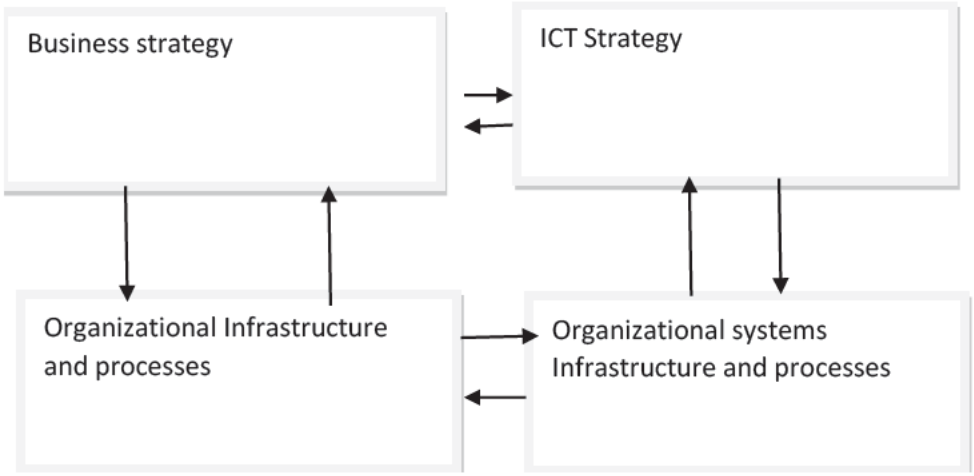

Figure 2.1: Strategic Alignment Model (SAM) (Castrounis, 2019)

SAM is characterised by two critical features of strategic management: strategic fit (interrelationships between external and internal domains) and functional integration (interrelationships between organisational and technology domains). Both strategic fit and functional alignment are essential for successful strategic alignment. Strategic fit refers to the alignment of internal and external domains, particularly strategic integration and the alignment of business and ICT strategies (Bhattacharya, 2018). Functional integration is a term that refers to two distinct types of integration between business and ICT domains and is concerned with the relationship between

organisational infrastructure and processes and ICT infrastructure and processes (Ominde et al., 2021). However, there are fundamental weaknesses and flaws that have been highlighted in the SAM, for example, it presents a simplistic relationship between ICT and strategy, yet it is complicated and there are many mitigating aspects that establish this relationship. Numerous factors, including cultural, political, economic, and semantic/social aspects, all contribute to the alignment of business and ICT, but the model is unable to integrate these factors, which is a major weakness (Bhattacharya, 2018; (Saldanha et al., 2020). To support continuous development, a deeper knowledge of the components and factors in the business and information systems alignment is required. Furthermore, the SAM is not a useful theory of strategic alignment since it does not give any suggestions for achieving alignment objectives (Jonathan et al., 2021).

There is also a lack of assurance and feedback methods for evaluating strategy alignment in business/ICT operational environments, and there are no definite criteria for determining which of the alignment perspectives are more essential in a certain alignment case study (Jonathan et al., 2021). Finally, this model fails to recognise the parts or viewpoints in the alignment model that deal with strategy execution, technological potential, competitiveness, and service level (Sembodo Suroso et al., 2018). In response to these gaps, the Information Systems Success Model (ISM) emerges as a compelling framework to address the multifaceted dimensions of information systems within organisational contexts.

2.7.2 Information Systems Success Model (ISM)

The pervasive integration of information systems in modern organisations has prompted a growing interest in understanding their success and impact. Safitri et al. (2020) cited DeLone and McLean (1992), who proposed a model named Information Systems (IS) Success, a theoretical framework used to evaluate the effectiveness and success of information systems within organisations. This updated model illustrates the links between three user-related characteristics (user satisfaction, system use, and system quality) and three IS success components (user experience; user training; and user attitude toward, and participation in, the development of the specific IS) (Safitri et al., 2020).

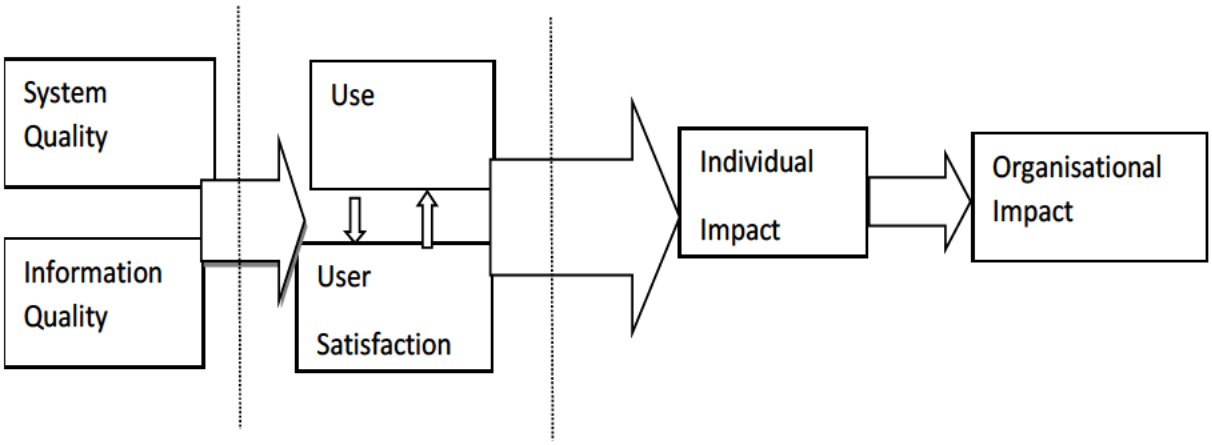

Figure 2.2: Information systems success model (Soper, 2014)

The ISM consists of six dimensions, which are often referred to as the 6Ds:

- System quality, this dimension assesses the technical aspects of the information system, including its reliability, performance, ease of use, and flexibility. A high-quality system is one that functions well and is user-friendly (DeLone and McLean, 2016). This highlights the importance of ensuring that a municipality's system receives robust support from IS and ICT personnel. This support should encompass various aspects, including assistance from helpdesk and helpline services.

- Information systems are primarily designed to provide information to users, thus information quality measures the accuracy, relevance, completeness, and timeliness of the information generated by the system. High-quality information is essential for effective decision-making (DeLone and McLean, 2016), for example a utility billing process should be automated to ensure accuracy and should be continuously monitored for precision and reliability.

- Service quality relates to the support and services provided to users of the information system, including factors like helpdesk support, training, and responsiveness to user needs (DeLone and McLean, 2016). This variable underscores the importance of having user-friendly and flexible information systems within a municipality.
- Usefulness gauges whether an information system contributes to improved job performance and decision-making. Users should perceive the system as a valuable tool that enhances their work (DeLone and McLean, 2016). Usefulness

as a criterion for information systems relates directly to ICT strategy alignment by ensuring that the system contributes to strategic objectives, enhances decision-making, improves job performance, and fosters user engagement, all of which are often central goals of an organisation's ICT strategy.

- User satisfaction reflects the overall contentment and acceptance of an information system by its users. Satisfied users are more likely to use a system effectively and promote its use within the organisation (DeLone and McLean, 2016). Prioritising user satisfaction ensures that technology investments align with organisational goals, foster technology adoption, enhance productivity, reduce resistance to change, and facilitate ongoing improvement in technology solutions and strategies.

- Net benefits encompass the positive outcomes achieved by the organisation using the information system. These could include increased efficiency, cost savings, revenue generation, or any other measurable benefits (DeLone and McLean, 2016). It assesses the overall value and alignment of technology initiatives by considering both the financial and strategic impacts, helping organisations make decisions that maximise benefits while minimising costs and risks.

Despite its contributions, the ISM does have limitations, however, including that it simplifies the complex factors influencing IS success and may not capture the full organisational context. Additionally, it may require adaptation to specific research contexts and industries. The measurement of its dimensions can also be challenging, potentially introducing subjectivity and biases. Despite this, the ISM offers a solid theoretical foundation for understanding and studying information system success due to its multi-dimensional approach and empirical basis (Kusrini et al., 2019). These two theoretical frameworks, the Strategic Alignment Model (SAM) and the Information Systems Success Model (ISM), provide valuable perspectives for examining the alignment of ICT strategies with organisational objectives and the success of information systems within the eThekwini municipality.

2.7.3 Criticism of strategic alignment

Despite the established usefulness of strategic alignment, several counterarguments criticise and undermine strategic alignment. Initially, strategic alignment was critiqued for its link between infrastructure and the implementation of ICT processes, with Kamel and Rizk (2017) claiming that the technique for strategic alignment omits difficulties relating to ICT infrastructure and application elements. Pashutan et al. (2022) further argued that alignment is unnecessary as addressing ICT and business separately may result in misalignment; rather, they argued, business and ICT strategy integration is necessary for success. Additionally, strategic alignment has been criticised for being too mechanical (McAdam et al., 2017); (Soltani, 2020), with Bhattacharya (2018) positing that strategic alignment is too theoretical to convey the dynamic nature of actual life. When the corporate environment changes abruptly, alignment may struggle to react.

Tunc and Aslan (2020), on the other hand, argued that a fusion of business and information technology strategies may be used to address the mechanistic challenge in lieu of strategic alignment. Sawng et al. (2021) similarly emphasised that strategic alignment may result in pathological results, such as organisations clinging to outdated strategies despite environmental changes. If ICT is not aligned with business plans on an internal level, it might stagnate, and cultural challenges can readily impact alignment resulting from globalisation (Makovhololo and Open Innovations Oct, 2018). The strategic alignment of Information and Communication Technologies (ICT) within municipalities is a critical aspect of governance and has been the subject of extensive research in recent years (Câmara et al., 2018). Strategic alignment between the business and ICT areas is associated with high strategic performance, but it has been noted that the strategic plans within municipalities have been diverse and not always guided by a holistic perspective, both internally and in their relationship with regional governments (Agbebi et al., 2021).

Furthermore, the governance and alignment of ICT management are essential for adding value to the use of ICT products and services, particularly in the public sector, where optimal investment is crucial for competitive advantage and financial return (Canedo et al., 2019). However, there is a gap in the literature regarding the strategic alignment and management of ICT systems and processes, as most studies have

focused on ICT functionality and usage, leaving a lacuna in strategic alignment and management (Godbless & Israel, 2022). This gap is further exemplified in the context of municipal performance management, where the alignment of key performance areas and indicators to the municipality's strategic objectives is lacking, leading to vague and internally focused KPIs (Khan and Zahid, 2020). The challenges related to leadership, ICT infrastructure, budget allocation, and employee training have been identified as significant barriers to the adoption and implementation of ICT initiatives for smart governance within municipalities (Kude et al., 2018). The potential impact of ICT on the strategic power of businesses and the increasing levels of ICT expenditure have made the evaluation, justification, and control of ICT investments critically important, emphasising the need for a robust ICT performance evaluation model (Câmara et al., 2018). Additionally, the alignment of strategy and structure in local government has been identified as a neglected area of research, highlighting the need for further investigation into this critical aspect of governance (Jacobsen & Johnsen, 2020).

In the context of internationalisation and business growth, the lack of ICT competence and strategic focus of ICT applications has been identified as internal problems facing small- and medium-sized enterprises, emphasising the importance of strategic ICT applications for promoting business growth (Kude et al., 2018). Furthermore, the adoption of ICT as a strategic policy option by businesses to compete favourably in a dynamic ICT-driven market underscores the significance of strategic ICT utilisation (Odesola & Akinola, 2020). The use of Information and Communication Technologies (ICTs) for sustainable purposes in municipalities is crucial for achieving smart and sustainable cities, emphasising the strategic role of ICTs in municipal sustainability efforts (Ribeiro et al., 2021). Moreover, the adoption of Green ICT using a maturity model has highlighted strategic alignment as a prominent factor of influence, further underscoring the importance of strategic alignment in the adoption of sustainable ICT practices (Hankel et al., 2019). Strategic engagement with external stakeholders, often using ICT, has been identified as critical to the success of megaprojects, emphasising the strategic role of ICT in external stakeholder management (Kettunen et al., 2020).

Additionally, the organisation of social sustainability work in municipalities requires systematic and strategic approaches, highlighting the importance of strategic thinking in addressing social sustainability challenges (Wälitalo et al., 2020). The engagement of municipalities in sustainability issues is closely linked to their strategic orientation, indicating that strategic thinking plays a crucial role in addressing local sustainability challenges (Kettunen et al., 2020). Furthermore, addressing the research gap between immigration and strategic urban planning in municipalities broadens the research scope and emphasises the strategic importance of considering immigration in municipal strategies (Helin and Dahlberg, 2017). The literature underscores the importance of strategic alignment in maximising the value and impact of ICT within municipalities, and further research in this area is essential for enhancing governance and public service delivery. It is worth noting that the primary argument against strategic alignment is centred around environmental change. Aklilu and Kagiso (2020) emphasised that alignment may fail due to external influences that have a detrimental impact on organisations, while Sibanda (2020) claimed that environmental uncertainty may hinder strategy alignment. Sugebo and Sekhar (2020), however, contended that managers depend more on ICT in quickly changing settings and that environmental uncertainty can be a facilitator of strategic alignment. There is little doubt, therefore, that there is a lack of consensus about the influence of shifting surroundings on strategic alignment. Despite the criticism levelled against strategic alignment, the concept has gained importance over the years.

2.8 Gaps in current strategic alignment

The landscape of service delivery and business environments is becoming increasingly intricate, necessitating considerations beyond mere cost and profit. Organisations often engage in multiple projects concurrently, benefiting from a larger workforce, greater capital, a diverse range of skills, a variety of products and services, and sometimes, involvement in multiple industries. Consequently, the task of strategically aligning public organisations' projects and their evaluation and selection processes has grown in complexity. To address these evolving challenges, updated analytical and managerial skills and models are required (Dairo et al., 2021a). Despite the considerable attention given to strategic alignment by industry professionals, consultants, and scholars, it remains an underdeveloped concept with an apparent

lack of robust theoretical foundations and empirical validation. Achieving strategic alignment can be particularly challenging when the business strategy is not clearly defined or is still evolving. In the private sector, the primary focus often centres on financial performance and profitability, making strategic alignment predominantly about optimising financial outcomes and shareholder value.

In contrast, public organisations like eThekwini municipality have a broader mandate that extends beyond profit-making. Their responsibilities encompass the delivery of public services, the promotion of public welfare, and ensuring the efficient utilisation of taxpayer funds. Consequently, strategic alignment in the public sector requires a more intricate and nuanced approach, as public organisations must consider both financial accountability and the delivery of public value when aligning their ICT strategies with their overarching strategic objectives (Kalonda and Govender, 2021). These involve factors such as citizen satisfaction, public trust, transparency, and social impact. Moreover, public sector organisations operate within a complex regulatory and political environment, which is subject to various legal requirements, public policies, and political pressures that can significantly influence their strategic decisions and ICT initiatives. Existing strategic alignment models, designed for the private sector, may thus not fully encompass the intricacies and distinct challenges faced by public organisations.

Therefore, there is a pressing need for a context-specific framework that considers the dual objectives of the public sector and provides guidance on effectively aligning an ICT strategy with the broader goals of municipalities. Furthermore, strategic alignment should not be viewed as a static end goal, as municipalities need to evolve continuously in response to changing environments. Municipalities should be proactive in leveraging information technology rather than being led solely by ICT. However, achieving and sustaining harmony between ICT and strategic alignment can be a formidable task, given that strategic alignment encompasses both effectiveness (doing the right things) and efficiency (doing things right) (Kalonda and Govender, 2021). Addressing the existing gap is imperative. Current strategic alignment models exhibit several flaws, including the separation of quantitative financial aspects from qualitative strategic considerations. These aspects are often assessed and analysed independently, resulting in an imbalanced weighting system that tends to prioritise

financial factors over qualitative strategic concerns. This imbalance further widens the gap between project alignment and overarching strategic objectives.

2.9 Hypothesis Statements

The hypothesis statements outline the specific relationships and associations that will be investigated in the study.

Objective 1: To investigate the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery.

Hypothesis 1:

- Null Hypothesis (H0): There is no significant relationship between the alignment of eThekwini municipality's ICT strategy and strategic objectives for service delivery.
- Alternative Hypothesis (H1): There is a significant relationship between the alignment of eThekwini municipality's ICT strategy and strategic objectives for service delivery.

Objective 2: To establish the contributing factors for aligning eThekwini municipality's ICT strategy with its strategic objectives.

Hypothesis 2:

- Null Hypothesis (H0): There is no significant relationship between budget constraints and the alignment of eThekwini municipality's ICT strategy with strategic objectives.
- Alternative Hypothesis (H1): There is a significant relationship between budget constraints and the alignment of eThekwini municipality's ICT strategy with strategic objectives.

Objective 3: To explore how eThekwini municipality's ICT strategy can be realised as an instrument of its strategic objectives for service delivery.

Hypothesis 3:

- Null Hypothesis (H0): There is no significant relationship between the implementation of eThekwini municipality's ICT strategy and effectiveness as an instrument for achieving strategic objectives for service delivery.
- Alternative Hypothesis (H1): There is a significant relationship between the implementation of eThekwini municipality's ICT strategy and effectiveness as an instrument for achieving strategic objectives for service delivery.

Objective 4: To design a standard mechanism to align eThekwini municipality's ICT strategy with strategic objectives for effective service delivery.

Hypothesis 4:

- Null Hypothesis (H0): There is no significant association between stakeholder involvement in the strategic planning process and the effectiveness of the designed mechanism to align eThekwini municipality's ICT strategy with strategic objectives for effective service delivery.
- Alternative Hypothesis (H1): There is a significant association between stakeholder involvement in the strategic planning process and the effectiveness of the designed mechanism to align eThekwini municipality's ICT strategy with strategic objectives for effective service delivery.

2.10 Conclusion

The conclusion drawn from the literature review underscores the complexity of the modern business landscape, particularly within the public sector, and emphasises the need for a nuanced approach to strategic alignment. The review highlights the unique challenges faced by public organisations, including the need to balance financial accountability with the delivery of public value, considering factors such as citizen satisfaction, public trust, transparency, and social impact. Moreover, the regulatory and political environment in which public organisations operate significantly influences their strategic decisions and ICT initiatives, necessitating context-specific frameworks tailored to the public sector. Furthermore, the literature review emphasises that strategic alignment is not a static goal but an ongoing process, requiring organisations to adapt and evolve in response to changing environments.

It stresses the importance of leveraging information technology as a proactive force rather than being solely led by it. Additionally, the review identifies flaws in current

strategic alignment models, such as the separation of quantitative financial aspects from qualitative strategic considerations, which can lead to misaligned priorities and hinder the achievement of overarching strategic objectives. In response to these conclusions, the research aims to develop a tailored framework for strategic alignment that addresses the specific needs and complexities of the public sector, with a particular focus on the eThekwini municipality. This framework will consider the dual objectives of financial accountability and the delivery of public value, while also considering the unique regulatory and political context in which public organisations operate. Through doing so, the research seeks to bridge the gap in existing alignment models and provide a comprehensive framework that aligns with the intricacies of the public sector. The literature review serves as a solid foundation for understanding the challenges and intricacies of strategic alignment in the public sector, guiding the development of an effective framework for the eThekwini municipality. It sets the stage for the subsequent chapters, providing a comprehensive understanding of the complexities involved and paving the way for the development of a tailored strategic alignment framework.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter delved into the purpose of the study, outlining the specific objectives and goals. This chapter describes the methods used to answer the research problem. The case study research design is explained first, followed by a discussion of the nature of mixed methods research. This includes the phases of the research, as well as the research design, target population, study area, sampling techniques, sample size, research instruments, pre-testing (pilot study), validity and reliability, data collection techniques, data analysis, and the ethical considerations and how they were managed. Data from interviews, government documents, and participant observation were analysed in this study.

3.2 Research objectives and questions

The objectives and questions of the study have been defined as follows:

1. To investigate the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery.
2. To establish the contributing factors for aligning eThekwini municipality's ICT strategy with its strategic objectives.
3. To explore how eThekwini municipality's ICT strategy can be realised as an instrument of its strategic objectives for service delivery.
4. To design a standard mechanism to align eThekwini municipality's ICT strategy with its strategic objectives for effective service delivery.
5. To make recommendations regarding the alignment of eThekwini municipality’s ICT strategy with its strategic objectives for effective service delivery.

The corresponding research questions were as follows:

1. What is the nature of the alignment of eThekwini municipality's ICT strategy and its strategic objectives?
2. What gaps exist between the ICT strategy and the strategic objectives of eThekwini municipality?

3. How can eThekwini municipality's ICT strategy be a means to realise its strategic objectives?
4. What is a standard mechanism to align eThekwini municipality's ICT strategy and strategic objectives for effective service delivery?

3.3 Research paradigm and methodology

3.3.1 Research paradigm

The approach that a researcher uses to acquire knowledge is referred to as a research philosophy or paradigm, which is a basic collection of beliefs. Cultural themes, worldviews, ideologies, and mindsets are all examples of paradigms that signify a pattern, model, or typical example (Yin and Campbell, 2018). As a result, the procedures employed to create knowledge are moulded by the researcher's beliefs and assumptions. The three components of a research paradigm are ontology (the nature of reality), epistemology (the nature of knowledge), and axiology (the nature of values). Some of the most common research paradigms includes, Positivism, Interpretivism, Critical Theory, Pragmatism and Constructivism (Leavy, 2017). The research paradigm employed in this study was pragmatism, which along with positivism, social constructivism and emancipatory, are the four paradigms in social science research. The focus of pragmatism is suitability, or what works. If solutions are found that assist in obtaining what is desired, it does not matter if there is a single reality (positivists) or numerous realities (social constructivists).

This study employed a mixed method design to implement the pragmatic philosophy, which is a method for collecting, analysing, and "mixing" quantitative and qualitative data at some stage of the research process within a single study to understand a research problem better. Mixed method research incorporates the philosophical assumptions, beliefs, and patterns of both qualitative and quantitative research. Mixed method advocates are pragmatic in nature; a mix of quantitative and qualitative approaches allows the researcher to capitalise on the strengths of each while reducing the weaknesses of both in a single study (Flick, 2018). Both qualitative and quantitative methods were utilised in this research as this was considered appropriate to address the findings/issues and contribute to understanding ICT strategy alignment to meet the municipality's strategic objectives (Haes et al., 2020).

3.3.2 Research design

Research design is the planned structure and investigation strategy used to gather answers to a research question. This section articulates the research design that assisted in getting answers to this study's research questions. Research designs are the types of inquiry that fall within the qualitative, quantitative, and mixed methodologies approaches and provide precise directions for procedures in a research design (Sekaran and Bougie, 2013; Creswell and Poth, 2018). The use of a mixed method was determined to be appropriate for the study because one data source was insufficient to comprehend the research problem completely.

The research approach was carefully tailored to address the research questions effectively. To ensure its suitability, the mixed methods case study research methodology underwent initial pilot testing, which enabled the researcher to refine and adjust the questionnaires and interview questions to maximise their effectiveness. The deductive approach was chosen by the researcher due to the pre-existing grounding of the concept of strategic alignment in various theories and frameworks. The researcher's focus was on a specific instance of strategic alignment within this well-established context. Furthermore, the deductive approach aligns well with the positivist paradigm, which was adopted for this study as recommended by Creswell and Poth (2018). This study was carried out utilising a convergent parallel, mixed methods design to acquire a thorough grasp of the subject.

The convergent parallel design (also referred to as the convergent design) occurs when a researcher uses concurrent timing to implement the quantitative and qualitative strands during the same phase of the research process, prioritises the methods equally, keeps the strands independent during analysis, and then mixes the results during the overall interpretation, as shown in Figure 3.1. Qualitative and quantitative methods of research can be represented as a symbol (QUAL+QUAN) (Creswell and Plano Clark, 2018).

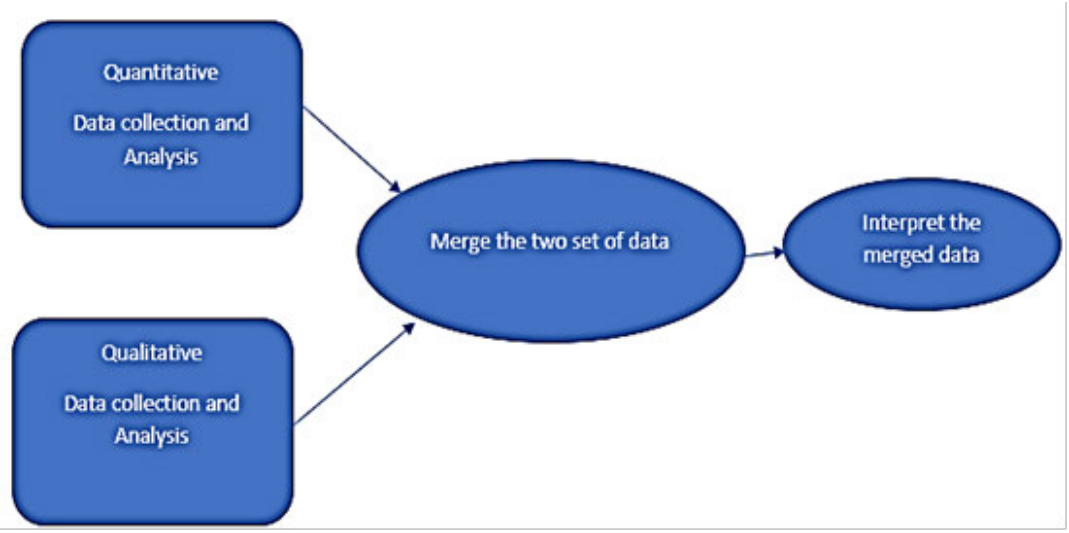

Figure 3.1: Convergent strategy (Kaur et al., 2019)

A convergent parallel design requires that the researcher simultaneously perform the quantitative and qualitative portions in the same stage of the research process, balance the methodologies, independently analyse the two components, and combine the results (Kaur et al., 2019). In the case of this study, it was decided to emphasise the qualitative data, as the aim was to explore the participants' feelings and thoughts regarding the current state of the municipality's ICT strategic alignment with its strategic objectives. Quantitative data, that is, the participants' scores, were used to confirm, corroborate, and cross-validate the research findings from the qualitative data analysis (Kaur et al., 2019).

The convergent design employed in this study serves the purpose of gathering diverse yet complementary data on the same topic, as elucidated (Privitera, 2017). The intent of using the design in this study was to bring together the differing strengths and non-overlapping weaknesses of quantitative methods (large sample size, trends, generalisation) with those of qualitative methods (small sample, details, in-depth) (Privitera, 2017). This convergent design is used when the researcher wants to triangulate the methods by directly comparing quantitative statistical results with qualitative findings for corroboration and validation purposes. Other purposes for this design include illustrating quantitative results with qualitative findings, synthesising complementary quantitative and qualitative results to develop a complete understanding of a phenomenon, and comparing multiple levels within a system (Denzin and Lincoln, 2018). Although this design is the most popular mixed method

design, it is also probably the most challenging of the major types of designs. Much effort and expertise are required, particularly because of the concurrent data collection and the fact that equal weight is usually given to each data type. It can be challenging to merge two sets of quite different data and their results meaningfully, for example, different sample sizes may arise because the quantitative and qualitative data are usually collected for different purposes (generalisation vs. in-depth description, respectively). This research was designed to overcome these challenges so that the quantitative and qualitative data addressed the same concepts (Creswell and Creswell, 2018). Both data types were efficiently collected during one research phase at the same time. Each data type was collected and analysed separately and independently using the techniques traditionally associated with each data type.

3.4 Study site

The study was conducted at eThekwini municipality in KwaZulu-Natal province, as shown in Figure 3.2. eThekwini municipality is the only metro in the KwaZulu-Natal province with a budget of over R50 billion to deliver services to improve people's lives. eThekwini municipality is a Category A municipality and the third-largest city on the South Africa. The municipality is a government entity that is home to more than 3.9 million people over area of 2,300 square kilometres.

Figure 3.2: eThekwini municipal area map

Source: eThekwini municipality area, www.ulwazi.org, accessed 20 April 2022.

3.5 Target population

ICT policy documents and human participants (selected government officials) formed the population of this study, while documents were utilised to investigate and analyse their importance, relevance, and meaning in relation to the research problem. The incorporation of policy documents in research concerning ICT policy and human participants, notably government officials, proves vital for scrutinising and evaluating the importance, relevance, and implications of these policies in addressing research issues. In the investigation conducted by Ngqondi and Mauwa (2020), an array of policy documents related to ICT was scrutinised, encompassing Internet access policy, strategic plans for curriculum development, institutional strategy, consolidation plans, technology stations policy, policy on electronic resource centres, and Internet centres policy. Additionally, an audit report on ICT was examined.

These documents played a pivotal role in comprehending the strategies and plans devised for technology integration in higher education, particularly within the framework of the "new normal." Similarly, Chindoza (2022) focused on the regulatory framework for eHealth data policies in Zimbabwe, scrutinising pertinent policy documents from Zimbabwe's ICT and health ministries to assess their alignment with FAIR (Findable, Accessible, Interoperable, and Reusable) principles. This underscores the significance of policy documents in evaluating the regulatory landscape and its implications for digital health initiatives. Furthermore, Aziz (2020) highlighted the importance of ICT policy discourse in Bangladesh, where the government perceives ICT practices as a fundamental catalyst for social change and economic development. This underscores the role of policy documents in mirroring the government's vision and priorities in harnessing ICT for societal and economic advancement. Moreover, Depaoli et al. (2020) underscored the transformative potential of governmental technology policy, indicating that ICT policies impose obligations on various stakeholders, thereby influencing the social context. This emphasises the impact of policy documents in shaping societal and ethical shifts in the digital age.

3.5.1 Qualitative Target population

The eThekwini municipality is organised into nine clusters, each overseen by a deputy head. The Deputy heads were intentionally chosen to participate in the study considering their substantial expertise and profound understanding of ICT matters, as well as the strategic objectives within the municipality. Exclusive interviews were conducted exclusively with the Deputy heads responsible for each organisational cluster. It is crucial to note that participation in these interviews was entirely voluntary, with participants willingly taking part after being informed about the study. Out of the nine Deputy heads approached, seven responded and actively participated in the interviews, providing valuable insights into the challenges they face and offering recommendations related to ICT strategy alignment.

The investigation carried out in the eThekwini municipality, concentrating on the involvement of Deputy heads in interviews, is in harmony with research on the strategic alignment of ICT in organisational contexts. The Deputy heads' voluntary participation in the interviews demonstrates their eagerness to contribute to the study, ensuring the effective capture of their insights and expertise. This approach adheres to ethical research practices, respecting participants' autonomy and ensuring their involvement is based on informed consent (Kamel and Rizk, 2017). Engaging Deputy heads, possessing substantial expertise and a profound understanding of ICT matters in the eThekwini municipality, is pivotal for acquiring valuable insights into the challenges they encounter and the recommendations they propose regarding ICT strategy alignment. This aligns with the imperative to involve knowledgeable stakeholders in organisational research to garner comprehensive and informed perspectives on strategic initiatives (Kostoska and Kocarev, 2019).

Moreover, the study's emphasis on ICT strategy alignment within the eThekwini municipality resonates with the broader discourse on sustainable management and strategic development in the realm of information and communications technology. The insights shared by the Deputy heads can contribute to advancing sustainable ICT management practices, aligning with the principles of sustainable development and competitive advantage (Hba et al., 2020). The Deputy heads' voluntary participation in the interviews also signifies a dedication to knowledge sharing and collaborative problem-solving within the organisational framework. This aligns with the stress on innovative communication strategies and business-ICT alignment to enhance effectiveness, as well as the necessity for strategic and innovative practices in addressing organisational challenges (Pillay & Mutereko, 2022; Ridwan & Rikmadani, 2022; Ajibade & Mutula, 2020). The study's focus on the eThekwini municipality presents a valuable opportunity to explore the practical implications of ICT strategy alignment in a specific local government context. This aligns with broader research on aligning organisation strategy and information technologies in local governments, highlighting the significance of enterprise architectures and standardisation to enhance service delivery and operational efficiency (Gallegos-Baeza et al., 2021). The participation of Deputy heads in the study underscores a commitment to advancing strategic ICT alignment within the eThekwini municipality, contributing to sustainable

management practices and promoting effectiveness through innovative communication strategies and business units-ICT alignment.

3.5.2 Quantitative Target population

In the quantitative aspect of the study, the target population consisted of 341 individuals. This population came from the 49 units or departments within the municipality, encompassing 49 senior managers, 280 operational managers, and the complete population of 12 ICT internal auditors working within the eThekwini municipality. The questionnaire was created and distributed electronically via email. As part of this process, a consent form was included to assure respondents of confidentiality. The form affirmed that their identities would be safeguarded and not disclosed to any third party, ensuring their privacy and protection throughout the research process. 331 responses were received from the targeted population, indicating a robust and significant level of participation in the quantitative phase of the research.

3.6 Sampling

The concept of sampling, as elucidated by Elston (2018), pertains to the careful selection of a subset of individuals or items that are deemed representative of the larger group under investigation. This method is crucial for ascertaining and comprehending the characteristics of the entire group. The process of selecting the sample holds immense importance in research methodology, as it directly impacts the generalisability and validity of the study findings. Within the study's context, the chosen sampling technique plays a pivotal role in ensuring that the selected sample accurately mirrors the characteristics of the target population. The cited references contribute valuable insights into various sampling techniques and their applications across diverse research domains. For instance, Suryathi et al. (2022) delve into factors influencing the performance of micro, small, and medium enterprises (MSMEs) in Denpasar, shedding light on the utilisation of the purposive sampling technique with specific considerations. Similarly, Mulisa (2022) explores sampling techniques involving human subjects, emphasising the differentiation between probability and non-probability sampling methods (Kurniawati et al., 2023) discuss the saturated sampling technique, involving the use of the entire population as samples. These

references offer valuable perspectives on the varied approaches to sampling in research.

3.6.1 Quantitative sampling technique

The study adopted a census approach for the quantitative data collection, which targets an entire population at any given time, space, and opportunity. The goal of a census is to provide users with contextually relevant population data, but it follows that this data must remain true to users' standards for quality. Therefore, assessing and evaluating the quality of a census is crucial, both for planning future data collection and for increasing confidence in the information the census produces (Jonathan et al., 2021). As the census approach targets an entire population, all 49 senior managers, 280 operational managers and 12 ICT internal auditors formed the census for this review. Of the 341 people approached, the 331 who responded to the survey became the sample.

The studies by Albertha et al. (2020), boyd and Sarathy (2022), and O'Hare (2020) collectively make substantial contributions to the field of census research, each addressing unique aspects that enrich our understanding of census methodologies and data collection practices. Albertha et al.'s (2020) assessment of the quality of administrative data and its applicability in the context of a population census is particularly noteworthy. Through illuminating the intricacies of incorporating administrative data into the census process, the study offers valuable insights into both the strengths and challenges associated with this approach. Understanding the complexities involved in leveraging administrative data is crucial for enhancing the overall quality of census data. Fouad and Gouvea (2018) exploration of differential perspectives on the use of differential privacy in the U.S. Census Bureau contributes essential insights into the evolving landscape of data privacy concerns. The study adds a critical layer to our understanding of census methodologies by considering diverse viewpoints on privacy considerations. In an era where privacy is a paramount concern, comprehending different perspectives is crucial for implementing effective privacy measures in census data.

3.6.2 Qualitative sampling technique

A purposive sampling technique was used to select respondents from various population categories to determine the sample. The main objective was to carefully choose informants who were "information-rich" and who could best respond to the research questions. The advantage of this sampling technique is that a researcher can choose respondents based on their interests and use their research skills and prior knowledge to select respondents and analyse their responses (Elston, 2018). Purposive sampling was utilised with the goal of reaching all nine Deputy heads who are accountable for the municipality's service delivery to the community.

Given the above, the study adopted a purposive sampling technique. When a researcher understands the kinds of participants they want, purposeful sampling is used (Ames et al., 2019). Purposeful sampling is a technique commonly used in qualitative research to identify and choose information-rich situations to make the most use of limited resources. This entails locating and selecting individuals or groups who are particularly knowledgeable about, or experienced in, a topic of interest. For qualitative data, purposeful sampling was used to select Deputy heads who participated in an interview (Kalonda and Govender, 2021). Among the nine Deputy heads approached, seven actively took part in the interviews. The reasons for sampling the Deputy heads are listed below:

- Deputy heads play a pivotal role in making high-level decisions concerning ICT investments and related activities.
- They are responsible for providing clarity and setting priorities for the overall direction of the organisation and ICT strategy.
- Deputy heads adopt frameworks, such as COBIT and ITIL, that support the municipality's corporate strategy.
- The outcomes of the research directly apply to Deputy heads, as they oversee the Integrated Development Plan (IDP) implementation and the development of the performance management system.
- Deputy heads serve as a crucial source of knowledge and practical expertise in the realm of ICT governance.

3.7 Sample size

According to Elston (2018), the sample size is the number of individuals to whom the study outcome would apply. For the questionnaires, the aim was to achieve a 100% population sample. In total, 341 participants comprised the targeted population, however only 331 responded (97% response rate). In the qualitative approach, choosing a sample that is representative of the entire population is crucial. Similarly, for the interviews, the aim was to achieve a 100% population sample. The sample for the qualitative design was nine respondents, yet seven participated in this study (78% response rate).

3.8 Process of contacting the respondents

To access the population, permission to conduct the study was requested from the Deputy head of the eThekwini Municipality Academy. The researcher then contacted the potential respondents by telephone and email to participate in this research. Each participant received an email that explained the objective of the study. The questionnaire was developed and dispersed electronically by email, which included a consent form that guaranteed the respondents' confidentiality and confirmed that their identities would be respected and not disclosed to anybody. The decision to participate or not was clarified to the respondents so that they knew they had the flexibility to withdraw from the study at any time with no penalties.

3.9 Data collection strategies

According to Sandkuhl and Seigerroth (2019), there are various data collection techniques, each of which has its disadvantages and advantages. These data collection methods include interviews, observations of individuals, written questionnaires administered in person or by email, or group discussions. In general, two kinds of information are collected primary and secondary data. Flick (2018) described primary data as information created for the first time by a scientist, whereas secondary data are extant information. Both primary and secondary data gathering approaches were utilised for this study. A municipality should be able to clearly articulate its goals for using ICT in the medium term to address the challenges identified by the municipality's ICT strategic direction.

3.9.1 Qualitative data collection instruments

Documents and interviews were employed as data collection instruments to conduct a critical analysis.

3.9.1.1 Documents

The analysis was conducted based on a set of documents and information acquired from the eThekwini municipality. The key documents included:

- **ICT Strategy:** This document outlines the municipality's approach and plans concerning Information and Communication Technology (ICT). It could detail strategies for leveraging technology to enhance municipal services, streamline operations, and support overall development goals.

- **Service Delivery Budget Implementation Plan for Municipalities:** This document is crucial for understanding how budgetary allocations are aligned with and implemented for service delivery in municipalities. It provides insights into the financial planning and execution strategies aimed at achieving service delivery objectives. The implementation of a service delivery budget plan for municipalities is crucial for enhancing the delivery of services to the community. Municipalities play a significant role in executing service delivery and implementing policy adjustments (Sharma, 2020). The Integrated Development Plan (IDP) is essential in identifying key developmental objectives and translating them into programs and projects that accelerate service delivery (Vinti, 2019). Furthermore, the budget formulation, execution, and evaluation stages are directly linked to service delivery, as they determine public spending priorities, finance the provision of services, and evaluate the implementation of the budget to inform future allocations (Pereira et al., 2018).

- **Integrated Development Plan (IDP):** The municipality's IDP is a foundational document that operationalises the legal development planning framework. It likely outlines the long-term vision, goals, and strategies for the municipality's development, with a significant emphasis on service delivery. The IDP is often a comprehensive roadmap for sustainable development. The Integrated Development Plan (IDP) serves as a comprehensive and inclusive roadmap for

a municipality's development over a five-year period. It plays a pivotal role in promoting development, tackling service delivery challenges, and fostering social and economic progress within the municipality. Transparency, accountability, and public participation in local governance are also key objectives of the IDP.

- The IDP process involves a thorough evaluation of the municipality's current status, identification of development needs and priorities, and the formulation of strategies and programs to address these needs. This participatory process engages various stakeholders, including local government officials, community members, civil society organisations, and other relevant parties. Covering a broad spectrum of development issues such as infrastructure, service delivery, economic and social development, environmental sustainability, and governance, the IDP also addresses cross-cutting issues like gender equality, youth development, and the needs of vulnerable groups.

- Mandated by the Local Government: Municipal Systems Act, 2000, the IDP is intricately linked to national and provincial development priorities and strategies. It serves as the foundation for resource allocation in the municipal budget process, supporting the implementation of development programs and projects.

- The IDP process adheres to principles outlined in the Municipal Systems Act, emphasising public participation, integration with other municipal planning processes, alignment with broader development plans, and the establishment of clear development objectives and targets. Monitoring and evaluation of IDP implementation, along with reporting on progress to the community and stakeholders, are essential components mandated by the Act.

- Functioning as a strategic framework, the IDP addresses development challenges, promotes inclusive and sustainable development, and aims to enhance residents' quality of life. The participatory and inclusive nature of the IDP process reflects its dynamic and responsive character, guiding resource allocation and the implementation of development initiatives. The legal development planning framework, as operationalised through the IDP process,

is acknowledged as a fundamental aspect. This framework typically ensures that the municipality's activities align with legal requirements and contribute to the overarching goal of effective service delivery. The IDP process is crucial for setting priorities, coordinating efforts, and engaging stakeholders in the municipality's development trajectory. This process involved an in-depth investigation into key strategic priorities. The study extensively explored the strategic orientation of municipalities, delving into the scrutiny of significant and applicable policies.

The strategic alignment of ICT initiatives with eThekwini municipal priorities is imperative, given that municipalities recognise technology as a pivotal facilitator in fulfilling their mandates. Developing a strategic direction involves a comprehensive understanding of a municipality's infrastructure, assets, economic zones, labour force, community and neighbourhood networks, and location quality. This knowledge forms the foundation for shaping the municipality's strategic approach. To assess the current state of ICT and guide its future trajectory, a literature review was conducted, focusing on both current practices and desired outcomes in municipalities. This review emphasised elements influencing the growth or hindrance of ICT in the public sector.

Additionally, the examination of ICT-related policy papers revealed that a municipality's vision for ICT strategic direction is influenced by the fundamentals of these policies and the challenges they aim to address. Several potential ICT strategic directions emerged from this analysis, including:

- Enabling a technologically smart city.
- Enhancing core municipal processes for greater efficiency.
- Promoting electronic government practices.
- Encouraging local communities to readily access and utilise ICT services.

These directions underscore the multifaceted role of ICT in municipal governance and service delivery, providing a framework for municipalities to leverage technology effectively for the benefit of their communities. Qualitative document analysis proved to be an efficient and cost-effective method for this study, which also provided stability and validity.

3.9.1.2 Interviews

The selection of an interview guide was driven by several considerations. One key factor is the guide's flexibility, offering an open, broad, and expandable formula. Additionally, the interview guide facilitates proximity between the subjects, a crucial prerequisite for delving into the nuances of common sense and gaining a deeper understanding of the participants' perspectives. The guide's design aligns with the research objective of capturing a rich and comprehensive range of insights on the chosen topic (Elston, 2018). It acknowledges that the data generated during the interviews is not static but evolves throughout the process, underscoring the need for a flexible and responsive approach to capture the depth and nuances of the participants' insights. This dual emphasis enhances the guide's effectiveness in fostering a rich and evolving dialogue during the interview process.

The researcher valued the interviews in this study because they provided immediate feedback. According to Kaur et al. (2019), interviews also allow a researcher control over the data-collection process, giving them the ability to elicit key responses. Since it can be challenging to ensure that the data acquired are relevant, the interviewer decided to conduct semi-structured interviews, which involve the creation and planning of questions in advance, providing uniformity throughout the interviews and allowing the researcher to find common patterns when analysing the data. Additionally, Saunders et al. (2019) pointed out that a semi-structured interview allows the researcher to ask participants for more information if necessary. The interviews were thus used to gather information regarding the interviewees' opinions, perceptions, and personal feelings.

In-depth interviews with seven Deputy heads were conducted to extract rich information relating to the study. Due to the Covid-19 pandemic, the interviews were conducted via Microsoft Teams and telephone. This choice was motivated by the nature of the research questions, which were built around the "how". A Microsoft Excel spreadsheet was used to document the feedback gathered during the interviews. Using spreadsheets allowed the researcher to arrange the data in a better format as well as identify the degree to which the interviewees agreed/disagreed. The results were then contrasted and compared.

This approach allowed the researcher access to a more profound understanding of the interactions between the sectors involved in eThekwini municipality's ICT strategy and strategic objectives.

3.9.2 Quantitative data collection instruments

The questionnaire link was emailed to the research population. The survey was sent to the participants by December 12, 2021. The electronic survey was closed on June 30, 2022. Follow-up emails were sent monthly, reminding the participants about the survey. The respondents were given six months to complete the questionnaire. The questionnaire was conducted online using the Survey Monkey application, and the data were returned electronically. The respondents completed the questionnaire within the stipulated timeframes. This research used the survey to quantitatively measure the themes that emerged from the literature review to gauge the implementation of standard ICT practices in eThekwini municipality.

3.10 Development of the research instruments

3.10.1 Questionnaire development

The questionnaire was meticulously crafted to align with the research objectives, leveraging its effectiveness in addressing well-defined variables. Following the guidance of Ames et al. (2019), a combination of structured and unstructured questions, including open-ended inquiries, was employed as the research instrument, utilising the Likert scale for nuanced responses. The questionnaire comprised three distinct sections, strategically covering aspects related to ICT strategy alignment, the methodologies employed for strategic alignment, and the perceived benefits resulting from this alignment.

To ensure ethical research practices, the first page of the questionnaire featured an informed consent form, acknowledging participants' willingness to partake in the study. Additionally, clear instructions were provided to guide participants through the questionnaire, streamlining the completion process. The questionnaire was developed using the online Survey Monkey platform, leveraging its user-friendly interface and capabilities for efficient data collection and analysis.

3.10.2 Interview schedule development

The interviews consisted of 20 open-ended questions that were designed in response to the research questions. Each interview was expected to take less than an hour. The open-ended questions allowed the respondents to react and the researcher to construct follow-up questions as needed. The average duration for each interview was set at 45 minutes, providing a balance between conducting in-depth discussions and respecting participants' time constraints. This timeframe was deemed suitable to cover the breadth of the questions while maintaining engagement and focus throughout the interview process. The open-ended format of the questions further facilitated an organic and exploratory conversation, enabling the researcher to delve into specific areas of interest and gather detailed insights from the respondents. It's important to acknowledge that data collection from the Deputy heads' interviews spanned four months due to their limited availability. This extended timeline reflects the practical challenges often encountered in organisational research, where key stakeholders may have demanding schedules and competing priorities. Despite the prolonged data collection period, the researcher remained diligent in coordinating and conducting the interviews, ensuring a comprehensive coverage of perspectives from the Deputy heads.

Following best practices in qualitative research, the responses from the interviews were digitally recorded to accurately capture the nuances of the discussions. Subsequently, the recorded data underwent meticulous coding and analysis to identify recurring themes, patterns, and insights relevant to the research questions. This rigorous approach to data analysis is crucial in deriving meaningful findings from the qualitative data collected during the interviews, contributing to the robustness and validity of the research outcomes. The development and execution of the interview schedule adhered to established principles of qualitative research, emphasising the thoughtful design of open-ended questions, respectful consideration of participants' time, and meticulous handling of the collected data. This comprehensive approach to data collection and analysis underscores the commitment to generating rich, nuanced insights that align with the research objectives.

3.11 Research mapping

The theoretical framework for this study was based on the conclusions given in Chapter 2 of this research, which also demonstrated how ICT strategic alignment models are utilised as instruments to facilitate ICT investment. This study's conceptual framework illustrates how the theories and concepts offered in Chapter 2 were used to inform data collection and analysis in this research. The conceptual framework that follows identifies each phase of the study.

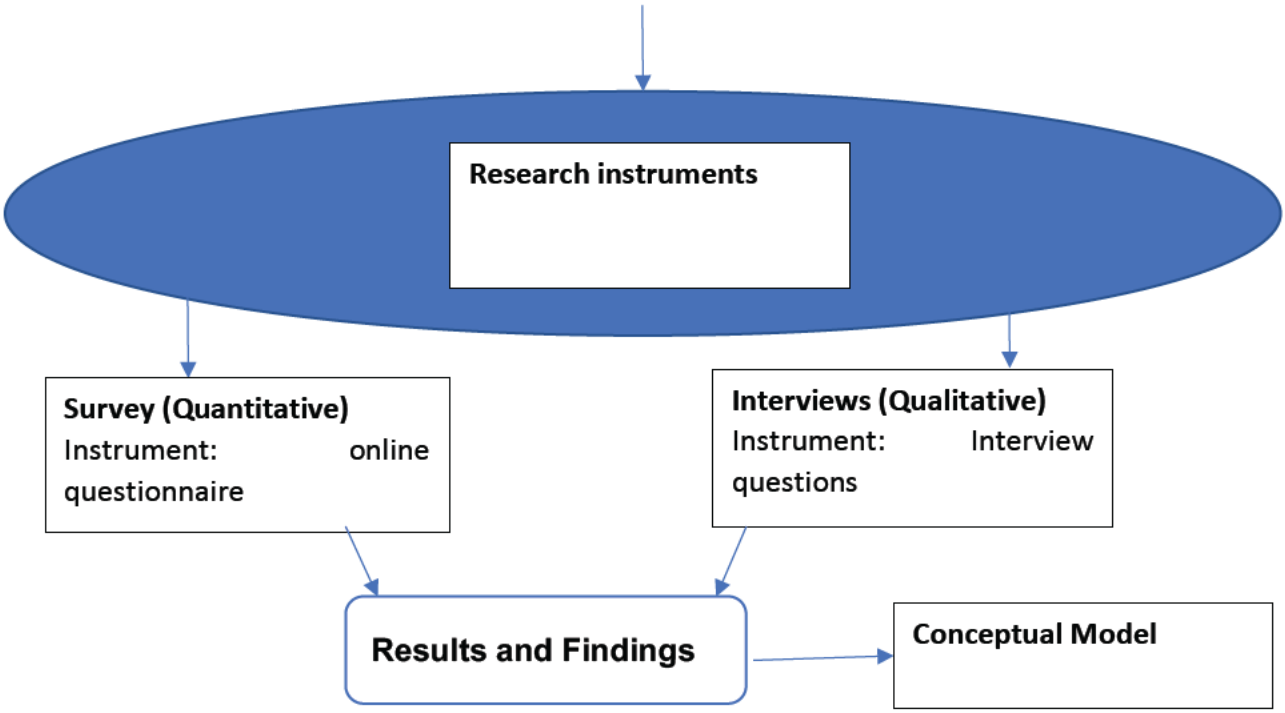

Figure 3.3: Resource mapping

Source: Designed by the author

3.12 Theoretical model

Developing a conceptual model for the alignment of eThekwini municipality's ICT strategy and strategic objectives for service delivery

a. What is the nature of the alignment of eThekwini municipality's ICT strategy and its strategic objectives?
b. What gaps exist between eThekwini municipality's ICT strategy and its strategic objectives?
c. How can an ICT strategy be a means to realise eThekwini municipality's strategic objectives?
d. What is a standard mechanism to align eThekwini municipality's ICT strategy and its strategic objectives for effective service delivery?
e. What are the recommendations regarding the alignment of eThekwini municipality's ICT strategy and its strategic objectives for effective service delivery?

Information Systems Success Model	Strategic Alignment Model
Behavioural intention	Business strategy
Perceived usefulness	ICT strategy
Perceived ease of use	Organisational infrastructure
User satisfaction	ICT infrastructure
Management support	
Training	
User involvement	

These models provide a theoretical foundation for understanding the factors that influence the alignment of ICT strategies with strategic objectives and the success of information systems within eThekwini municipality. This informed the research process and guided the investigation to achieving better alignment for effective service delivery.

3.13 Validation of the study

According to Zapolski and Smith (2017), a pilot study is a short form of a full study that is held directly before the expected study or in preparation for the complete research. The elimination of bias may be more challenging in a pilot study, however it can help a researcher to work out a portion of the procedural bias, even though it is not liable to add anything new to the principal study.

Zapolski and Smith (2017) indicated that the motivation to utilise a pilot study before executing the principal study incorporates the following:

- To test the research procedure and protocol.
- To recognise variables of interest and choose how to operationalise each.
- To test an intervention strategy and distinguish the segments most critical to the intervention's acceleration.
- To test the adequacy of the research instruments and check the responses of the members in the research.
- To evaluate statistical parameters for future analyses.

3.13.1 Quantitative Validation of the study

In the quantitative validation of the study, a pilot survey was conducted to assess the effectiveness and appropriateness of the questionnaire in capturing relevant data aligned with the study's theoretical model and research questions. The pilot survey was distributed via email to 20 potential participants, with ten individuals completing the questionnaire. The questions were meticulously constructed to align with the study's theoretical model, thereby minimising the collection of unnecessary data and ensuring the relevance of the survey instrument. The pilot study yielded valuable feedback from the participants, encompassing comments and ideas related to the content, wording, and sequencing of the questions. This feedback proved instrumental in identifying areas for improvement, such as the placement of certain questions within the questionnaire to enhance the flow and minimise potential biases. As a result, adjustments were made to the order of questions to facilitate a more logical progression of the survey, thereby enhancing the overall quality and effectiveness of the instrument. Additionally, the findings from the pilot survey highlighted the need for minor changes to further refine the questionnaire before its utilisation in the main study.

The completion time for the questionnaire was reported to be no longer than 20 minutes, indicating that the survey instrument contained clear and direct questions, contributing to its acceptability and construct validity. The efficient completion time also reflects the participants' ability to engage with the questionnaire without undue burden,

thereby enhancing the quality of the data collected. Furthermore, all considerations to improve the overall generalisability of the research were considered, ensuring that the pilot survey served as a robust validation mechanism for the questionnaire's suitability and effectiveness in capturing relevant data aligned with the study's objectives.

3.13.2 Qualitative Validation of the study

Qualitative validation of a study is a critical component in ensuring the trustworthiness and credibility of the research findings. In response to the user's task, the qualitative validation of the study involved a multi-faceted approach, encompassing participant feedback, iterative refinement of the interview schedule, and the implementation of a peer review process. These measures were undertaken to enhance the overall structure and effectiveness of the research methodology, aligning with the factors of consistency, dependability, replicability, credibility, and transferability outlined by Zapolski and Smith (2017). The interview schedule, a fundamental tool for qualitative data collection, was devised and tested with 10 participants, who provided valuable feedback on the program's arrangement. Their recommendations were carefully incorporated into the schedule through an iterative process, aiming to refine and optimise its structure and content. This iterative approach reflects a commitment to enhancing the dependability and consistency of the interview schedule, ensuring that it effectively captures the perspectives and insights of the participants in a reliable and replicable manner.

Furthermore, to bolster the credibility and robustness of the research methodology, a peer review process was implemented for both the data collection and interpretation phases. As described by Lowe (2019), a peer review involves having a knowledgeable individual review the data and research process, offering insightful questioning, encouragement, and critical evaluation. In this case, a peer reviewer with PhD-level expertise and a deep understanding of the research subject matter was engaged to provide rigorous scrutiny and constructive feedback on the research process, data collection methods, and interpretation of findings. This peer review process served as a valuable mechanism for ensuring the credibility and trustworthiness of the research, as well as for challenging and refining the researcher's perspectives and interpretations.

Moreover, the research maintained the credibility and transferability of the collected data by thoroughly examining the information from the questionnaires and diverse sources of data. The researcher dedicated sufficient time to engaging with the participants, ensuring that they fully understood the research problem being studied and had the opportunity to express their perspectives and insights in a comprehensive manner.

3.14 Administration of the questionnaire

The questionnaires were distributed on December 12, 2021, using the online questionnaire platform, SurveyMonkey. The final questionnaire was submitted on June 30, 2022. This meant that the quantitative data collection lasted for a period of six months. A monthly reminder was sent to the participants until the end of the six-month period. The use of an online questionnaire platform such as SurveyMonkey offers several advantages, including ease of distribution, efficient data collection, and the ability to track responses in real-time. Through leveraging this platform, the researcher was able to reach a wide pool of participants and streamline the process of data collection. Additionally, the use of an online platform facilitated the organisation and management of responses, contributing to the overall efficiency of the data collection process. The six-month duration of the quantitative data collection period reflects a comprehensive and sustained effort to gather responses from the participants. This extended timeline allowed for ample opportunity for participants to engage with the questionnaire and submit their responses, thereby enhancing the overall response rate and the richness of the data collected.

Furthermore, the monthly reminders sent to the participants throughout the data collection period served as a proactive measure to encourage participation and ensure that the research objectives were met within the designated timeframe. In terms of best practices, the administration of the questionnaire adhered to ethical considerations, ensuring that participants were provided with clear instructions, informed consent, and the opportunity to engage with the survey at their convenience. The use of an online platform also facilitated the secure and confidential collection of responses, safeguarding the privacy and anonymity of the participants.

3.15 Administration of the interviews

The participants were contacted through email and telephone, and the interviews were arranged as per Table 3.1. The interviews were digitally recorded, but the recordings were later erased after being transcribed. The responses from the interviews were coded and analysed following transcription. The use of multiple communication channels, including email and telephone, allowed for effective coordination and scheduling of the interviews, ensuring the participation of the selected individuals. The decision to digitally record the interviews is in line with established best practices in qualitative research, enabling the accurate capture of participants' responses and the preservation of rich, detailed data. The use of digital recordings serves to enhance the reliability and validity of the data collected, as it allows for thorough transcription and analysis of the interview content. However, it is important to note that the recordings were later erased after transcription, reflecting a commitment to safeguarding the confidentiality and privacy of the participants' responses.

Following transcription, the responses from the interviews were meticulously coded and analysed, in accordance with established qualitative research methodologies. The coding and analysis process involved identifying recurring themes, patterns, and insights within the interview data, thereby contributing to the generation of meaningful findings and insights aligned with the research objectives.

Participant no.	**Interview Date**	**Position of respondent**	**Method**
1.	December 13, 2021	Internal Auditor	Online (Microsoft Teams) The interview took one hour
2.	December 20, 2021	Deputy Head in trading services cluster	Online (Microsoft Teams) The interview took 50 minutes
3.	January 11, 2022	ICT Deputy	Online (Microsoft Teams) The interview took 45 minutes
4.	January 17, 2022	Chief Strategy Officer	Online (Microsoft Teams) The interview took 45 minutes

Participant no.	Interview Date	Position of respondent	Method
5.	February 21, 2022	Deputy Head from Human Resources Department	Telephone The interview took 45 minutes
6.	March 28, 2022	Deputy Head in Area-Based Management	Online (Microsoft Teams) The interview took 40 minutes
7.	May 16, 2022	Chief Finance Officer	Telephone The interview took 35 minutes

Table 3.1: Interview information

Source: Designed by the Author (2022)

Interviews ranged from 45 minutes to an hour, depending on what the participants had to say about the subject matter. The interviews were recorded using a digital recorder, which was used as further validation of the interviews when it came to the transcription process.

3.16 Analysis of the data

Organised data leads to the development of a coding system through the allocation of codes, which are identifiers applied to assign meaning to data (Jing et al., 2018). Alberto Leite et al. (2018) described data analysis as the process of studying data to uncover practicalities about a certain area of interest, whereby the data are examined cautiously to reveal new facts based on the evidence presented. Data analysis can either be qualitative or quantitative.

3.16.1 Quantitative data analysis

The data gathered from participants were systematically entered into a spreadsheet, with numerical codes assigned to each question for organisation and categorisation. Quantitative data analysis was conducted utilising statistical procedures, with a particular focus on employing the SPSS® software tool. The strategic use of coding played a crucial role in facilitating the evaluation process. The analysis included the following techniques tailored for quantitative data:

- **Reliability Analysis:** This method was employed to assess the consistency and dependability of the collected data. It ensured that the measurements and instruments used in the study were reliable and produced consistent results. Reliability analysis serves the purpose of evaluating the consistency and dependability of the data collected in a study. This method employs various statistical measures, with Cronbach's alpha being a notable example for assessing internal consistency. The objective is to ascertain the reliability of measurements and instruments utilised throughout the research, ensuring that they yield consistent and trustworthy results. Through systematically examining the stability of data over time and under different conditions, reliability analysis enhances the overall quality and credibility of the study's findings. This method is particularly crucial in research endeavours where the precision and repeatability of measurements play a fundamental role in drawing meaningful conclusions.

- **Descriptive Statistics (Frequency Analysis):** Descriptive statistics, particularly frequency analysis, were utilised to provide a comprehensive overview of the data. This technique facilitated the identification of patterns, trends, and the distribution of responses. Utilising descriptive statistics, specifically frequency analysis, proved instrumental in this study for delivering a comprehensive overview of the data. This technique facilitated the identification of patterns, trends, and the distribution of responses within the dataset. Employing measures such as mean, median, mode, range, and standard deviation, the study aimed to unravel key insights into the central tendencies and variations present in the data. The systematic application of descriptive statistics provided a foundational understanding of the dataset's characteristics, contributing essential information to the overall narrative of the research.

- **Chi-Square Analysis:** The study incorporated Chi-square analysis to examine the association between categorical variables. This statistical method facilitated an in-depth exploration of relationships and dependencies within the dataset. Through comparing observed and expected frequencies in a contingency table,

Chi-square analysis enabled the identification of significant associations or deviations from expected values, shedding light on the interconnectedness of categorical variables in the study. This approach provided a valuable means of understanding the patterns and dependencies inherent in the data, contributing to a more nuanced interpretation of the relationships among categorical variables within the research framework.

- **Correlations:** The study employed correlation analysis to evaluate the strength and direction of relationships between variables, offering valuable insights into potential connections within the dataset. Through calculating correlation coefficients, such as the widely used Pearson correlation, the research aimed to quantify the degree of association between two continuous variables. This method provided a systematic and quantitative measure of how variables were interrelated, enabling the identification of patterns and trends in their behaviour. Correlation analysis proved instrumental in discerning the nature and extent of connections between variables, enhancing the study's capacity to draw meaningful conclusions about the interdependencies within the dataset.

- **Regression Analysis**: In the study, regression analysis was utilised to investigate the relationship between dependent and independent variables. This statistical method played a crucial role in uncovering predictive patterns and understanding the influence of one variable on another. When using mathematical models like linear regression, the research aimed to quantify and analyse how changes in independent variables correlated with changes in the dependent variable. Through regression analysis, the study gained valuable insights into the nature and strength of these relationships, providing a foundation for predicting outcomes and elucidating the impact of specific variables on the overall study framework. This approach contributed to a more nuanced understanding of the intricate interplay between different factors in the dataset, thereby enhancing the study's analytical depth.

Throughout the analysis, a meticulous review process was implemented to identify recurring themes and evolving central patterns within the quantitative data. This

iterative approach ensured a comprehensive understanding of participant responses, contributing to the depth of insights derived from the quantitative analysis.

The following procedure was used to analyse the data after the quantitative data were gathered (see Figure 3.4 below):

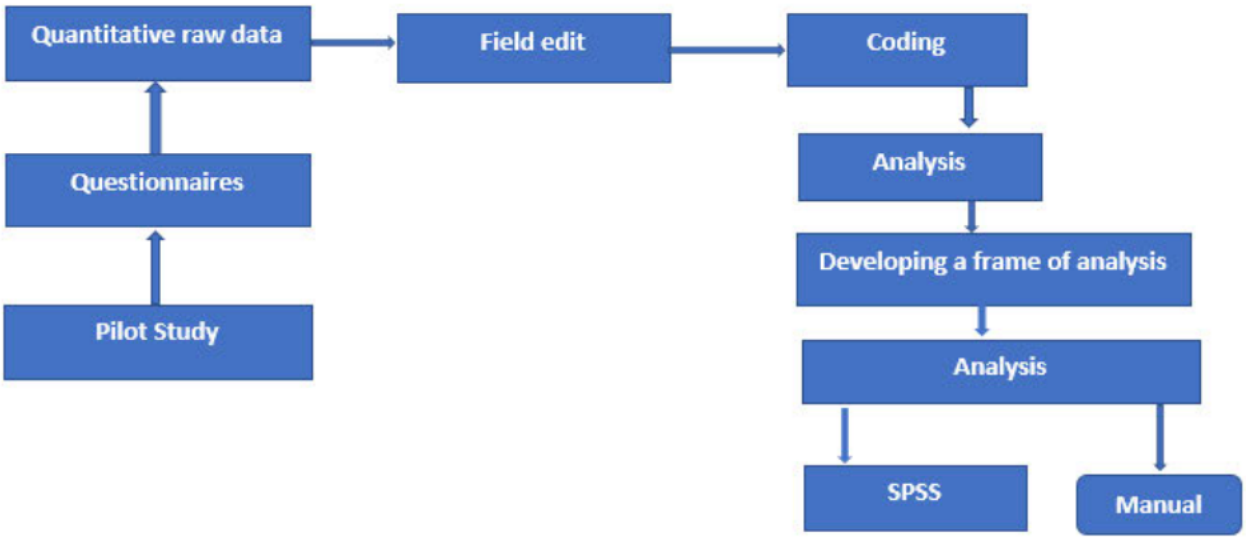

Figure 3.4: Steps in data processing
Source: Adopted from (Ames et al., 2019)

Quantitative research necessitates meticulous data processing, including data coding, to maintain data consistency and completeness. This process enables researchers to transform complex information into numerical formats, simplifying the analysis. A Likert scale was utilised in this research – see Table 3.2 below for an example of the pre-coded data columns from the questionnaire. The use of a Likert scale allowed for capturing nuanced responses and evaluating varying degrees of agreement or disagreement with specific statements, providing valuable insights into participant perspectives and attitudes.

Likert scale	**Codes**
Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

Table 3.3: Example of coding data – Likert scale

There are three main steps to follow when analysing quantitative survey data (Kaur et al., 2019):

- Summarise and reduce the data by developing the variables.
- Illustrate the distribution of the variables across the sample.
- Analyse the relationships between the variables.

3.16.2 Qualitative data analysis

The thematic analysis approach used in this research involved a systematic process for analysing the collected data. The interviews were transcribed verbatim, preserving the participants' original responses to the questions asked. The data analysis process began with the transcription of the audio-recorded interviews, ensuring accuracy and fidelity to the participants' words. The data collected from these interviews underwent a meticulous process of organisation, preparation, and analysis in strict accordance with the guidelines outlined in the interview guide. This method entailed a thorough and systematic review of all the collected data, with codes systematically applied to segment and categorise the information. To enhance organisation and facilitate the identification of areas of consensus or divergence among the interviewees, Microsoft Excel spreadsheets were employed to record and structure the interview feedback.

Subsequently, the results were subjected to a detailed comparative analysis, enabling the identification of discernible patterns and variations within the data. To gain a comprehensive understanding of the research problem, a comprehensive review of the researcher’s field notes, and the interview transcripts was conducted. This step was crucial in providing a holistic perspective on the collected data. To further support the analysis process, the data files were uploaded into NVivo 10, a qualitative data analysis software. This allowed for open-axial selective coding, a methodological approach that facilitates the exploration and development of emerging themes and patterns within data. The entire data analysis process adhered to a structured framework, ensuring rigour and consistency in the examination of the qualitative data. The workflow is illustrated in Figure 3.5, which was adapted from (Creswell and Plano Clark, 2018).

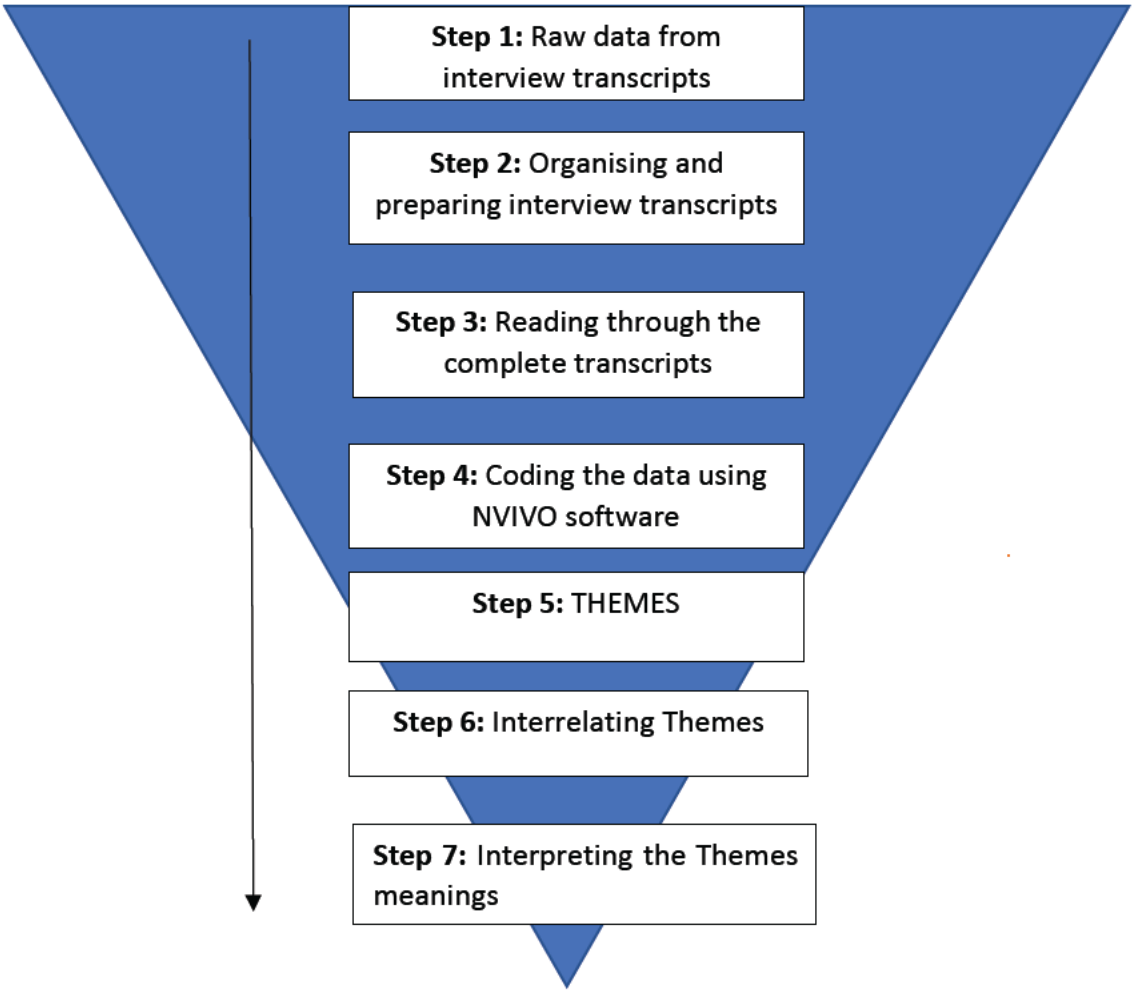

Figure 3.5: Data analysis in qualitative research
Source: Adapted from (Creswell and Plano Clark, 2018)

Step 1: The interviews were listened to several times to obtain a sense of the whole. Reading over the data several times also helped the researcher to understand the overall data.

Step 2: The transcribed text was divided into meaning units, condensed, and labelled with codes.

Step 3: The codes were compared, looking for similarities and differences, and then sorted into subcategories.

Step 4: The researcher verified that the coding was congruent with the units of meaning. According to similarities and differences, the codes were categorised, and the categories were compared. Coding enabled the researcher to assess and understand the data to identify recurring and emergent core themes and primary responses.

Step 5: Themes were formed by combining meaningful and comprehensive categories.
Step 6: Ongoing analysis was done to refine the specifics of each theme and the overall story the analysis told. This generated clear definitions and names for each theme.
Step 7: Finally, the latent content was formulated into an overarching theme, relating the analysis to the research question, objectives, and literature reviewed.

3.17 Reliability and validity

Reliability and validity are fundamental concepts used in research methodology to assess the quality of measurements and the validity of research findings. They are crucial for ensuring the trustworthiness and accuracy of research results (Blanchflower, 2018). Reliability refers to the consistency and stability of measurements over time and across different conditions. A reliable measurement tool produces consistent results, contributing to the dependability of data. On the other hand, validity concerns the extent to which a measurement tool accurately measures what it intends to measure. A valid instrument ensures that the data collected accurately reflects the intended construct or variable of interest. These concepts are critical in ensuring the trustworthiness and accuracy of research findings, as they provide a systematic framework for evaluating the robustness and relevance of the methods and instruments used in a study. Ultimately, a rigorous consideration of reliability and validity enhances the credibility and meaningfulness of research results.

3.17.1 Reliability

Reliability refers to the consistency and stability of measurements or data over time and across different conditions. In other words, it assesses whether the results obtained from a measurement or instrument are consistent and dependable. The argument raised by Creswell and Poth (2018) implies that reliability relates to the steadiness of a measure; it measures a research's consistency, precision, repeatability, and reliability (Kalonda and Govender, 2021). It further shows the extent to which a study is bias-free (error-free), and thus ensures regular cross-time measurement across the distinct items in the instruments (the scores observed).

- **Measurement reliability:** The measure of reliability illustrates the degree to which the instrument is error-free and certifies consistency in measurement over time and through items in the research instrument (Sekaran and Bougie, 2013). To ensure the reliability of this survey instrument, a test-retest study was conducted with a sample of participants, and the results showed a high degree of consistency in responses over a two-week period.

- **Instrument validity and reliability**: The self-report questionnaire used in this study demonstrated high internal consistency (Cronbach's alpha = 0.70), indicating good reliability. Additionally, the questionnaire underwent a content validity review by a panel of experts in the field. The following guidelines were considered in formulating the questionnaire:

    - Why are these questions being asked?
    - Be clear and concise.
    - Response choices should not overlap.
    - Use natural and familiar language.
    - Do not use words or phrases that show bias.
    - Avoid double-barrelled or ambiguous questions.
    - Provide explicit alternatives.
    - Questions should be reliable, relevant, and valid.

- **Addressing threats to reliability**: The potential for response bias in the survey due to the reliance on self-reporting was acknowledged. To mitigate this concern, several measures were taken. Firstly, participants were assured of the utmost confidentiality regarding their responses, emphasising that their individual answers would remain anonymous and would not be linked to their identities. Secondly, to further minimise potential bias, randomised response techniques were employed. These techniques are designed to protect respondents' privacy by introducing randomisation in the response process. This was aimed to encourage more honest and candid responses from the participants. In addition, to address selection and potential sample bias, the questionnaire was strategically distributed exclusively to senior managers within the target population (Creswell and Creswell, 2018). This approach aimed to ensure that the survey participants were representative of the

relevant decision-makers and key stakeholders in the context of the research.

3.17.2 Validity

Validity is a crucial aspect of research methodology, as it pertains to the accuracy and precision with which a measurement or instrument captures the concept or construct it is intended to measure. In the context of research, validity concerns can be categorised into internal, content, external, criterion, and construct-related validity (Creswell and Plano Clark, 2018). This response will comprehensively address the various aspects of validity, including content validity, construct validity, and convergent and discriminant validity, as well as their significance in ensuring the credibility and trustworthiness of research findings. Content validity is established through a rigorous process of survey question development, which involves a comprehensive review of the existing literature and input from subject matter experts. In the present study, the survey questions were formulated based on an extensive review of the relevant literature, ensuring that they effectively captured the targeted constructs. Additionally, input from experts in the field was sought to validate the questionnaire, thereby confirming that it adequately covered the intended constructs. This process ensures that the measurement instrument aligns with the content domain it aims to assess, thereby enhancing the content validity of the survey instrument.

Construct validity, on the other hand, pertains to the extent to which the measurement instrument accurately assesses the underlying theoretical constructs or concepts. In the current study, a factor analysis was conducted to evaluate the construct validity of the scale. Factor analysis is a statistical technique used to identify the underlying structure of the measured constructs and to assess how well the items align with the expected factors. The results of the factor analysis indicated strong loadings of the items on the anticipated factors, providing empirical support for the instrument's ability to measure the intended constructs. This process contributes to the establishment of construct validity, thereby ensuring that the measurement instrument accurately captures the theoretical constructs under investigation.

Furthermore, convergent and discriminant validity are essential components of validity assessment. Convergent validity is demonstrated by examining the correlations between the questionnaire under study and a previously validated measure of the same construct. In the present research, the examination of the correlations revealed a significant and positive relationship ($r = 0.78$) between the questionnaire and the established measure, thereby supporting the convergent validity of the instrument. This finding indicates that the questionnaire effectively measures the same construct as the established measure, thus reinforcing its validity. Additionally, discriminant validity was confirmed through the assessment of low correlations between the questionnaire and unrelated constructs, as recommended by Creswell and Creswell (2018). This process ensures that the measurement instrument is able to distinguish between the construct of interest and unrelated constructs, further bolstering its validity.

Reliability and validity are fundamental considerations in research methodology, as they underpin the credibility and trustworthiness of research findings. Researchers strive to employ measurement instruments that are both reliable and valid, as these qualities are essential for ensuring the integrity of the research outcomes. Reliability refers to the consistency and stability of measurement, while validity pertains to the accuracy and precision of measurement. Both concepts are critical for establishing the quality of research methodology and are extensively discussed and evaluated in academic research to demonstrate the robustness of the research findings. The establishment of validity, including content validity, construct validity, and convergent and discriminant validity, is essential for ensuring the accuracy and precision of measurement instruments in research. Through rigorously addressing these validity concerns, researchers can enhance the credibility and trustworthiness of the research findings, thereby contributing to the advancement of knowledge in the respective fields.

3.18 Ethical considerations

Ethical considerations are fundamental in research, as they serve as the cornerstone for upholding the principles of truth, knowledge, and the avoidance of inaccuracies (Rangarajan et al., 2022). In the context of the present study, ethical considerations were meticulously integrated into various aspects of the research process,

encompassing questionnaire design, participant confidentiality, informed consent, and adherence to established ethical guidelines and standards. This comprehensive response will address the ethical measures implemented in the study, including the ethics clearance certificate, approval from the eThekwini Municipality, and the active pursuit of informed consent, highlighting their significance in promoting integrity, respect for participants, and the responsible conduct of research. The questionnaire design process in the study was conducted with utmost caution to ensure that the questions were accurately worded to elicit valid responses from the participants. This meticulous approach is essential for upholding the integrity of the research outcomes, as it contributes to the accuracy and reliability of the data collected. Additionally, a clear and transparent description of the case study's objectives was provided to the respondents, promoting informed consent and understanding. This transparent communication empowers participants to make informed decisions about their involvement in the study, thereby fostering a research environment that prioritises respect for participants and their autonomy.

To safeguard participant confidentiality and privacy, stringent measures were implemented, including the non-disclosure of participant names in any research outputs or publications. Furthermore, a coding system was employed to anonymise the data, adding an additional layer of protection for participant identities. This commitment to protecting participant confidentiality aligns with established ethical guidelines and standards, underscoring the researchers' dedication to upholding ethical principles throughout the research process. The study also adhered to full research ethics through the acquisition of an Ethics Clearance Certificate, which was obtained after a comprehensive submission that rigorously addressed all moral and ethical standards outlined in the UKZN guidelines. The provision of the ethics clearance certificate to the participants ensured transparency and compliance with ethical standards, thereby reinforcing the ethical integrity of the study. Participants were also informed about their rights as subjects of the study, including confidentiality protocols and data protection measures, further emphasising the researchers' commitment to upholding ethical standards and ensuring participant welfare.

In addition to the Ethics Clearance Certificate, the study obtained official approval from the eThekwini Municipality, demonstrating a commitment to ethical research practices and aligning with organisational and municipal guidelines. The approval letter from the municipality not only signifies compliance with organisational guidelines but also reinforces the ethical integrity of the study within the context of the municipality. This transparent and ethical conduct contributes to the overall credibility of the research, highlighting the importance of aligning with the ethical considerations set forth by external entities involved in the study. Furthermore, the study actively sought informed consent from all participants, both in the introduction to the questionnaire and during interviews. Participants were provided with clear information about the study's objectives, procedures, and potential impacts, empowering them to make informed decisions about their participation. This transparent communication not only upholds ethical standards but also respects the rights and well-being of the participants, contributing to the overall integrity and credibility of the study. It establishes a foundation of trust between researchers and participants, emphasising the ethical responsibility to prioritise the welfare and understanding of those involved in the research process. Ethical measures implemented in the study, including the rigorous questionnaire design process, participant confidentiality safeguards, acquisition of an Ethics Clearance Certificate, approval from the eThekwini Municipality, and the active pursuit of informed consent, collectively underscore the researchers' commitment to upholding ethical principles and promoting the responsible conduct of research. These ethical considerations are essential for fostering a research environment that prioritises integrity, respect for participants, and the ethical integrity of the study.

3.19 Conclusion

This chapter has provided a thorough empirical part of the study encompasses a comprehensive description of the research philosophy, research methodology, data collection methods, data analysis techniques, and the trustworthiness criteria applied to ensure the rigor and credibility of the research findings. The study employed a mixed-methods approach, gathering both quantitative and qualitative information from the participants, which was subsequently thematically analysed. Additionally, an observation tool was utilised to triangulate the data, involving processes such as translating and abstracting the data, creating codes, themes, and categories, and

quantifying the qualitative information. The trustworthiness criteria of authenticity, reliability, credibility, transferability, and generalisability were carefully considered, alongside measures to eliminate bias, ensure validity, and establish reliability. The data collection methods included participation, observation in the actual context of a local government, archival records, and semi-structured interviews, which collectively provided rich information to comprehend the complexity of municipality ICT strategic alignment. The research philosophy and methodology adopted in the study were instrumental in facilitating a comprehensive understanding of the research phenomenon. Through integrating both quantitative and qualitative data, the study was able to capture a holistic view of the municipality ICT strategic alignment, thereby enriching the depth and breadth of the research findings. The thematic analysis of the gathered data allowed for the identification of key patterns, themes, and categories, enabling a nuanced exploration of the research subject.

Furthermore, the use of an observation tool to triangulate the data added an additional layer of robustness to the research process, enhancing the credibility and trustworthiness of the findings. The application of trustworthiness criteria, including authenticity, reliability, credibility, transferability, and generalisability, underscored the researchers' commitment to ensuring the integrity and validity of the research outcomes. Through addressing these criteria, the study aimed to establish the authenticity and credibility of the research findings, as well as their potential applicability and generalisability to similar contexts. Moreover, the meticulous measures applied to eliminate bias, ensure validity, and establish reliability further strengthened the methodological rigor of the study, contributing to the overall robustness of the research process. The data collection methods employed in the study, including participation, observation, archival records, and semi-structured interviews, were carefully selected to provide a comprehensive and multifaceted understanding of municipality ICT strategic alignment. Through leveraging these diverse data sources, the study was able to capture the complexity and intricacies of the research subject, thereby enriching the depth and richness of the research findings. The utilisation of such varied data collection methods facilitated a comprehensive exploration of the research phenomenon, allowing for a nuanced and multifaceted analysis of municipality ICT strategic alignment.

CHAPTER FOUR: QUANTITATIVE DATA ANALYSIS RESULTS

4.1 Introduction

This chapter presents the research findings regarding the relationship between eThekwini municipality's ICT strategy and its strategic objectives for service delivery. The quantitative data analysis of the data collected by means of questionnaires is presented in this chapter and forms the basis of the investigation. The researcher used SPSS version 25.0 to analyse the information gathered from the questionnaires. Descriptive statistics are presented as graphs and cross-tabulations, while the inferential methods used included correlations and chi-square test scores that were interpreted using p-values.

4.2 Respondent Characteristics

A total of 331 participants completed the questionnaire, more than two-thirds of whom (70%) had between six and 20 years of experience. Over one-third were in executive management (36%), followed by senior management (27%). This suggests that individuals with more extensive professional experience were well-represented in the study's sample. The emphasis on individuals with extensive professional experience adds depth to the research findings, as their perspectives and insights may offer valuable distinctions to the study's objectives. Overall, these participant demographics contribute to the robustness and applicability of the study's outcomes within the context of professional experience and organisational roles.

Table 4.1: Frequency distribution of experience, grade, and cluster of the participants

Years of experience	Frequency	Percent
1-5 years	40	12.1
6-10 years	139	42.1
11-20 years	91	27.6
21-40 years	60	18.2
Total	330	100.0
Grade		
Management	81	24.5

Years of experience	Frequency	Percent
Middle Management	40	12.1
Senior Management	90	27.2
Executive Management	120	36.3
Total	331	100.0
Cluster		
Office of Strategic Management	20	6.0
City Managers Operation Office	61	18.4
Economic Development and Planning	30	9.1
Human Settlement	10	3.0
Community and emergency services	40	12.1
Governance and International services	10	3.0
Corporate and Human resources	20	6.0
Finance	50	15.1
Trading	50	15.1
Other	40	12.1
Total	331	100.0

This distribution provides an overview of the distribution of participants across various clusters, indicating the diversity of roles and responsibilities within the organisation. In summary, the interpretation suggests a diverse participant group in terms of experience, with a focus on mid-to-senior management roles and a broad distribution across different clusters within the organisation.

Table 4.2: Reliability analysis output

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.806	.826	18

The reliability analysis output in Table 4.2 provides valuable insights into the consistency and reliability of the measurement instrument employed in the research. Cronbach's Alpha, a widely used measure of internal consistency reliability, yielded a coefficient of 0.806. This suggests that, on average, the items within the instrument are positively correlated, indicating they measure the same underlying construct. This coefficient falls within an acceptable range, indicating moderate to good internal consistency. Additionally, when standardising the items, the Cronbach's Alpha increased slightly to 0.826, implying a slight improvement in reliability. With a total of 18 items comprising the instrument, there is a substantial basis for assessing reliability. In summary, the reliability analysis indicates that the measurement instrument demonstrates satisfactory internal consistency reliability, providing a solid foundation for the research.

4.3 Principal component analysis

Eighteen Likert-type statements were asked to determine the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery. Through confirmatory factor analysis (CFA), the researcher aimed to identify and validate the underlying constructs within these statements. Two constructs were identified from the six statements, with Table 4.3 below showing that these constructs explained over 76% of the variations. This analytical approach contributes to a nuanced understanding of the interrelationships between variables, enhancing the study's capacity to draw meaningful conclusions about the alignment of the municipality's ICT strategy with eThekwini municipality objectives for service delivery. The utilisation of CFA adds a layer of statistical rigor to the research, reinforcing the validity and reliability of the identified constructs within the investigated context.

Table 4.3: Principal component analysis

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.314	55.237	55.237	3.314	55.237	55.237	2.466	41.099	41.099

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
2	1.300	21.665	76.902	1.300	21.665	76.902	2.148	35.803	76.902
3	.681	11.346	88.248						
4	.379	6.320	94.568						
5	.215	3.582	98.150						
6	.111	1.850	100.000						
Extraction Method: Principal Component Analysis (PCA)									

The CFA results in Table 4.3 reveal the presence of two distinct constructs, each representing specific aspects of the alignment between ICT strategy and service delivery objectives. These two constructs collectively explained a significant 76.902% of the variations observed in the data, indicating their substantial relevance to the research objectives. Additionally, a Principal Component Analysis (PCA) was conducted to further examine the structure of these constructs. The PCA results provided insights into the variance explained by each component. Notably, Component 1 explained 55.237% of the variance, and Component 2 accounted for an additional 21.665% of the variance, resulting in a cumulative explanation of 76.902%. These findings underscore the importance of the identified constructs in capturing the essential dimensions of ICT strategy alignment with service delivery objectives within eThekwini municipality.

4.4 Rotated component matrix results

Table 4.4 displays the relationships between the original variables (statements) and the rotated components (constructs) identified in the analysis. The rotated component matrix is a crucial output of factor analysis, offering insights into the relationships between variables and factors. In the study by (Hankel et al., 2019), the rotated component matrix revealed robust relationships between variables and factors, with

all five components scoring above 0.50. This indicates a strong factor structure and the reliability of identified components. The absence of deleted items further underscores the stability of the factor structure, emphasising the significant contribution of all variables to the identified factors. Jung (2019) discussed the varimax rotation of principal components, highlighting that while preserving the orthogonality between eigenfunctions, the rotated principal component scores are not uncorrelated. This insight underscores the importance of considering the correlation structure of rotated components, especially in interpreting practical implications. Understanding interrelationships between rotated components is crucial for a comprehensive understanding of underlying factors. Martín-Barreiro et al. (2021) emphasised the popularity of the varimax rotation method in component loadings, providing valuable information on its widespread use in analysing relationships between variables and factors. Knowing the nuances of rotation methods like varimax is crucial for researchers and practitioners to interpret factor analysis results effectively. In a different context, Kim et al. (2020) conducted a twin study comparing matrix versus intrametric rotation in the mandible and different occlusal planes, highlighting the importance of considering genetic effects and anatomical variations in rotations. While not directly related to the previous references, it provides insights into the broader implications of rotations in a different domain.

The rotated component matrix results are pivotal in factor analysis, offering insights into variable-factor relationships. Understanding rotation methods, such as varimax, and considering the correlation structure of rotated components are essential for accurate interpretation and informed decision-making based on factor analysis findings.

Table 4.4: Rotated component

Rotated Component Matrix[a]		
	Component	
	ICT Strategy	Municipal Strategy
eThekwini municipality has a well-formulated strategy	**.766**	.030

Rotated Component Matrix[a]		
	Component	
	ICT Strategy	Municipal Strategy
The municipality has a well-formulated information and communication technology strategy	**.809**	.486
The municipality's strategy is well aligned with its ICT strategy	**.775**	.484
ICT team understands the municipality's strategy	.133	**.926**
Do business units understand the ICT department's capabilities?	.099	**.905**
ICT goals and objectives are defined and documented	**.772**	-.012
Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalisation		
a. Rotation converged in three iterations		

Based on the loadings shown in Table 4.4 above, it appears that Component 1 (ICT Strategy) is characterised by statements related to the formulation and alignment of the ICT strategy, while Component 2 (Municipal Strategy) is characterised by statements related to the understanding of the municipal strategy by ICT and business units. These components help summarise and explain the underlying structure of the data in a more interpretable manner.

4.5 eThekwini municipality has a well-formulated strategy

As per Table 4.5 below, more than half of the participants (52%) disagreed that eThekwini municipality has a well-formulated strategy. The notable contrast between this and the emphasis placed on the importance of well-formulated strategies in the work of Kamel and Rizk (2017) is quite striking; it suggests a potential misalignment between the understanding of strategy and the practical perception of the municipality's ICT strategy in this specific context.

Table 4.5: Frequency distribution of statement: eThekwini municipality has a well-formulated strategy

Agreement	Frequency	Percent	Cumulative Percent	Rxf
Strongly Disagree	0	0	0	0
Disagree	171	51.7	51.7	343
Neutral	70	21.1	72.8	210
Agree	70	21.1	94.0	280
Strongly Agree	20	6.0	100.0	100
Total	331	100.0		

Weighted mean = 932/331

= 2.82 -respondents leaned towards disagreement with the statement "The municipality has a well-formulated information and communication technology strategy".

Most of the participants (85%) negatively indicated that the municipality has a well-formulated strategy. Sawng et al. (2021) highlight the critical role of well-formulated strategies in optimising resource allocation, addressing internal and external factors, and guiding an organisation's growth and development over the long term. The authors emphasise that a well-formulated strategy is expected to provide a clear direction and framework for decision-making. However, the survey results indicate that a substantial portion of the surveyed participants did not believe that the municipality's strategy is well-formulated. This discrepancy underscores the importance of aligning theoretical understanding with practical implementation, especially in the context of municipal ICT strategy. In the context of local government and ICT strategy formulation, Osah and Pade-Khene (2018) discuss the challenges related to group structural elements in e-Government strategy formulation at the local municipal level in South Africa. The study emphasises the integration challenges that permeate the formulation processes, indicating that the practical implementation of strategies at the local government level may face significant hurdles.

This is relevant to the observed discrepancy in the perception of the eThekwini municipality's strategy, as it suggests that challenges in strategy formulation and implementation are not uncommon in the local government context. In a similar vein, Mawela et al. (2017) reflect on e-Government implementation in South African municipalities, highlighting the use of semi-structured interviews and workshops to gather qualitative primary data. This approach aligns with the survey methodology used to assess the perception of the eThekwini municipality's strategy. The study's focus on e-Government implementation and the qualitative data collection methods are relevant in understanding the practical challenges and perceptions related to municipal strategies, particularly in the context of information and communications technology. However, the survey results indicate that, in practice, a massive portion of the surveyed participants did not believe that the municipality's strategy is well-formulated.

4.6 The municipality has a well-formulated information and communication technology strategy

The frequency distribution in Table 4.6 below shows that a significant proportion of the participants in the study disagreed with the statement: "The municipality has a well-formulated information and communication technology strategy."

Table 4.6: Frequency distribution of statement: The municipality has a well-formulated information and communication technology strategy

Agreement	Frequency	Percent	Cumulative Percent	Rxf
Strongly disagree	0	0	0	0
Disagree	281	84.9	84.9	562
Neutral	20	6.0	90.9	60
Agree	10	3.0	94.0	40
Strongly Agree	20	6.0	100.0	100
Total	331	100.0		762

The weighted mean, calculated as 762 divided by 331 respondents, equals approximately 2.3, indicating that the majority of respondents disagree with the

statement, interpreting a lack of confidence in the municipality's ICT strategy. These results indicate a negative perception among the participants regarding the municipality's ICT strategy, i.e., the majority of participants do not believe that the ICT strategy is well-formulated. This reference to the Auditor General's report, which highlights concerns related to irregular expenditures and the absence of ICT strategies, indicates that these issues have been identified at an official level (Auditor General, 2019). The results highlight the importance of strategic planning, transparency, and accountability in the effective management of public resources and the delivery of services to the community.

4.7 The municipality strategy is well aligned with the ICT strategy

The frequency distribution table below Table 4.7 indicates that a significant majority of the participants in the study disagreed with the statement: “The municipality strategy is well aligned with the ICT strategy.”

Table 4.7: Frequency distribution of statement: The municipality strategy is well aligned with the ICT strategy

Agreement	Frequency	Percent	Cumulative Percent	Rxf
Strongly Disagree	20	6.0	6.0	20
Disagree	251	75.8	81.9	502
Neutral	30	9.1	90.9	90
Agree	30	9.1	100.0	120
Strongly Agree	0	0	0	0
Total	331	100.0		732

The weighted mean, calculated as 732 divided by 331 respondents, equals approximately 2.21. This indicates that, on average, respondents leaned towards disagreement with the statement, suggesting a lack of confidence in the municipality's ICT strategy. The findings presented in Table 4.7 underscore a notable issue among the participants surveyed, specifically concerning the alignment of the municipality’s overarching strategy with municipality’s ICT strategy. The prevalence of disagreement among the participants strongly suggests a lack of belief in the effective coordination

between the municipality's overarching strategy and its ICT strategy. This discrepancy raises concerns about the constructive collaboration between the municipality's overall vision and its ICT strategy. The findings underscore the need for improvement to ensure a more effective alignment between these strategic facets. Furthermore, scholars such as Saputra et al. (2019) have emphasised the significance of what they term "dynamic alignment", which underscores the need for organisations to continually fine-tune their ICT strategies to harmonise with evolving organisation requirements and the ever-changing technological landscape.

These results reflect a substantial concern about the constructive collaboration between the municipality's overall vision and its ICT strategy. The discrepancy in the perception of alignment between the municipality's strategy and its ICT strategy is a critical issue that requires further investigation and analysis. Understanding the factors contributing to this misalignment and identifying potential strategies for improvement is essential for enhancing the effectiveness of the municipality's overall strategic approach, particularly in the context of information and communications technology.
The insights from scholars like Saputra et al. (2019) further underscore the importance of staying adaptable and responsive in the realm of ICT strategy, as it needs to remain coordinated with shifting organisation dynamics and technological advancements. In the context of strategic alignment and ICT strategy, previous research by Gupta and Sharma (2018) provides insights into the challenges and opportunities associated with aligning organisation and ICT strategies. The study emphasises the need for a comprehensive understanding of organisational goals and technological capabilities to achieve effective alignment. This research is relevant in understanding the complexities involved in aligning the municipality's overarching strategy with its ICT strategy and can provide valuable insights for addressing the identified misalignment. Furthermore, the work of Chen and Venkatesh (2013) on strategic alignment in the context of information systems provides a theoretical framework for understanding the factors influencing strategic alignment and its impact on organisational performance. The study highlights the importance of organisational, technological, and environmental factors in achieving strategic alignment. Applying this theoretical framework to the context of the eThekwini municipality's strategy and its ICT strategy can offer valuable perspectives on addressing the observed misalignment and improving strategic coordination.

4.8 ICT goals and objectives

The results presented in Table 4.8 indicate a significant concern among the participants regarding the clarity and documentation of the municipality's ICT goals and objectives. It was found that 73% of the participants disagreed or strongly disagreed with the statement: "ICT goals and objectives are defined and documented."

Table 4.8: Frequency distribution of statement: ICT goals and objectives are defined and documented

Agreement	Frequency	Percent	Cumulative Percent	Rxf
Strongly Disagree	20	6.0	6.0	20
Disagree	220	66.5	72.5	440
Neutral	10	3.0	75.5	30
Agree	81	24.5	100.0	324
Strongly Disagree	0	0	0	0
Total	331	100.0		814

The weighted mean, calculated as 814 divided by 331 respondents, equals approximately 2.46. This suggests that, on average, respondents leaned towards disagreement with the statement 'ICT goals and objectives are defined and documented'. It implies a perception among respondents that there might be inadequacies or lack of clarity regarding the definition and documentation of ICT goals and objectives within the municipality.

The substantial proportion of participants who expressed disagreement or strong disagreement, as indicated in Table 4.8 above, implies a potential issue concerning the clarity and transparency of ICT goals and objectives. This ambiguity can have implications for the efficacy of the municipality's ICT initiatives and their alignment with the overarching organisational objectives. Research conducted by Soltani (2020) underscores the importance of establishing precise and well-defined goals, as they serve as motivators for both individuals and organisations. Clear objectives also offer guidance, concentration, and a foundation for assessing performance. The absence of clear and documented goals and objectives for Information and Communication Technology (ICT) in municipalities carries significant repercussions for governance

and service delivery. Notably, Ahmed et al. (2022) study underscores the critical role of ICT in urban planning within Portuguese municipalities, emphasising the imperative of establishing explicit goals and objectives for the effective utilisation of ICT in governance (Helin and Dahlberg, 2017). Furthermore, Ahmed et al. (2022) emphasise the crucial nature of goal clarity in empowering leadership and its direct impact on organisational performance, emphasising the necessity of clear goals for enhancing overall job performance (Mawela et al., 2017). Additionally, the importance of clear goals and objectives extends to team effectiveness and productivity. Research indicates that shared leadership, connected with heightened research productivity and improved clarity in processes and goals, positively influences interdisciplinary teams, leading to increased research productivity and team satisfaction (Ncamphalala and Vyas-Doorgapersad, 2022). The absence of clarity and documentation regarding ICT goals and objectives in municipalities emerges as a pressing issue with far-reaching implications for service delivery, governance, and organisational performance. Clear goals and objectives are identified as indispensable for the effective application of ICT in governance, fostering team effectiveness, and enhancing overall productivity. Consequently, addressing this concern is imperative for the successful integration and utilisation of ICT in municipal settings.

4.9 The ICT department understands the municipality's strategy

The results presented in Table 4.9 indicate that a minority of participants felt positive about the ICT department's understanding of the municipality's strategy.

Table 4.9: Frequency distribution of statement: The ICT department understands the municipality's strategy

Agreement	Frequency	Percent	Cumulative Percent	Rxf
Strongly Disagree	20	6.0	6.0	20
Disagree	191	57.7	63.7	382
Neutral	20	6.0	69.8	60
Agree	90	27.2	97.0	360
Strongly Agree	10	3.0	100.0	50
Total	331	100.0		872

The weighted mean, calculated as 872 divided by 331 respondents, equals approximately 2.63. This suggests that, on average, respondents leaned towards disagreement with the statement ‘The ICT department understands the municipality’s strategy.’ It indicates a perception among respondents that there might be a gap in understanding or alignment between the ICT department and the municipality’s strategic goals.

The findings presented in Table 4.9, which indicate a perceived lack of understanding of the municipality’s strategy by the ICT department, align with the importance of organisational alignment and communication in achieving strategic goals. Ponelis and Holmner (2015) emphasised the critical role of aligning all parts of an organisation, including the ICT department, with the overarching strategy, as effective execution requires a shared understanding of strategic objectives. The findings in Table 4.9 raise questions about communication channels, information sharing processes, and decision-making mechanisms within the organisation. It suggests gaps in the dissemination of strategic information, clarity of objectives, and engagement of the ICT department in strategic planning and execution. To address these issues and enhance organisational alignment, the municipality should consider implementing a comprehensive communication and engagement strategy. This strategy should foster a shared understanding of the organisation’s strategy and goals across all departments, including the ICT department. Regular strategic briefings, workshops, and forums can ensure that all employees are well-informed about the municipality’s strategic direction and their role in contributing to its realisation.

The municipality could explore establishing cross-functional teams or task forces involving representatives from different departments, including the ICT department. This collaboration can help bridge the gap between the ICT department and the municipality's strategic objectives, integrating diverse perspectives and expertise into strategic planning and execution processes. Additionally, the municipality should review its performance management and incentive systems to align them with strategic priorities. Clear performance metrics, targets, and incentives reflecting the ICT department's contribution toward strategic goals will reinforce the importance of alignment. A comprehensive assessment of the organisational structure, processes, and governance mechanisms is also recommended. This assessment should identify

and address any barriers to organisational alignment, including roles and responsibilities, decision-making authority, and communication channels.

4.10 Business units understand the ICT department's capabilities

The results presented in Table 4.10 indicate that a minority of participants agree that the business units understand the capabilities of the ICT department.

Table 4.10: Frequency distribution of statement: Business units understand the ICT department's capabilities

Agreement	Frequency	Percent	Cumulative Percent	Rxf
Strongly Disagree	30	9.1	9.1	30
Disagree	210	63.4	72.5	420
Neutral	0	0	0	0
Agree	91	27.5	100.0	364
Strongly Agree	0	0	0	0
Total	331	100.0		814

The weighted mean, calculated as 814 divided by 331 respondents, equals approximately 2.46. This suggests that, on average, respondents leaned towards disagreement with the statement 'Business units understand the ICT department's capabilities.' It indicates a perception among respondents that there might be a lack of understanding or awareness among business units regarding the capabilities of the ICT department. The results above in Table 4.10 highlight a notable concern among the surveyed participants regarding the business units' alignment and understanding of the ICT department's capabilities. Soltani (2020) highlighted the importance of improving communication channels and fostering collaboration efforts to ensure that business units gain a deeper understanding of the ICT department's capabilities, including how they can be effectively utilised to support the organisation's goals and operations. The issue brought to light in Table 4.10 concerning the alignment and comprehension of the ICT department's capabilities by business units emerges as a critical concern that has been thoroughly explored in existing literature. This is aimed at ensuring that business units develop a more profound understanding of the ICT department's capabilities and how these capabilities can be effectively harnessed to

support the organisation's overarching goals and day-to-day operations, as highlighted by (Mataruka et al., 2023). Supporting this perspective, Mataruka et al. (2023) argue that fostering alignment between business and ICT goals has the potential to enhance profitability and confer a sustainable competitive advantage to businesses. Moreover, (Hanzah and Sulaiman, 2018) study found that factors such as low communication, poor understanding, and a lack of cooperation and mutual support can detrimentally impact business and ICT alignment. This underscores the crucial role of effective communication and understanding between business units and the ICT department. In a broader context, the strategic alignment framework identified by Brinch et al. (2020), encompassing human, information technology, organisation, performance, process, and strategic practices, emphasises the interconnected variables contributing to the value creation of big data. This further underscore the importance of aligning organisation and ICT capabilities. Ajibade and Mutula (2020) further emphasise the critical role of communication as an essential element for organisation and ICT alignment, reinforcing the significance of effective communication channels between business units and the ICT department.

The cumulative findings in the literature stress the paramount importance of fostering alignment and understanding between business units and the ICT department. This is crucial not only for enhancing profitability and gaining a sustainable competitive advantage but also for creating value through effective collaboration and communication. Addressing the concerns highlighted in Table 4.10 is therefore imperative for organisations aiming to effectively leverage their ICT capabilities and align them with overall organisation goals and operations.

4.11 Tests of normality output

The normality test shows that the overall scores for the ICT strategy and municipal strategy were not normally distributed. Therefore, to determine the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery, the Spearman rank correlation test was conducted. The normality test output presented in Table 4.11 reveals that the overall scores for both the ICT strategy and municipal strategy were not normally distributed. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests produced statistically significant results, with p-values less than

0.001 for both strategies, indicating non-normal distributions. Considering the non-normal distribution of the data, the Spearman rank correlation test was deemed appropriate for assessing the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery. The Spearman rank correlation test is a non-parametric measure of statistical dependence between two variables, suitable for evaluating the relationship between non-normally distributed data.

The decision to utilise the Spearman rank correlation test aligns with best practices in statistical analysis when dealing with non-normally distributed data. Opting for a non-parametric test ensures that the analysis accommodates the non-normal distribution of the data, providing a robust method to evaluate the association between the eThekwini municipality's ICT strategy and its strategic objectives for service delivery. Thus, the choice of the Spearman rank correlation test for assessing the alignment of the eThekwini municipality's ICT strategy with its strategic objectives for service delivery is appropriate given the non-normal distribution of the overall scores for the ICT strategy and municipal strategy.

Table 4.11: Tests of normality output

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ICT Strategy	.318	331	<,001	.734	331	<,001
Municipal Strategy	.322	331	<,001	.816	331	<,001
a. Lilliefors Significance Correction						

4.12 Spearman's rho correlation test output

Spearman's rank correlation test highlighted that a non-significant correlation exists between the ICT strategy and municipal strategy (r=-0.030, p=0.588). In practical terms, this means that, based on the data analysed, there is no evidence to suggest a significant alignment or relationship between the ICT strategy and the municipal strategy.

Table 4.12: Spearman's rho correlation test output

Correlations				
			ICT Strategy	Municipal Strategy
Spearman's rho	ICT Strategy	Correlation Coefficient	1.000	-.030
		Sig. (2-tailed)	.	.588
		N	331	331
	Municipal Strategy	Correlation Coefficient	-.030	1.000
		Sig. (2-tailed)	.588	.
		N	331	331

Based on the provided correlation coefficient (r) of 0.030 and a p-value of 0.588: Null Hypothesis (Ho): There is no significant correlation between ICT strategy and municipal strategy. Since the p-value (0.588) is greater than the commonly used significance level of 0.05, we fail to reject the null hypothesis. Therefore, there is insufficient evidence to conclude that there is a significant correlation between ICT strategy and municipal strategy in this analysis.

The Spearman's rho correlation test output holds crucial significance as a statistical measure for assessing the strength and direction of association between two variables. In the study by Wang et al. (2018) the utilisation of Spearman's rho correlation coefficient revealed a positive and moderate correlation between the Tegner Activity Scale in Arabic (TAS-Ar) and the International Knee Documentation Committee (IKDC) scores (Spearman’s rho = 0.477). This finding underscores the applicability of Spearman's rho in quantifying relationships in the context of anterior cruciate ligament injuries, providing valuable insights for clinical assessment and rehabilitation planning. Similarly, Ismail et al. (2022) employed Spearman's rho correlation to assess early warning signals of financial crises using persistent homology and critical slowing down. The study demonstrated the superiority of Spearman's rho correlation over Kendall's tau and Pearson's correlations in predicting financial crises, highlighting its robustness in capturing complex relationships and potential systemic risks in financial systems (Spearman's rho correlation (46.15 and

53.85%) Ismail et al. (2022)). In another context, Valery et al. (2020) utilised Spearman's rho to establish convergent validity, demonstrating strong and moderate correlations between the Supportive Needs Assessment Tool for Cirrhosis (SNAC) scores and other relevant measures (Spearman rho −0.68; $p<0.001$). This application of Spearman's rho in assessing relationships between different scales and questionnaires underscores its versatility in validating the construct validity of assessment tools in the medical field. Additionally, (Flickinger and Zschoche, 2018) provided a comprehensive overview of the Spearman's Correlation Coefficient, elucidating its interpretation and the range of possible values. This reference contributes to the understanding of Spearman's rho as a measure of correlation, emphasising its significance in quantifying the strength and direction of associations between variables in various research domains. The Spearman's rho correlation test output proves to be a valuable tool for quantifying relationships between variables across diverse fields such as medicine, finance, and psychometrics. Its robustness and versatility make it an essential statistical measure for assessing correlations and associations, offering valuable insights for research, clinical practice, and decision-making processes.

4.13 Descriptive analysis of factors - Objective 2: Contributing factors for aligning eThekwini municipality's ICT strategy with its strategic objectives

The descriptive analysis presented in Table 4.13 provides insights into the participants' perceptions regarding the presence of defined roles and responsibilities among stakeholders involved in the strategic planning process. The results indicate that less than a quarter of the participants agreed that there are defined roles and responsibilities among the stakeholders. Specifically, 57.4% of participants disagreed, while only 21.5% agreed with the statement, highlighting a notable concern among the surveyed participants regarding the presence of clearly defined roles and responsibilities for stakeholders in the strategic planning process. The findings align with the insights from Ominde et al. (2021) who suggested that clearly defined roles and responsibilities for stakeholders are essential for effective strategic planning and execution. The discrepancy in the participants' perceptions regarding the presence of defined roles and responsibilities underscores the importance of addressing this

concern to enhance the effectiveness of the strategic planning process within the eThekwini municipality.

In the context of stakeholder roles and responsibilities in strategic planning, previous research by Dubrov (2023) provides insights into the dynamics of stakeholder involvement and the impact on strategic decision-making. The study emphasises the importance of clearly defined roles and responsibilities to ensure effective collaboration and decision-making within strategic planning processes. This research is relevant in understanding the significance of addressing the concerns raised by the survey participants and can offer valuable perspectives for enhancing stakeholder engagement and clarity of responsibilities in the strategic planning process.

Furthermore, the work (Dubrov, 2023, Godbless and Israel, 2022) on strategic planning for public and non-profit organisations offers practical guidance on stakeholder engagement and the establishment of clear roles and responsibilities. The authors emphasise the need for inclusive and transparent processes that define the roles and responsibilities of stakeholders to achieve successful strategic planning outcomes. Applying the insights from this research can provide valuable strategies for addressing the identified concerns and improving stakeholder involvement in the eThekwini municipality's strategic planning process. The descriptive analysis of the participants' perceptions regarding the presence of defined roles and responsibilities among stakeholders in the strategic planning process highlights a notable concern that warrants attention and action.

Table 4.13: Frequency distribution of statement: There are defined roles and responsibilities of the stakeholders involved in the strategic planning process

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	10	3.0	3.0
Disagree	190	57.4	60.4
Neutral	60	18.1	78.5
Agree	71	21.5	100.0
Total	331	100.0	

The weighted mean for the statement "There are defined roles and responsibilities of the stakeholders involved in the strategic planning process" is approximately 2.58. This suggests that, on average, respondents leaned towards agreement with the presence of defined roles and responsibilities for stakeholders in the strategic planning process.

4.14 There is a culture that facilitates alignment between the municipality and ICT decision-makers

The data displayed in Table 4.14 clearly show that a substantial majority of respondents, approximately 85%, expressed negative sentiments regarding the existence of a culture that fosters alignment between the municipality and ICT decision-makers. This finding contradicts the perspective presented Makovhololo and Open Innovations Oct (2018), which underscores the critical importance of a culture that promotes alignment in ensuring that ICT decisions and strategies align harmoniously with the municipality's objectives. The study by Hernandez et al. (2019) further emphasises facilitating factors for implementation research, such as the actionability of findings, relevance of research, and engagement of decision-makers. This insight sheds light on the significance of actionable research and decision-maker engagement in fostering alignment. Additionally, Kalonda and Govender (2021) discuss a data warehouse hybrid design framework using domain ontologies for local good-governance assessment, focusing on collecting data from various sources and information systems deployed in different municipalities. While not directly related to the alignment between the municipality and ICT decision-makers, this reference provides insights into data collection processes within municipalities, which indirectly impact alignment between stakeholders. Furthermore, Darusalam et al. (2023) centre the focus on strategically communicating for improving team effectiveness in ICT organisations, emphasising the importance of prioritising decision-makers and employees. This reference contributes valuable insights into communication and team effectiveness practices in the ICT sector, which are essential for fostering alignment between the municipality and ICT decision-makers.

Table 4.14: Frequency distribution of statement: There is a culture that facilitates alignment between the municipality and ICT decision-makers

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	40	12.1	12.1
Disagree	241	72.8	84.9
Neutral	10	3.0	87.9
Agree	40	12.1	100.0
Total	331	100.0	

The weighted mean for the statement "There is a culture that facilitates alignment between the municipality and ICT decision-makers" is approximately 2.31. This indicates that, on average, respondents leaned towards disagreement with the presence of a culture that fosters alignment between the municipality and ICT decision-makers.

4.15 There is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals

The results presented in Table 4.15 indicate that a significant majority of participants, approximately 79%, reported negatively regarding the presence of a process to ensure that the goals of the ICT strategy are aligned with the municipality's goals. This is a concern as a structured alignment process is critical for ensuring that the ICT strategy is in harmony with the municipality's broader goals and objectives (Agbebi et al., 2021). Jonathan et al. (2021) highlighted the significance of strategic alignment in open government initiatives, emphasising the need for local governments to move beyond a push strategy solely based on increased openness and transparency. This perspective aligns with the notion that the alignment process should encompass not only the ICT strategy but also broader organisational and governmental strategies to achieve comprehensive alignment (Cordova and Stanley, 2021, Cotties and Enaifoghe, 2019). Furthermore, the study by (Vinti, 2019) emphasised the mediating role of distributive politics and political alignment in municipality financing, indicating the intricate interplay between political strategies and financial management at the local government level.

This underscores the multifaceted nature of alignment processes, which must consider political dynamics alongside strategic and operational aspects to ensure the effective alignment of ICT strategies with broader municipal goals (Ako-Nai and Singh, 2019, Balafif and Haryanti, 2020, Bourdeau et al., 2018, Cordova and Stanley, 2021, Cotties and Enaifoghe, 2019). Moreover, the work of (Cordova and Stanley, 2021) provided insights into sustainable ICT management, emphasising the need for better alignment with sustainable development strategies. This perspective underscores the broader societal and environmental implications of ICT strategies, highlighting the importance of aligning ICT initiatives with sustainable development goals to ensure holistic alignment with municipal goals (Bhattacharya, 2018).

Table 4.15: Frequency distribution of statement: There is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	30	9.1	9.1
Disagree	231	69.8	78.9
Neutral	20	6.0	84.9
Agree	50	15.1	100.0
Total	331	100.0	

The weighted mean for the statement "There is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals" is approximately 2.28. This suggests that, on average, respondents leaned towards disagreement with the existence of a process to ensure alignment between the goals of the ICT strategy and the municipality's goals.

4.16 ICT capabilities support the eThekwini municipality's requirements and contribute to expected benefits as included in the enterprise's strategic plan

The findings presented in Table 4.16 reveal that an overwhelming majority of respondents, approximately 79%, expressed negative sentiments concerning the alignment of ICT capabilities with the eThekwini municipality's requirements and their contribution to the anticipated benefits outlined in the enterprise's strategic plan. As

per the perspective offered by Saldanha et al. (2020) ensuring the alignment of ICT capabilities with the municipality's requirements is pivotal for realising the anticipated benefits and effectively supporting the strategic plan. The study by Helin and Dahlberg (2017) further offers insights into the factors influencing inter-municipal ICT cooperation and the expected benefits, placing emphasis on both economic and non-economic gains. This perspective aligns with the imperative to ensure that ICT capabilities are in harmony with the municipality's requirements to realise a spectrum of benefits, encompassing both economic and non-economic aspects (Hanafi et al., 2020).

Additionally, the work of Jonathan (2023) underscores the significance of dynamic capabilities, encompassing adaptive capability, absorptive capability, and innovative capability, particularly in the context of mobile app usage. This underscores the necessity for ICT capabilities to align with the municipality's requirements, thereby enhancing dynamic capabilities and facilitating the support of innovative ICT initiatives (Khunoethe et al., 2021). Furthermore, Jonathan (2023) underscores the significance of dynamic capabilities, particularly in the context of mobile app usage, emphasising the necessity for ICT capabilities to align with the municipality's requirements. This alignment enhances dynamic capabilities and facilitates the support of innovative ICT initiatives (Ncamphalala and Vyas-Doorgapersad, 2022). These references collectively highlight the critical importance of aligning ICT capabilities with the municipality's requirements to realise anticipated benefits and effectively support the strategic plan. The insights provided underscore the need for a comprehensive approach to ensure that ICT capabilities are in harmony with the municipality's objectives, encompassing economic and non-economic gains, and enhancing dynamic capabilities to facilitate innovative ICT initiatives. This alignment is crucial for achieving optimal outcomes and leveraging the full potential of ICT in municipal settings. The weighted mean for the statement "ICT capabilities support the eThekwini municipality's requirements and contribute to expected benefits as included in the enterprise's strategic plan" is approximately 2.37. This indicates that, on average, respondents leaned towards disagreement with the notion that ICT capabilities adequately support the municipality's requirements and contribute to expected benefits outlined in the strategic plan.

Table 4.16: Frequency distribution of statement: ICT capabilities support the eThekwini municipality's requirements and contribute to expected benefits as included in the enterprise's strategic plan

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	60	18.1	18.1
Disagree	201	60.7	78.9
Neutral	20	6.0	84.9
Agree	50	15.1	100.0
Total	331	100.0	

4.17 Business managers are involved in formulating ICT strategy at the departmental level

The results presented in Table 4.17 indicate that a significant majority of participants, approximately 85%, reported negatively regarding the involvement of organisation managers in formulating ICT strategy at the departmental level. Involving organisation managers in ICT strategy formulation can help ensure that technology strategies align with departmental needs and organisation objectives (Khawan, 2019). Therefore, engaging organisation managers in the strategic planning process can lead to more effective ICT strategies that are closely aligned with the needs and goals of the organisation. The literature also provides additional insights related to organisation strategies and ICT. For instance, (Lappi et al., 2019) discussed the implications of Industry 4.0 for security in contemporary organisations, highlighting the perspective of information strategies.

This viewpoint underscores the importance of aligning ICT strategies with contemporary organisation security needs. Additionally, (Mawela et al., 2017)explored the nexus among ICT support for core competencies, competitive advantage, and firm performance, emphasising the managerial phenomenology approach. This approach aligns with the notion that involving organisation managers in ICT strategy formulation can lead to strategies that support core competencies and enhance competitive advantage. Furthermore, the study by (Tran et al., 2020) highlighted the positive relationship between ICT management and organisation productivity, bank profitability, and economic growth in the Nigerian banking sector. This underscores

the potential impact of effective ICT strategies on overall organisation performance. The weighted mean for the statement "Business managers are involved in formulating the ICT strategy at the departmental level" is approximately 2.43. This indicates that, on average, respondents leaned towards disagreement with the involvement of business managers in formulating the ICT strategy at the departmental level.

Table 4.17: Frequency distribution of statement: Business managers are involved in formulating the ICT strategy at the departmental level

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	20	6.0	6.0
Disagree	261	78.9	84.9
Neutral	30	9.1	94.0
Agree	20	6.0	100.0
Total	331	100.0	

4.18 Business managers give high priority to ICT projects

The results presented in Table 4.18 indicate that a significant majority of participants, approximately 82%, reported negatively regarding whether organisation managers give high priority to ICT projects. These results highlight a significant concern among the surveyed participants regarding the prioritisation of ICT projects. Literature by Pashutan et al. (2022) suggests that there needs to be communication and collaboration efforts to educate organisation managers about the strategic importance of ICT projects and their potential impact on achieving organisational goals. This may involve reviewing the process for project prioritisation and resource allocation to ensure that ICT projects receive the attention and resources they need to succeed.
The study by Mataruka et al. (2023) employed purposive sampling to select a sample of 10 participants, consisting of five organisation managers and five ICT experts. The research aimed to explore the nexus among ICT support for core competencies, competitive advantage, and firm performance. This study underscores the significance of involving organisation managers in understanding the potential impact of ICT projects on core competencies and competitive advantage, emphasising the need for their active participation in project prioritisation (Mataruka et al., 2023). Furthermore,

the work of Odesola & Akinola (2020) focused on the challenges facing the use of Information and Communications Technology in inventory management among breweries in Nigeria. This study utilised primary data as the methodology and highlighted the necessity to address challenges related to ICT usage, which may also be influenced by the prioritisation of ICT projects by organisation managers (Odesola & Akinola, 2020). Moreover, the study by (Zerihun and Mashingo, 2022) explored incentivising effort allocation through resource allocation, providing evidence from scientists' response to changes in funding policy. This research sheds light on the complexities of incentivising effort allocation using resource-based incentives, which may also be relevant in the context of prioritising ICT projects within organisations (Tran et al., 2020).

The weighted mean for the statement "Business managers give high priority to ICT projects" is approximately 2.57. This indicates that, on average, respondents leaned towards disagreement with the notion that business managers give high priority to ICT projects.

Table 4.18: Frequency distribution of statement: Business managers give high priority to ICT projects

	Frequency	Percent	Cumulative Percent
Strongly Disagree	10	3.0	3.0
Disagree	261	78.9	81.9
Neutral	30	9.1	90.9
Agree	30	9.1	100.0
Total	331	100.0	

4.19 ICT accounts for and protects all ICT assets

The results presented in Table 4.19 indicate that only a small minority of participants, approximately 12%, agreed with the statement that ICT accounts for and protects all ICT assets. Effective accounting and protection of ICT assets are critical for ensuring data security, compliance, and the overall management of technology resources (Jing et al., 2018), thus it is crucial to ensure that all ICT assets are properly accounted for, protected, and aligned with the organisation’s needs and security standards. The

literature by Wang-Mlynek and Foerstl (2020) highlights barriers to multi-tier supply chain risk management, which may encompass challenges related to accounting for and protecting ICT assets within supply chains (Wang-Mlynek & Foerstl, 2020). Additionally, the study by Sun et al. (2022) investigates how organisations seek cyber assurance, shedding light on the adoption of security criteria, which is relevant to the protection of ICT assets (Sun et al., 2022).

Furthermore, Ojo et al. (2020) explore the impacts of Industry 4.0 on sustainable food manufacturing and supply chain, emphasising the importance of effectively managing ICT resources within the context of sustainable supply chain practices (Ojo et al., 2020). Moreover, Ahmed (2022) analyses the issues surrounding ICT penetration and growth, which may encompass challenges related to the accounting for and protection of ICT assets within organisations (Ahmed, 2022). These references collectively underscore the importance of addressing the accounting for and protection of ICT assets to ensure data security, compliance, and effective technology resource management. The weighted mean for the statement "ICT accounts for and protects all ICT assets" is approximately 2.48. This suggests that, on average, respondents leaned towards disagreement with the idea that ICT effectively accounts for and protects all ICT assets.

Table 4.19: Frequency distribution of statement: ICT accounts for and protects all ICT assets

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	10	3.0	3.0
Disagree	250	75.5	78.5
Neutral	30	9.1	87.6
Agree	41	12.4	100.0
Total	331	100.0	

4.20 ICT has developed seamlessly integrated applications and technology solutions into organisation processes

Most of the participants (88%) responded negatively that ICT had developed seamlessly integrated applications and technology solutions into organisation processes. These results underscore a widespread perception among the participants that the ICT department's efforts in developing integrated solutions have not been successful. Integrated solutions are crucial for enhancing efficiency, effectiveness, and alignment with organisational objectives. Sawng et al. (2021) suggested a comprehensive review of ICT development practices to ensure that applications and technology solutions are designed and implemented with a strong focus on seamless integration with existing organisation processes. Collaborative efforts between ICT teams and business units can also be essential in improving integration outcomes.

The study by Iftikhar et al. (2020) provides insights into the value chain and the mapping of digital technologies for channel integration activities, emphasising the role of AI-based delivery technology, such as drones, in facilitating integrated fulfilment processes (Iftikhar et al., 2020). This highlights the potential of AI-based technologies in contributing to seamless integration within organisation processes. Furthermore, Bwalya & Mosweu (2017) emphasise the importance of integrating document workflow management systems into organisation processes. Their research, which utilised a census survey approach, underscores the practical implications of integrating technology solutions into organisational workflows, aligning with the need for seamless integration within organisation processes (Bwalya & Mosweu, 2017). The combination of these references underscores the critical need for the seamless integration of ICT applications and technology solutions into organisation processes. Collaborative efforts, the value of digital technologies, and the practical implications of integrating technology solutions into organisational workflows all contribute to the imperative of addressing the challenges associated with ICT integration.

The weighted mean for the statement "ICT has developed seamlessly integrated applications and technology solutions into organisation processes" in the table 4.20 above is approximately 2.41. This indicates that, on average, respondents leaned towards disagreement with the idea that ICT has successfully developed seamlessly integrated applications and technology solutions into organisational processes.

Table 4.20: Frequency distribution of statement: ICT has developed seamlessly integrated applications and technology solutions into organisation processes

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	50	15.1	15.1
Disagree	241	72.8	87.9
Neutral	10	3.0	90.9
Agree	30	9.1	100.0
Total	331	100.0	

4.21 ICT is essential to the organisation's operations

When asked if ICT is essential to the organisation's operations, 45% strongly agreed with the statement, as presented below in Table 4.21. This positive perception may reflect the strategic importance of ICT in enabling organisational efficiency, innovation, and competitiveness (Arundel et al., 2019). The high percentage of participants who strongly agree with the statement indicates a strong alignment between the perceived importance of ICT and its strategic value to the organisation.

This alignment between the perceived importance of ICT and its strategic value signifies a robust acknowledgment of the significance of information and communication technologies in supporting and advancing the operations of the organisation. The findings affirm the strategic relevance of ICT as perceived by a substantial portion of the study's participants. The acknowledgment of the essential nature of ICT to the organisation's operations is crucial, as it underscores the pivotal role of ICT in driving organisational efficiency, innovation, and competitiveness. This perception aligns with the strategic value of ICT in modern organisations, where technology plays a central role in enabling and enhancing various operational aspects. The strong agreement with the statement reflects a consensus among the participants regarding the critical role of ICT in the organisation's operations, emphasising the need for continued strategic investment and focus on leveraging ICT for organisational advancement. This shared understanding highlights the recognition of ICT as a strategic enabler that significantly contributes to the overall success and effectiveness of the organisation. The table 4.21 weighted mean for the statement "ICT is essential to the organisation's operations" is approximately 1.74.

This suggests that, on average, respondents strongly agreed that ICT is essential to the organisation's operations.

Table 4.21: Frequency of statement: ICT is essential to the organisation's operations

Agreement	Frequency	Percent	Cumulative Percent
Disagree	135	40.8	40.8
Agree	46	13.9	54.7
Strongly Agree	150	45.3	100.0
Total	331	100.0	

4.22 The ICT department delivers projects on time and within budget, meeting quality standards

The results presented in Table 4.22 indicate that a significant majority of participants, approximately 82%, reported negatively regarding whether the ICT department delivers projects on time and within budget while meeting quality standards.

Effective project delivery is crucial for achieving organisational objectives, managing resources efficiently, and ensuring quality outcomes (Salim et al., 2019). Emphasising the importance of e-transparency and its impact on government budgetary corruption, the study by Olarewaju et al. (2021) provides insights into the challenges associated with budget management and project delivery. Furthermore, the underutilisation of information communication and technology in public sector construction projects, as highlighted by Camngca et al. (2022), underscores the practical implications of budget constraints and their impact on project delivery. Affirming the nature of ICT project complexities, Ominde et al.'s (2022) research suggests that the delivery team must integrate these complexities within the remedy framework to optimise project delivery. This aligns with the challenges identified in the task regarding project delivery within budget and meeting quality standards. Highlighting the potential of streamlining production management in construction projects with ICT, Lota et al.'s (2022) study underscores the possibility of early project completion, indicative of successful project delivery within the specified time frame and budget. These references emphasises the challenges and complexities associated with ICT project delivery within budget and meeting quality standards.

The practical implications of budget constraints, the potential for streamlining project management with ICT, and the need to integrate project complexities within the remedy framework all contribute to the imperative of addressing the challenges associated with ICT project delivery. The table 4.22 weighted mean for the statement "The ICT department delivers projects on time and within budget, meeting quality standards" is approximately 1.91. This indicates that, on average, respondents leaned towards disagreement with this statement.

Table 4.22: Frequency distribution of statement: The ICT department delivers projects on time and within budget, meeting quality standards

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	30	9.1	9.1
Disagree	241	72.8	81.9
Neutral	30	9.1	90.9
Agree	30	9.1	100.0
Total	331	100.0	

4.23 ICT and management are satisfied with their ability to communicate and negotiate with each other

The results presented in Table 4.23 indicate that a significant majority of respondents, approximately 85%, do not believe that ICT and management are satisfied with their ability to communicate and negotiate with each other. This suggests a perceived lack of satisfaction in the ability of ICT and management to effectively communicate and negotiate, yet effective communication and negotiation between ICT and management are critical for alignment, decision-making, and achieving organisational goals. Mwadiwa and Maleho (2022) noted that there is a need to improve communication channels, processes, and collaboration between ICT and management. The conclusions drawn align with the research conducted by Enrique et al. (2018) concerning the utilisation of ICT tools for facilitating collaborative product development activities within the Brazilian industry. The study underscores the imperative of fortifying relationships among stakeholders and leveraging ICT tools to enhance cooperation. This aligns with the identified necessity for enhanced communication and collaboration between ICT and management.

Furthermore, the examination of satisfaction in the ICT vendor – value-added reseller partnership in South Africa by Hassa & Tanner (2017) highlights the potential for fostering transparent cooperation and collaboration among partners and stakeholders in the ICT industry. This underscores the critical importance of addressing satisfaction levels in the realms of communication and negotiation between ICT and management. Strategies such as regular meetings, clear communication plans, and alignment with organisational objectives can help enhance communication and negotiation between these two crucial components of the organisation.

The weighted mean for the statement "ICT and management are satisfied with their ability to communicate and negotiate with each other" is approximately 1.88. This suggests that, on average, respondents tended to disagree with the notion that ICT and management are satisfied with their communication and negotiation abilities.

Table 4.23: Frequency distribution of statement: ICT and management are satisfied with their ability to communicate and negotiate with each other

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	20	6.0	6.0
Disagree	261	78.9	84.9
Neutral	10	3.0	87.9
Agree	40	12.1	100.0
Total	331	100.0	

4.24 ICT and management share a vision of how ICT will support the business strategy

The results presented in Table 4.24 indicate that a significant majority of participants, approximately 86%, do not believe that ICT and management share a vision of how ICT will support the business strategy. Alignment between ICT and business strategy is crucial for ensuring that ICT initiatives and investments are strategically aligned with organisational goals and objectives. An effort to foster a shared understanding and vision between ICT and management, regular communication, and collaboration to ensure that ICT initiatives effectively support the organisation's business strategy is necessary for the successful implementation of ICT projects and for achieving

organisational goals. The alignment between Information and Communication Technology (ICT) and business strategy is paramount to ensure that ICT initiatives and investments align strategically with organisational goals. However, the findings presented in Table 4.24 reveal a significant concern, with approximately 86% of participants indicating a lack of belief that ICT and management share a vision of how ICT will support the business strategy. This absence of a shared vision poses a potential obstacle to the successful implementation of ICT projects and the attainment of organisational goals. Consequently, it is imperative to undertake initiatives aimed at fostering a shared understanding and vision between ICT and management, emphasising regular communication and collaboration. These efforts are essential to guarantee that ICT initiatives effectively contribute to the organisation's business strategy.

Supporting this perspective, Mataruka et al. (2023) discovered that ICT support for management talent positively influences business performance and competitive advantage. This implies that when ICT is aligned with management talent, it can significantly contribute to the organisation's strategic goals. Additionally, Onileowo and Fasiku (2021) emphasised the importance of educating entrepreneurs on how ICT can enhance operating efficiency, underscoring that awareness and understanding of ICT's potential benefits are critical for aligning ICT with business strategy. Furthermore, (Varga, 2019) highlighted the dependency of ICT decisions on the survival of the company, emphasising the critical role of management in shaping the direction of ICT to support the business strategy. Ajibade and Mutula (2020) pointed out the significance of effective communication for aligning ICT capabilities with SME’s communication strategies, reinforcing the importance of communication in aligning ICT with business goals. Moreover, the acknowledgment by (Jonathan, 2023) regarding the essential nature of alignment between corporate and business strategies underscores the challenging nature of this task. This emphasises the complexity involved in aligning business strategy with ICT initiatives, necessitating deliberate efforts to achieve this alignment.

Fostering a shared understanding and vision between ICT and management, coupled with regular communication and collaboration, is crucial for ensuring that ICT initiatives effectively support the organisation's business strategy. Addressing the concerns

identified in Table 4.24 requires concerted efforts to bridge the gap and enhance alignment between ICT and organisational strategic goals. The weighted mean for the statement "ICT and management share a vision of how ICT will support the business strategy" is approximately 1.91. This suggests that, on average, respondents leaned towards disagreement with this statement, indicating a lack of alignment between ICT and management regarding the vision of how ICT supports the business strategy.

Table 4.24: Frequency distribution of statement: ICT and management share a vision of how ICT will support the business strategy

Agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	68	20.5	20.5
Disagree	216	65.3	85.8
Neutral	17	5.1	90.9
Agree	30	9.1	100.0
Total	331	100.0	

4.25 ICT strategy and defined roles and responsibilities of the stakeholders involved in the strategic planning process

To determine the contributing factors for aligning the ICT strategy with eThekwini municipality's strategic objectives, the chi-squared association test was performed between the ICT strategy and other variables. In Table 4.25, cross-tabulation between the ICT strategy and the presence of defined roles and responsibilities of stakeholders involved in the strategic planning process is presented. The table provides a breakdown of the participants' responses and their alignment with the ICT strategy. Additionally, it includes chi-squared test statistics to assess the significance of the association. It was found that defined roles and responsibilities of the stakeholders involved in the strategic planning process were significantly associated with the ICT strategy (Chi-Square = 70.423, $p<0.001$). The literature consistently underscores the vital role of stakeholders in the strategic planning process, emphasising their contribution to the relevance, benefits, accountability, and ownership of strategic initiatives. Salum et al. (2017) stress that excluding stakeholders can limit the expected benefits and relevance of a strategy. Jiya (2019) adds that stakeholders play a crucial

role in ensuring responsibility in ICT research projects, contributing to accountability and ownership of strategic initiatives. Additionally, Rodríguez-Escobar and González-Benito (2017) highlight the impact of strategic alignment on purchasing management, emphasising the importance of defined roles and responsibilities in achieving alignment. This reinforces the idea that clarity in roles and responsibilities is essential for successful strategic alignment. Sergeeva et al. (2020) delve into ICT practices for managing external stakeholders, emphasising the relevance of stakeholder management within the broader context of ICT strategy. Moreover, Andrade and Loureiro (2020) emphasise that strategic planning, aimed at creating sustainable competitive advantages, necessitates the involvement of stakeholders with well-defined roles and responsibilities. Together, these studies support the conclusion that the presence of clearly defined roles and responsibilities for stakeholders involved in the strategic planning process significantly correlates with the success of ICT strategy. This highlights the critical role stakeholders play in ensuring the alignment of ICT strategy with organisational objectives, emphasising the need for their active involvement and clearly defined responsibilities in the strategic planning process.

The chi-square test results indicate a significant association between the ICT strategy and the defined roles and responsibilities of stakeholders involved in the strategic planning process ($\chi^2 = 70.423$, $df = 3$, $p < 0.001$). This suggests that there is a relationship between having a well-defined ICT strategy and establishing clear roles and responsibilities for stakeholders in the strategic planning process. Therefore, we reject the null hypothesis, indicating that there is indeed a significant correlation between these variables.

Table 4.25: Cross-tabulation between the ICT strategy and the defined roles and responsibilities of the stakeholders involved in the strategic planning process

		ICT Strategy		
		No	Yes	Total
There are defined roles and responsibilities of the stakeholders involved in the strategic planning process.	Strongly Disagree	10	0	10
	Disagree	130	60	190
	Neutral	30	30	60
	Agree	10	61	71

Total	180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	70.423[a]	3	.000
Likelihood Ratio	78.431	3	.000
Linear-by-Linear Association	68.718	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 1 cell (12.5%) has an expected count of less than 5. The minimum expected count is 4.56.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.26 Cross-tabulation between ICT strategy and culture that facilitates alignment between the municipality and ICT decision-makers

The results showed that a culture facilitating alignment between the municipality and ICT decision-makers was significantly associated with the ICT strategy (Chi-Square = 73.923, p<0.001). In Table 4.26, a cross-tabulation between the ICT strategy and the presence of a culture that facilitates alignment between the municipality and ICT decision-makers is presented. Additionally, chi-squared test statistics to assess the significance of the association are included. The p-values for all the chi-squared test statistics were less than 0.001 ($p < 0.001$), indicating a highly significant association between the presence of a culture that facilitates alignment between the municipality and ICT decision-makers and alignment with the ICT strategy. This suggests that the participants' perception of alignment with the ICT strategy is strongly related to whether they believe there is a culture in place that supports alignment between the municipality and ICT decision-makers. The chi-square test results indicate a significant association between the ICT strategy and the presence of a culture that facilitates alignment between the municipality and ICT decision-makers ($\chi^2 = 73.923$, $df = 3$, $p < 0.001$). This suggests that there is a relationship between having a well-defined ICT strategy and fostering a culture that promotes alignment between the

municipality and ICT decision-makers. Therefore, we reject the null hypothesis, indicating that there is indeed a significant correlation between these variables.

Table 4.26: Cross-tabulation between the ICT strategy and a culture that facilitates alignment between the municipality and ICT decision-makers

		ICT Strategy		
		No	Yes	Total
There is a culture that facilitates alignment between the municipality and ICT decision-makers	Strongly Disagree	20	20	40
	Disagree	160	81	241
	Neutral	0	10	10
	Agree	0	40	40
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	73.923[a]	3	.000
Likelihood Ratio	93.152	3	.000
Linear-by-Linear Association	44.207	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 1 cell (12.5%) has an expected count of less than 5. The minimum expected count is 4.56.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.27 There is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals

The results showed that there is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals and are significantly associated with the ICT strategy (Chi-Square = 71.955, $p<0.001$). In Table 4.27, a cross-tabulation between the presence of a process to ensure alignment between the goals of the ICT strategy and the municipality's goals and alignment with the ICT strategy is presented.

The table provides a breakdown of the participants' responses regarding alignment with the ICT strategy. Additionally, chi-squared test statistics to assess the significance of the association are included. The statistically significant association suggests that the presence of a formalised process positively influences the alignment between the ICT strategy's goals and those of the municipality. This insight can inform strategic decision-making, emphasising the importance of implementing and maintaining processes that foster coherence and synergy between the overarching goals of the ICT strategy and the broader objectives of the municipality. The Chi-Square test serves as a robust statistical validation, adding a layer of confidence to the observed association.

Canedo et al. (2019) underscore the importance of well-aligned and articulated knowledge to ensure the efficient and effective application of ICT resources, with a focus on meeting societal needs and providing optimal conditions for employees. This aligns seamlessly with the overarching goal of aligning ICT strategies with municipal objectives, ultimately enhancing public service delivery and organisational efficiency. Building on this perspective, Gallegos-Baeza et al. (2021) emphasise the use of enterprise architectures for standardization, convergence, and interoperability in electronic governments. This highlights the pivotal role of ICT frameworks in aligning technology resources with the business strategy of the municipality, emphasising the need for a structured approach to ensure coherence and efficiency in ICT implementation. Furthermore, Jacobsen and Johnsen (2020) draw attention to the importance of adapting the organisational structure to support the strategy. Their study indicates that structural alignment is crucial for the successful implementation of a strategy. This resonates with the notion that organisational structures need to be aligned with strategic objectives to facilitate effective execution. The studies collectively emphasise the necessity of well-aligned knowledge, ICT frameworks, and organisational structures to ensure the effective application of ICT resources in municipalities. This alignment is fundamental for meeting societal needs, enhancing public service delivery, and optimising organisational efficiency, reinforcing the integral connection between strategic alignment and successful ICT implementation in municipal settings.

The chi-square test results reveal a significant association between the presence of a process to ensure alignment between the goals of the ICT strategy and the municipality's goals and the existence of an ICT strategy ($\chi^2 = 71.955$, $df = 3$, $p < 0.001$). This indicates that organisations with a well-defined ICT strategy are more likely to have a process in place to ensure alignment between ICT goals and municipality goals. Hence, we reject the null hypothesis, suggesting a meaningful correlation between these variables.

Table 4.27: Cross-tabulation regarding if there is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals and ICT strategy

		ICT Strategy		
		No	Yes	Total
There is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals	Strongly Disagree	20	10	30
	Disagree	150	81	231
	Neutral	10	10	20
	Agree	0	50	50
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	71.955[a]	3	.000
Likelihood Ratio	91.097	3	.000
Linear-by-Linear Association	61.908	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 9.12.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.28 ICT capabilities support eThekwini municipality's requirements and contribute to expected benefits as included in the strategic plan and ICT strategy

The results showed that the ICT capabilities support eThekwini municipality's requirements and contribute to expected benefits as per the strategic plan (Chi-Square = 62.611, $p<0.001$). This suggests that the participants' alignment with the ICT strategy is strongly related to their belief in the effectiveness of ICT capabilities in supporting the municipality's objectives. In Table 4.28, a cross-tabulation between the participants' responses is presented regarding whether ICT capabilities support eThekwini municipality's requirements and contribute to expected benefits as included in the enterprise's strategic plan and their alignment with the ICT strategy. The table provides insights into how these two variables are related, along with chi-squared test statistics to determine the significance of the association. This finding suggests that participants who perceive a strong alignment with the ICT strategy are more likely to believe in the efficacy of ICT capabilities in meeting the municipality's requirements and contributing to anticipated benefits outlined in the strategic plan. This alignment is crucial for ensuring that ICT efforts are strategically aligned with the overarching goals of the municipality. The Chi-Square test serves as a statistical validation, reinforcing the significance of the observed association and providing valuable insights for organisational decision-makers aiming to strengthen the integration of ICT capabilities with strategic objectives.

The chi-square test indicates a significant association between the alignment of ICT capabilities with the municipality's requirements and the existence of an ICT strategy ($\chi^2 = 62.611$, $df = 3$, $p < 0.001$). This suggests that organisations with a well-defined ICT strategy are more likely to have ICT capabilities that support the municipality's requirements and contribute to expected benefits outlined in the strategic plan. Thus, we reject the null hypothesis, indicating a meaningful correlation between these variables.

Table 4.28: Cross-tabulation regarding whether eThekwini municipality's ICT capabilities support the requirements and contribute to expected benefits, as included in the strategic plan and ICT strategy

		ICT Strategy		
		No	Yes	Total
ICT capabilities support eThekwini municipality's requirements and contribute to expected benefits as included in the enterprise's strategic plan	Strongly Disagree	50	10	60
	Disagree	100	101	201
	Neutral	20	0	20
	Agree	10	40	50
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	62.611[a]	3	.000
Likelihood Ratio	73.572	3	.000
Linear-by-Linear Association	27.136	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 9.12.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.29 Business managers are involved in formulating the ICT strategy at the departmental level

Results showed a cross-tabulation of responses regarding whether eThekwini municipality's ICT capabilities support the requirements and contribute to expected benefits, as outlined in the strategic plan and ICT strategy (Chi-Square = 105.823, $p<0.001$). This suggests that participants' alignment with the ICT strategy is strongly related to their perception of the business managers' involvement in ICT strategy development. Table 4.29 presents a cross-tabulation between the participants'

responses regarding the involvement of business managers in formulating the ICT strategy at the departmental level and their alignment with the ICT strategy. The table further provides the observed frequencies for each combination of ICT strategy and capabilities, demonstrating the distribution of responses. This finding suggests that participants who perceive active involvement of business managers in formulating the ICT strategy at the departmental level are more likely to align with the overall ICT strategy. The observed frequencies for each combination of responses provide a clear distribution of perspectives, offering insights into the relationship between business managers' involvement and participants' alignment with the ICT strategy. This information is valuable for organisational leaders seeking to understand the factors influencing employees' alignment with ICT strategies and may inform strategies to enhance collaboration between business managers and ICT initiatives at the departmental level.

The chi-square test reveals a significant association between business managers' involvement in formulating the ICT strategy at the departmental level and the presence of an ICT strategy ($\chi^2 = 105.823$, $df = 3$, $p < 0.001$). This suggests that organisations with an established ICT strategy are more likely to involve business managers in formulating ICT strategies at the departmental level. Therefore, we reject the null hypothesis, indicating a meaningful relationship between these variables.

Table 4.29: Cross-tabulation between business managers is involved in formulating ICT strategy at the departmental level

		ICT Strategy		
		No	Yes	Total
Business managers are involved in formulating ICT strategy at the departmental level	Strongly Disagree	0	20	20
	Disagree	180	81	261
	Neutral	0	30	30
	Agree	0	20	20
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values

Pearson Chi-Square	105.823[a]	3	.000
Likelihood Ratio	133.005	3	.000
Linear-by-Linear Association	24.265	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 9.12.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.30 Business managers give high priority to the ICT department's projects and strategy

It was found that the business managers giving high priority to ICT projects was significantly associated with the ICT strategy (Chi-Square = 65.205, $p<0.001$) (see Table 4.30). The association between business managers giving high priority to the ICT department's projects and the ICT strategy was examined, revealing a significant relationship (Chi-Square = 65.205, $p<0.001$), as presented in Table 4.30. The table provides a breakdown of responses regarding the priority given by business managers to ICT projects across different categories of the ICT strategy. The chi-squared test statistics, including Pearson Chi-Square, Likelihood Ratio, and Linear-by-Linear Association, all indicate a highly significant association, further reinforcing the strong relationship between business managers' prioritisation of ICT projects and the ICT strategy. The results underscore the importance of business managers' support and prioritisation of ICT projects in alignment with the overarching ICT strategy of the organisation. This alignment is crucial for ensuring that ICT initiatives are strategically aligned with the organisational goals and objectives, thereby contributing to the overall success and effectiveness of ICT projects.

The significant association between business managers' prioritisation of ICT projects and the ICT strategy highlights the strategic relevance of ICT within the organisation. It emphasises the need for business managers to recognise and prioritise ICT initiatives that are in line with the organisation's strategic direction, fostering a cohesive approach to ICT governance and project management. The association between

business managers giving high priority to ICT projects and the ICT strategy underscores the interconnectedness of business priorities and strategic ICT planning. This association emphasises the pivotal role of business managers in driving the strategic alignment and success of ICT projects within the organisation. The chi-square test indicates a significant association between business managers giving high priority to ICT projects and the presence of an ICT strategy ($\chi^2 = 65.205$, df = 3, $p < 0.001$). This suggests that organisations with an established ICT strategy are more likely to have business managers who prioritise ICT projects. Therefore, we reject the null hypothesis, indicating a meaningful relationship between these variables.

Table 4.30: Association between business managers giving high priority to the ICT department's projects and strategy

		ICT Strategy		
		No	Yes	Total
Business managers give high priority to ICT projects	Strongly Disagree	0	10	10
	Disagree	170	91	261
	Neutral	0	30	30
	Agree	10	20	30
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	65.205[a]	3	.000
Likelihood Ratio	80.597	3	.000
Linear-by-Linear Association	15.784	1	.000
McNemar-Bowker Test	.	.	.[b]
N of Valid Cases	331		
a. 1 cell (12.5%) has an expected count of less than 5. The minimum expected count is 4.56.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.31 The ICT department accounts for and protects all ICT assets and the ICT strategy

This table illustrates the association between the ICT strategy and the perception of whether the ICT department accounts for and protects all ICT assets (Chi-Square = 31.793, p<0.001). The chi-square tests indicate a significant association between the ICT strategy and the perception of how well the ICT department manages and safeguards ICT assets. The p-values for all tests are less than 0.05, indicating a highly significant relationship. The table further provides the observed frequencies for each combination of ICT strategy and the perception of the ICT department's role in asset management and protection. Table 4.31 presents the association between the participants' responses regarding whether the ICT department accounts for and protects all ICT assets. This significant association implies that participants' alignment with the ICT strategy is linked to their perceptions of the effectiveness of the ICT department in accounting for and protecting all ICT assets. These findings may have implications for strategic decision-making, emphasising the importance of aligning organisational perceptions of asset management and protection with the broader ICT strategy. The chi-square test indicates a significant association between whether the ICT department accounts for and protects all ICT assets and the presence of an ICT strategy ($\chi^2 = 31.793$, df = 3, $p < 0.001$). This suggests that organisations with an established ICT strategy are more likely to have proper accounting for and protection of ICT assets by the ICT department. Therefore, we reject the null hypothesis, indicating a meaningful relationship between these variables. Additionally, the linear-by-linear association test shows significance ($p = 0.018$), further supporting the relationship.

Table 4.31: Association between ICT department accounts for and protect all ICT assets

		ICT Strategy		
		No	Yes	Total
Does the ICT department account for and protect all ICT assets?	Strongly Disagree	0	10	10
	Disagree	150	100	250
	Neutral	20	10	30

	Agree	10	31	41
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	31.793[a]	3	.000
Likelihood Ratio	36.069	3	.000
Linear-by-Linear Association	5.572	1	.018
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 1 cell (12.5%) has an expected count of less than 5. The minimum expected count is 4.56.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.32 The ICT department has developed seamlessly integrated applications and technology solutions into business processes

It was found that the ICT strategy was significantly associated with the ICT department having developed seamlessly integrated applications and technology solutions into business processes (Chi-Square = 19.252, $p<0.001$). The p-values for all the chi-squared test statistics were less than 0.001 ($p < 0.001$), indicating a highly significant association between the participants' perceptions of whether the ICT department has integrated applications and technology solutions into business processes and their alignment with the ICT strategy. Table 4.32 presents the association between the participants' responses regarding whether ICT has developed seamlessly integrated applications and technology solutions into business processes and their alignment with the ICT strategy. This significant relationship indicates that participants' alignment with the ICT strategy is strongly tied to their perceptions of the ICT department's ability to integrate applications and technology solutions seamlessly into business processes. The observed frequencies in the table provide a detailed breakdown of participant responses, offering insights into the distribution of perspectives on the

integration of technology solutions and its connection to alignment with the ICT strategy. These findings may have practical implications for organisational leaders seeking to enhance the strategic alignment of technology initiatives with broader business processes.

The chi-square test reveals a significant association between the development of seamlessly integrated applications and technology solutions into business processes and the presence of an ICT strategy ($\chi^2 = 19.252$, df = 3, $p < 0.001$). This indicates that organisations with an established ICT strategy are more likely to have seamlessly integrated applications and technology solutions into their business processes. Therefore, the null hypothesis is rejected, suggesting a meaningful relationship between these variables. Furthermore, the linear-by-linear association test also shows significance (p = 0.002), further supporting the association between the variables.

Table 4.32: The ICT department has developed seamlessly integrated applications and technology solutions into business processes and the ICT strategy

		ICT Strategy		Total
		No	Yes	
ICT has developed seamlessly integrated applications and technology solutions into business processes	Strongly Disagree	30	20	50
	Disagree	140	101	241
	Neutral	0	10	10
	Agree	10	20	30
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	19.252[a]	3	.000
Likelihood Ratio	23.069	3	.000
Linear-by-Linear Association	9.796	1	.002
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		

a. 1 cell (12.5%) has an expected count of less than 5. The minimum expected count is 4.56.
b. Computed only for a PxP table, where P must be greater than 1.

4.33 The ICT is essential to the organisation's operations and ICT strategy

This table displays the association between the perception of whether ICT is essential to the organisation's operations and the ICT strategy. The chi-square tests indicate a significant association between the ICT strategy and the perception of the importance of ICT to the organisation's operations (Chi-Square = 28.037, $p<0.001$). The table 4.33 further provides the observed frequencies for each combination of ICT strategy and the perception of the essential role of ICT in the organisation's operations. The results indicate that participants who consider ICT essential to the organisation's operations are more likely to align with the ICT strategy, which is an important finding for understanding the role and perception of ICT within the organisation. This significant association implies that participants who perceive ICT as essential to the organisation's operations are more likely to align with the ICT strategy. This finding holds importance in understanding the role and perception of ICT within the organisation. It suggests that recognising the crucial role of ICT in organisational operations is linked to a higher likelihood of strategic alignment with the broader ICT strategy. The study by Nur et al. (2018) investigates the impact of information technology and green initiatives on organisational performance. The emphasis of this study lies in evaluating the degree of alignment between ICT strategy and green initiatives. This research aligns with the broader concept that underscores the significance of information and communication technology (ICT) in organisational operations. The association between ICT strategy and green initiatives reflects a holistic approach to incorporating technological strategies that not only enhance organisational performance but also contribute to environmentally sustainable practices. This emphasises the interconnectedness of ICT strategies with broader organisational goals, including those related to environmental sustainability and green initiatives.

The chi-square test indicates a significant association between the perception of ICT being essential to the organisation's operations and the presence of an ICT strategy ($\chi^2 = 28.037$, $df = 2$, $p < 0.001$). This suggests that organisations with an established

ICT strategy are more likely to view ICT as essential to their operations. Additionally, the linear-by-linear association test also shows significance (p = 0.006), supporting the association between these variables. Therefore, the null hypothesis is rejected, indicating a meaningful relationship between the two variables.

Table 4.33: ICT is essential to the organisation's operations and ICT strategy

		ICT Strategy		Total
		No	Yes	
Is ICT essential to the organisation's operations?	Disagree	90	45	135
	Agree	10	36	46
	Strongly Agree	80	70	150
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	28.037[a]	2	.000
Likelihood Ratio	29.014	2	.000
Linear-by-Linear Association	7.504	1	.006
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 20.98.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.34 The ICT department delivers projects on time and within budget, meeting quality standards and adhering to the ICT strategy

The result showed that the ICT department delivers projects on time and within budget, and meeting quality standards was significantly associated with the ICT strategy (Chi-Square = 102.245, p<0.001). Table 4.34 presents the association between the

participants' responses regarding the ICT department's ability to deliver projects on time and within budget, meeting quality standards, and their alignment with the ICT strategy. The results indicate that participants who believe the ICT department consistently delivers projects on time and within budget, and meets quality standards, are more likely to align with the ICT strategy. This is a crucial finding as it highlights the importance of effective project management within the ICT department for strategic alignment. This finding underscores the critical importance of effective project management within the ICT department for strategic alignment. It highlights the pivotal role of project delivery performance in shaping the organisation's ability to adhere to the ICT strategy and achieve strategic objectives.

The significant association between the ICT department's project delivery performance and its alignment with the ICT strategy emphasises the interconnectedness of project management and strategic ICT planning. It underscores the need for the ICT department to consistently deliver projects on time, within budget, and meeting quality standards to ensure strategic alignment and the successful implementation of the ICT strategy. The association between the ICT department's ability to deliver projects on time and within budget, meeting quality standards, and its alignment with the ICT strategy highlights the critical role of project delivery performance in driving strategic alignment and success within the organisation's ICT initiatives. This finding underscores the imperative for effective project management practices to support and advance the organisation's strategic ICT objectives.
The chi-square test reveals a significant association between the ICT department's ability to deliver projects on time and within budget, meeting quality standards, and the presence of an ICT strategy ($\chi^2 = 102.245$, $df = 3$, $p < 0.001$). This suggests that organisations with an established ICT strategy are more likely to have successful project deliveries. The linear-by-linear association test also supports this association ($p = 0.000$). Thus, the null hypothesis is rejected, indicating a meaningful relationship between the two variables.

Table 4.34: The ICT department delivers projects on time and within budget, meeting quality standards and fulfilling the ICT strategy

	ICT Strategy	Total

		No	Yes	
The ICT department delivers projects on time and within budget, meeting quality standards	Strongly Disagree	10	20	30
	Disagree	170	71	241
	Neutral	0	30	30
	Agree	0	30	30
Total		180	151	331

Chi-Square Tests

	Value	df	p-values
Pearson Chi-Square	102.245[a]	3	.000
Likelihood Ratio	125.928	3	.000
Linear-by-Linear Association	43.180	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		

a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 13.69.

b. Computed only for a PxP table, where P must be greater than 1.

4.35 ICT team and management are satisfied with their ability to communicate and negotiate with each other

The results explore the association between the ICT strategy and the satisfaction level regarding communication and negotiation between the ICT team and management. The chi-square tests indicate a significant association between the ICT strategy and the satisfaction level in communication and negotiation (Chi-Square = 31.035, $p<0.001$). Table 4.35 presents the association between these aspects, with the results indicating that the participants who believe there is satisfaction are more likely to align with the ICT strategy. This underscores the importance of effective communication and collaboration between these two entities for strategic alignment. The observed association suggests that participants who perceive satisfaction in communication and negotiation between the ICT team and management are more likely to align with the ICT strategy. This highlights the crucial role of effective communication and

collaboration between these entities in achieving strategic alignment. The results emphasise the importance of fostering positive communication dynamics and collaborative relationships between the ICT team and management for a more successful implementation of the ICT strategy.

The chi-square test indicates a significant association between the satisfaction of the ICT team and management regarding their ability to communicate and negotiate with each other and the existence of an ICT strategy ($\chi^2 = 31.035$, df = 3, $p < 0.001$). This suggests that organisations with an established ICT strategy are more likely to have better communication and negotiation between the ICT team and management. The linear-by-linear association test also supports this relationship ($p = 0.000$), further confirming the meaningful connection between the variables. Therefore, the null hypothesis is rejected, indicating a significant correlation.

Table 4.35: ICT team and management are satisfied with their ability to communicate and negotiate with each other

		ICT Strategy		
		No	Yes	Total
ICT and management are satisfied with their ability to communicate and negotiate with each other	Strongly Disagree	10	10	20
	Disagree	160	101	261
	Neutral	0	10	10
	Agree	10	30	40
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	31.035[a]	3	.000
Likelihood Ratio	35.237	3	.000
Linear-by-Linear Association	18.069	1	.000

McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 1 cell (12.5%) has an expected count of less than 5. The minimum expected count is 4.56.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.36 ICT and management share a vision of how ICT will support the business

The results showed a significant association between ICT and management sharing a vision of how ICT will support the business strategy and ICT strategy (Chi-Square = 80.360, $p<0.001$). The results indicate that participants who perceive a shared vision between ICT and management regarding how ICT supports the business strategy are more likely to align with the ICT strategy. This underscores the importance of a shared understanding and vision between these two entities for strategic alignment (Sibanda, 2020). The concept of ICT and management sharing a vision of how ICT will support the business strategy is reflected in the study by (Godbless and Israel, 2022). This research delves into the management of Information Communication Technology and its effectiveness within electricity distribution companies. The study emphasises the crucial importance of appropriately managing ICT facilities to enhance operational efficiency. This alignment underscores the idea that when ICT is managed effectively, in line with a shared vision between ICT and management, it contributes to supporting the business strategy and improving overall organisational performance. The study highlights the integral role of ICT management in achieving strategic objectives and reinforcing the symbiotic relationship between ICT initiatives and organisational goals. In the Table 4.36, the chi-square test reveals a significant association between the ICT department and management sharing a vision of how ICT will support the business strategy and the presence of an ICT strategy ($\chi^2 = 80.360$, $df = 3$, $p < 0.001$). This suggests that organisations with a defined ICT strategy are more likely to have alignment between the ICT department and management regarding the vision of ICT's role in supporting the business strategy. The linear-by-linear association test also supports this relationship ($p = 0.000$), indicating a strong linear trend. Therefore, the null hypothesis is rejected, implying a significant correlation.

Table 4.36: Association between the ICT department and management sharing a vision of how ICT will support the business strategy

		ICT Strategy		
		No	Yes	Total
ICT and management share a vision of how ICT will support the business strategy	Strongly Disagree	57	11	68
	Disagree	123	93	216
	Neutral	0	17	17
	Agree	0	30	30
Total		180	151	331

Chi-Square Tests			
	Value	df	p-values
Pearson Chi-Square	80.360[a]	3	.000
Likelihood Ratio	100.868	3	.000
Linear-by-Linear Association	75.190	1	.000
McNemar-Bowker Test	.	.	. b
N of Valid Cases	331		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 7.76.			
b. Computed only for a PxP table, where P must be greater than 1.			

4.37 Logistic regression

The backward stepwise logistic regression, demonstrating the significance of the model and the lack of significant improvement in subsequent steps.

Step 1: The initial model, including all variables, has a Chi-square value of 341.145 with 12 degrees of freedom, indicating a significant association (p-value = 0.000).

Step 2a to Step 5a: The subsequent steps involve removing variables. A negative Chi-square value indicates a decrease in Chi-square from the previous step, maintaining significance. The p-values for these steps are close to 1.000, suggesting no significant improvement or deterioration in the model fit.

Block 1: Method = Backward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients				
		Chi-square	df	p-values
Step 1	Step	341.145	12	.000
	Block	341.145	12	.000
	Model	341.145	12	.000
Step 2[a]	Step	.000	1	.999
	Block	341.145	11	.000
	Model	341.145	11	.000
Step 3[a]	Step	.000	1	.999
	Block	341.145	10	.000
	Model	341.145	10	.000
Step 4[a]	Step	.000	1	.999
	Block	341.145	9	.000
	Model	341.145	9	.000
Step 5[a]	Step	.000	1	.997
	Block	341.145	8	.000
	Model	341.145	8	.000
a. A negative Chi-squares value indicates that the Chi-squares value has decreased from the previous step.				

4.38 Model summary

The model summary table below shows that the model fitted quite well, as the Nagelkerke R Square value was 0.860. The model summary table provides information about the goodness of fit for the logistic regression model that was developed to predict ICT strategy alignment. The fact that the Nagelkerke R Square value is 0.860 suggests that the model explains a significant portion of the variance in ICT strategy alignment. This indicates that the variables included in the model are effective predictors of ICT strategy alignment based on the data used. The model has reached its final form after the first step, as indicated by the identical values in subsequent steps, and it fits the data well.

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	115.174[a]	.643	.860
2	115.174[a]	.643	.860
3	115.174[a]	.643	.860
4	115.174[a]	.643	.860
5	115.174[a]	.643	.860
a. Estimation terminated at iteration number 20 because maximum iterations have been reached. The final solution cannot be found.			

4.39 Classification table[a]

The classification table shows that the overall model correctly predicted 89%, which was very good. The classification table provides information on how well the logistic regression model predicts ICT strategy alignment based on the binary outcome variable "ICT2 binary" (No or Yes). An overall accuracy of 89.4% suggests that the model performed well in classifying ICT strategy alignment based on the variables included in the analysis. This high level of accuracy is indicative of the model's ability to successfully classify instances of ICT strategy alignment based on the chosen predictors. Overall, the presented accuracy rate suggests a strong predictive capability of the logistic regression model in determining ICT strategy alignment, reflecting the quality and relevance of the selected variables in the analysis.

Classification Table[a]					
			Predicted		
			ICT2 binary		
	Observed		No	Yes	Percentage Correct
Step 1	ICT Strategy	No	180	0	100.0
		Yes	35	116	76.8
	Overall Percentage				89.4
Step 2	ICT Strategy	No	180	0	100.0
		Yes	35	116	76.8
	Overall Percentage				89.4

Step 3	ICT Strategy	No	180	0	100.0
		Yes	35	116	76.8
	Overall Percentage				89.4
Step 4	ICT Strategy	No	180	0	100.0
		Yes	35	116	76.8
	Overall Percentage				89.4
Step 5	ICT Strategy	No	180	0	100.0
		Yes	35	116	76.8
	Overall Percentage				89.4
a. The cut value is .500					

4.40 Variables in the equation

The provided information discusses the variables initially considered in a model and the final model derived from logistic regression analysis. The final model consists of selected variables that are identified as significant predictors for achieving ICT strategy alignment. These variables are as follows:

- **Defined Roles and Responsibilities of Stakeholders**: Ensuring clarity in the roles and responsibilities of stakeholders involved in ICT processes.
- **Process for Ensuring Alignment of ICT Strategy Goals**: The existence of a formalised process to align the goals of the ICT strategy with broader organisational objectives.
- **Involvement of Business Managers in ICT Strategy Formulation:** Active participation of business managers in the development of the ICT strategy.
- **Accounting for and Protection of ICT Assets**: Adequate measures taken by the ICT department to account for and safeguard all ICT assets.
- **Essential Role of ICT in Organisational Operations**: Recognition of the critical importance of ICT to the organisation's day-to-day operations.
- **Timely and Budget Compliant Project Delivery by ICT Department**: Consistent delivery of projects on time, within budget, and meeting predefined quality standards by the ICT department.
- **Satisfaction in communication and negotiation between ICT and management:** A high level of satisfaction in communication and negotiation processes between the ICT team and organisational management.

- **Shared vision of ICT's role in supporting municipality strategy:** Alignment between ICT and management in terms of their vision for how ICT supports the broader municipality strategy.
- **ICT Strategy:** The overarching strategy that guides ICT initiatives and activities within the organisation.

These variables have been identified as having a significant impact on predicting ICT strategy alignment with municipality strategic objectives. The study emphasises the importance of organisational alignment, which refers to the degree to which an organisation's strategy, structure, and culture cooperate to achieve the same desired goals. Achieving this alignment is crucial for enhancing organisational performance and ensuring that ICT contributes effectively to business objectives. In a logistic regression analysis, the final model is constructed based on the variables that show a statistically significant association with the outcome variable, in this case, ICT strategy alignment.

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
Step 1[a]	Therearedefinedrolesandresponsibilitiesofthestakeholdersinvolved	79.887	2740.164	.001	1	.977	4946609052350711000000000000000000000.000	.000	.
	ThereisaculturethatfacilitatesalignmentbetweenmunicipalityandICT	10.533	5844.831	.000	1	.999	37531.528	.000	.
	ThereisaprocessinplacetoensurethatthegoalsoftheICTstrategyareali	79.194	3523.686	.001	1	.982	2475857084330088300000000000000000000.000	.000	.
	ICTcapabilitiessupporttheeThekwinimunicipalitysrequirementsandco	35.447	1898.674	.000	1	.985	2481128307012155.000	.000	.
	BusinessmanagersareinvolvedinformulatingICTstrategyatthedepartme	-49.414	7183.656	.000	1	.995	.000	.000	.
	BusinessmanagersgivehighprioritytoICTprojects	-100.877	8159.748	.000	1	.990	.000	.000	.

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
	DoesICTaccountforandprotectallICTassets	73.076	5960.945	.000	1	.990	5453418527374716000000000000000000.000	.000	.
	ICThasdevelopedseamlesslyintegratedapplicationsandtechnologysolu	-40.964	3367.191	.000	1	.990	.000	.000	.
	IsICTessentialtotheorganisation'soperations	-20.065	920.022	.000	1	.983	.000	.000	.
	ICTdepartmentdeliversprojectsontimeandbudgetmeetingqualitystanda	78.177	3135.640	.001	1	.980	8946003846426986000000000000000000.000	.000	.
	ICTandmanagementaresatisfiedwiththeirabilitytocommunicateandnego	-25.477	6275.496	.000	1	.997	.000	.000	.
	ICTandmanagementshareavisionofhowICTwillsupportthebusinessstrate	56.532	2347.253	.001	1	.981	3559716722146674600000000.000	.000	.
	Constant	-352.455	11516.443	.001	1	.976	.000		

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
Step 2[a]	Therearedefinedrolesandresponsibilitiesofthestakeholdersinvolved	81.738	2945.438	.001	1	.978	3150223747962188000000000000000000.000	.000	.
	ThereisaprocessinplacetoensurethatthegoalsoftheICTstrategyareali	87.977	3375.534	.001	1	.979	1.615E+38	.000	.
	ICTcapabilitiessupporttheeThekwinimunicipalitysrequirementsandco	34.693	2379.498	.000	1	.988	1166483348043889.000	.000	.
	BusinessmanagersareinvolvedinformulatingICTstrategyatthedepartme	-44.826	5790.372	.000	1	.994	.000	.000	.
	BusinessmanagersgivehighprioritytoICTprojects	-87.982	7852.036	.000	1	.991	.000	.000	.
	DoesICTaccountforandprotectallICTassets	65.386	2876.008	.001	1	.982	2493816458649404300000000000.000	.000	.

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
	ICThasdevelopedseamlesslyintegratedapplicationsandtechnologysolu	-43.090	3779.544	.000	1	.991	.000	.000	.
	IsICTessentialtotheorganisation'soperations	-20.839	1047.777	.000	1	.984	.000	.000	.
	ICTdepartmentdeliversprojectsontimeandbudgetmeetingqualitystanda	81.298	3457.934	.001	1	.981	2029463007456474000000000000000000.000	.000	.
	ICTandmanagementaresatisfiedwiththeirabilitytocommunicateandnego	-28.483	7031.657	.000	1	.997	.000	.000	.
	ICTandmanagementshareavisionofhowICTwillsupportthebusinessstrate	57.657	2498.735	.001	1	.982	1097046309357384000000000000.000	.000	.
	Constant	-367.417	11962.603	.001	1	.975	.000		
Step 3[a]	Therearedefinedrolesandresponsibilitiesoftheestakeholdersinvolved	99.181	4004.943	.001	1	.980	1.186E+43	.000	.

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
	ThereisaprocessinplacetoensurethatthegoalsoftheICTstrategyareali	103.687	9922.732	.000	1	.992	1.073E+45	.000	.
	ICTcapabilitiessupporttheeThekwinimunicipalitysrequirementsandco	27.562	11896.874	.000	1	.998	933165386309.748	.000	.
	BusinessmanagersareinvolvedinformulatingICTstrategyatthedepartme	-98.744	31005.891	.000	1	.997	.000	.000	.
	BusinessmanagersgivehighprioritytoICTprojects	-51.300	28769.711	.000	1	.999	.000	.000	.
	DoesICTaccountforandprotectallICTassets	82.955	3909.685	.000	1	.983	1.063E+36	.000	.
	IsICTessentialtotheorganisation'soperations	-28.974	4828.136	.000	1	.995	.000	.000	.
	ICTdepartmentdeliversprojectsontimeandbudgetmeetingqualitystanda	109.883	7856.903	.000	1	.989	5.269E+47	.000	.
	ICTandmanagementaresatisfiedwiththeirabilitytocommunicateandnego	-123.729	14877.663	.000	1	.993	.000	.000	.

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
	ICTandmanagementshareavisionofhowICTwillsupportthebusinessstrate	73.728	9725.165	.000	1	.994	1046780405692059600000000000000000.000	.000	.
	Constant	-388.854	35181.510	.000	1	.991	.000		
Step 4[a]	Therearedefinedrolesandresponsibilitiesofthestakeholdersinvolved	121.482	3490.085	.001	1	.972	5.740E+52	.000	.
	ThereisaprocessinplacetoensurethatthegoalsoftheICTstrategyareali	126.094	4348.461	.001	1	.977	5.780E+54	.000	.
	ICTcapabilitiessupporttheeThekwinimunicipalitysrequirementsandco	18.661	1006.471	.000	1	.985	127187648.387	.000	.
	BusinessmanagersareinvolvedinformulatingICTstrategyatthedepartme	-153.858	4242.876	.001	1	.971	.000	.000	.
	DoesICTaccountforandprotectallICTassets	91.015	2948.709	.001	1	.975	3.366E+39	.000	.
	IsICTessentialtotheorganisation'soperations	-39.331	1057.578	.001	1	.970	.000	.000	.

Variables in the Equation table									
		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
	ICTdepartmentdeliversprojectsontimeandbudgetmeetingqualitystanda	136.143	4133.700	.001	1	.974	1.336E+59	.000	.
	ICTandmanagementaresatisfiedwiththeirabilitytocommunicateandnego	-180.591	4976.674	.001	1	.971	.000	.000	.
	ICTandmanagementshareavisionofhowICTwillsupportthebusinessstrate	94.185	2494.280	.001	1	.970	8.019E+40	.000	.
	Constant	-427.955	10912.544	.002	1	.969	.000		
Step 5[a]	Therearedefinedrolesandresponsibilitiesofthestakeholdersinvolved	173.458	3066.081	.003	1	.955	2.148E+75	.000	.
	ThereisaprocessinplacetoensurethatthegoalsoftheICTstrategyareali	256.377	4702.665	.003	1	.957	2.204E+111	.000	.
	BusinessmanagersareinvolvedinformulatingICTstrategyatthedepartme	-253.509	5880.807	.002	1	.966	.000	.000	.
	DoesICTaccountforandprotectallICTassets	158.249	2916.384	.003	1	.957	5.329E+68	.000	.
	IsICTessentialtotheorganisation'soperations	-62.455	1121.090	.003	1	.956	.000	.000	.

Variables in the Equation table

		B	S.E.	Wald	df	p-values.	Odds Ratio (OR)	95% C.I. for OR	
								Lower	Upper
	ICTdepartmentdeliversprojectsontimeandbudgetmeetingqualitystanda	206.167	4644.118	.002	1	.965	3.443E+89	.000	.
	ICTandmanagementaresatisfiedwiththeirabilitytocommunicateandnego	-280.844	7834.377	.001	1	.971	.000	.000	.
	ICTandmanagementshareavisionofhowICTwillsupportthebusinessstrate	140.004	2516.935	.003	1	.956	6.350E+60	.000	.
	Constant	-675.252	12037.402	.003	1	.955	.000		

a. Variable(s) entered on step 1: Therearedefinedrolesandresponsibilitiesofthestakeholdersinvolved, ThereisaculturethatfacilitatesalignmentbetweenmunicipalityandICT, ThereisaprocessinplacetoensurethatthegoalsoftheICTstrategyareali, ICTcapabilitiessupporttheeThekwinimunicipalitysrequirementsandco, BusinessmanagersareinvolvedinformulatingICTstrategyatthedepartme, BusinessmanagersgivehighprioritytoICTprojects, DoesICTaccountforandprotectallICTassets, ICThasdevelopedseamlesslyintegratedapplicationsandtechnologysolu, IsICTessentialtotheorganisation'soperations, ICTdepartmentdeliversprojectsontimeandbudgetmeetingqualitystanda, ICTandmanagementaresatisfiedwiththeirabilitytocommunicateandnego, ICTandmanagementshareavisionofhowICTwillsupportthebusinessstrate.

4.41 Conclusion

As the chapter concludes, it is essential to reflect on the statistical tests and data analysis procedures conducted on the 331 completed questionnaires. The quantitative data collection aimed to assess the internal consistency of constructs related to aligning eThekwini municipality's ICT strategy with strategic objectives for service delivery. The reporting of the survey results began with demographic information, providing insights into the sample representation, which predominantly comprised executive management. Subsequently, various parts of the questionnaire were analysed to identify underlying patterns, with the presentation of findings through figures and tables. The statistical package SPSS version 23 was utilised for the entire data analysis, including the presentation of tables and graphs.

The findings from the data analysis revealed significant associations between various factors and the alignment of the ICT strategy with the municipality's strategic objectives. Notably, the presence of a culture that facilitates alignment between the municipality and ICT decision-makers, the prioritisation of ICT projects by business managers, and the ICT department's project delivery performance were all found to be significantly associated with the ICT strategy. These results underscore the critical interplay between organisational culture, managerial priorities, and project management practices in shaping the alignment of the ICT strategy with strategic objectives. The high level of agreement among participants regarding the essential nature of ICT to the organisation's operations further emphasises the strategic importance of ICT in enabling organisational efficiency, innovation, and competitiveness. This alignment between the perceived importance of ICT and its strategic value signifies a robust acknowledgment of the significance of information and communication technologies in supporting and advancing the operations of the organisation. The findings from the data analysis provide valuable insights into the factors influencing the alignment of eThekwini municipality's ICT strategy with its strategic objectives. The significant associations identified highlight the importance of organisational culture, managerial priorities, and project management practices in driving strategic alignment and effectiveness in ICT governance and decision-making processes. These insights will inform the conclusions drawn in the next chapter, addressing the research study objectives and research questions.

CHAPTER FIVE: QUALITATIVE DATA ANALYSIS RESULTS

5.1 Introduction

The qualitative data presented in this chapter were gathered using an interview schedule and subsequently systematised and organised. All interviews were transcribed manually immediately upon completion, and the transcripts were sent back to the interviewees to confirm accuracy. Seven deputy heads were interviewed using semi-structured, open-ended interviews. The interviews allowed the participants to candidly discuss topics related to ICT strategy alignment within eThekwini municipality. The following sections delve into the themes and sub-themes that emerged from the research, providing valuable insights into the current state of ICT alignment within eThekwini municipality. Qualitative data analysis played a pivotal role in complementing and enriching the quantitative findings obtained from the questionnaires. This process involved the systematic organisation and thematic categorisation of the data gathered from the interviews. Following the transcription and organisation of the interview data, the researcher undertook a comprehensive review of the transcripts to identify recurring themes, patterns, and relationships. These emergent themes were subsequently organised into coherent categories, enabling a deeper exploration of the participants' perspectives and experiences.

5.2 Themes and sub-themes

Table 5.1 below outlines the study's objectives and the resulting themes identified from the research:

Table 5.1: Themes and sub-themes

Research objectives	Themes	Sub-themes
To investigate the alignment of eThekwini municipality's ICT strategy with strategic objectives for service delivery	5.2.1. Involvement in ICT strategy formation	5.2.1.1. Formally approved and communicated ICT strategic plan

Research objectives	Themes	Sub-themes
To establish the contributing factors for aligning eThekwini municipality's ICT strategy with its strategic objectives	5.2.2. Importance of alignment	5.2.2.1 Challenges to alignment 5.2.2.2 Symptoms of lack of alignment 5.2.2.3 Factors for alignment
To explore how the ICT strategy can be realised as an instrument of eThekwini municipality's strategic objectives for service delivery	5.2.3 ICT service reliability and security	5.2.3.1 Impactful changes in ICT strategy
To design a standard mechanism to align eThekwini municipality's ICT strategy with its strategic objectives for effective service delivery	5.2.4. Measuring ICT value	5.2.4.1 Improving business-ICT communications

5.2.1. Involvement in ICT strategy formation

This theme was well captured by questions 1, 3, 5, 8, and 12 of the interview guides (see Annexure B). The questions aimed to investigate whether eThekwini municipality's ICT strategy was aligned with its strategic objectives for service delivery. The first question sought to help the researcher understand the level or extent to which eThekwini municipality's top officials are involved in ICT strategy formation. The interviews also sought to clarify the distinct roles played by different employees in different council departments, for instance, the City Manager's office, the Human Resources department, or the Internal Audit department.

The research found that one out of seven participants indicated that they are not directly involved in ICT strategy formation but play a greater role in the internal audit department towards the implementation of the strategy. One respondent stated that: *"I'm not involved in terms of being an implementer, however, I do participate as an internal auditor; my role is to highlight issues/challenges that may hamper the eThekwini municipality from achieving its objectives. My roles involve the management*

of the eThekwini in ensuring that the ICT strategy is being implemented." (Participant 1, 2022).

The researcher also observed that the second participant was the deputy head of the eThekwini municipality trading services cluster, therefore their involvement was more in the formation of the ICT strategy. The third participant worked as a deputy within the ICT department and was very much involved in the formulation of the ICT strategy. In addition, three out of seven participants stated that they were Deputy heads of the Human Resources department and Area Based Management, and the other was a Chief Finance Officer, so all were highly involved in the formulation of the strategy. With regards to the above information, it is worth noting that the eThekwini ICT committee operates in line with King IV, which requires top officials to remain accountable to both customers and stakeholders for all ICT direction, policy, and strategy on a formulation and executive level (Institute of Directors, 2016).

One other research participant also reported being involved in the strategy formulation, noting that:

"I work in the Municipal Manager's (MM) office as the Chief Strategy Officer. My position spans the entire municipality at all levels, intending to recognise high-impact areas and push related activities." (Participant 5, 2022).

Section 5.4 of the SALGA (South African Local Government Association) ICT guidelines (2012) (Dubrov, 2023) similarly notes that the Municipal Manager is responsible for the implementation and operation of ICT governance and is expected to report to the ICT Steering Committee and the Council about the effective and efficient management of ICT resources to facilitate the achievement of corporate objectives. The results yield valuable insights into the varying degrees of participation by top officials and employees from different departments in the formulation of the eThekwini municipality's ICT strategy. This emphasises the critical significance of strategic alignment and governance in guaranteeing that ICT initiatives are harmonised with the municipality's strategic objectives for service delivery. The diverse levels of involvement suggest that a comprehensive and inclusive approach to strategy formulation is essential, involving key stakeholders from various departments and hierarchical levels. This inclusivity is crucial for ensuring that the ICT strategy aligns effectively with the municipality's broader goals and objectives, particularly in the context of improving service delivery.

5.2.1.1. Formally approved and communicated ICT strategic plan

When asked if the ICT strategic plan is formally approved and communicated in a way that is clearly understood by those who need to translate it into budgets, tactical plans, sourcing and acquisition strategies, processes, and organisational structures, all the participants were quick to agree that there is an approved ICT strategic plan. However, they noted that it is not very effective, nor is it in alignment with the municipality's ICT strategy:

"There is an approved and communicated ICT strategic plan, but it is not aligned with the municipality strategy. Even the IDP (Integrated Development Plan) strategy as well, which is a strategy; I do not think it is really helping when it comes to the alignments. He continued by saying that ICT had not effectively aided the municipality's strategic transformation and that the ability of ICT to align with business would be improved if a business plan were in place." (Participant 3, 2022)

"Yes, but it lacks innovation, i.e., taking water consumption meter readings from customers is a time-consuming task as it is done manually, and it is bound to have errors." (Participant 4, 2022)

The researcher thus observed that the municipality is still lagging regarding ICT alignment. The ICT deputy head stated that the IDP was the foundation for developing the ICT strategic plan and that ICT considered business objectives and coordinated with business managers to understand their plans. The participant responses and the researcher's observations highlight a notable discrepancy between the existence of an approved and communicated ICT strategic plan and its effectiveness or alignment with the municipality's overall strategy. While all participants acknowledged the presence of an approved ICT strategic plan, concerns were raised about its effectiveness and alignment with broader organisational goals. The comments suggest that merely having a documented plan does not guarantee its efficacy or its integration with the municipality's overarching strategy. Participants noted issues such as the lack of alignment between the ICT strategic plan and the municipality's strategy or the Integrated Development Plan (IDP). The quotes from participants underscore concerns about the strategic plan lacking innovation and not effectively supporting critical operational tasks, such as manual water consumption meter readings.

Furthermore, the observation that the ICT department becomes involved in departmental strategic planning only at the end of the process indicates a potential gap in collaboration and communication between ICT and other departments. The delay in ICT involvement during strategic planning could hinder the seamless integration of ICT resources with business objectives, potentially impacting the overall effectiveness of ICT in supporting the municipality's strategic transformation. The contradiction between the observed practices and the theoretical perspective presented by (Lucia Masilela and Nel, 2021) emphasises the importance of not only having an ICT strategic plan but ensuring its alignment with broader organisation strategies and its active integration into the planning processes of different departments. These findings suggest the need for a more integrated and collaborative approach to strategic planning, where ICT considerations are embedded throughout the process rather than added as an afterthought. This approach aligns with the broader understanding that effective organisational performance requires a cohesive and aligned relationship between ICT resources and overall organisation strategy. Addressing these issues could contribute to enhancing the municipality's ICT alignment and its ability to leverage technology to support its strategic objectives.

5.2.2. Importance of alignment

During the discussion, participants emphasised the significance of achieving alignment between the business strategy and ICT strategy within the municipality. They unanimously agreed that aligning eThekwini's service delivery with its ICT strategy should be a top priority. This perspective resonates with Alaeddini et al. (2017), who highlighted the importance of aligning a municipality's core strategy with their ICT strategy to enhance governance effectiveness and improve organisational performance.

"Very important because if there is no alignment, ICT will always be viewed as ineffective. Alignment facilitates the identification and adoption of innovative technologies and solutions that address the evolving needs of the municipality. It enables the municipality to leverage emerging technologies and industry trends to drive innovation, improve processes, and deliver new and enhanced services. Alignment also ensures that the municipality can adapt and respond to changes in the external environment and technological advancements, remaining competitive and future ready." (Participant 1, 2022)

The importance of aligning ICT strategic plans with overall organisational strategy is emphasised in the literature. It is noted that ICT strategic plans serve as a managerial tool to rationalise ICT solutions and coordinate efforts within an organisation. Furthermore, the alignment of ICT strategic plans with organisational goals is crucial for ensuring that ICT can effectively aid in the strategic transformation of the organisation. The participants emphasised that achieving alignment between the business and ICT strategies is crucial, as alignment enables innovation, efficient service delivery, adaptation to changing needs and responsiveness to technological advancements, and ensures that ICT investments support the municipality's goals and objectives. The participant quote further articulates the importance of alignment, noting that without it, ICT may be perceived as ineffective. Alignment is viewed as a facilitator for identifying and adopting innovative technologies and solutions that address the evolving needs of the municipality.

The broader benefits of alignment, as mentioned by participants, include the ability to adapt and respond to changes in the external environment and technological advancements. This adaptability is seen as essential for remaining competitive and future-ready. The participants' perspective underscores that alignment is not merely a theoretical concept but a practical necessity for organisations, particularly in the dynamic and rapidly evolving landscape of technology and service delivery. The participants' acknowledgment of the importance of alignment between business and ICT strategies aligns with existing literature and emphasises the multifaceted benefits it brings, from efficiency and innovation to strategic adaptability. This shared understanding among participants reinforces the notion that strategic alignment is a fundamental aspect of organisational success, especially in the context of municipal service delivery and governance.

5.2.2.1. Challenges to alignment

Addressing the challenges identified by participants, such as the lack of understanding and buy-in from executive management, poor communication between business and ICT functions, unclear roles, insufficient documentation of business processes, and inadequate integration of applications and technology, is crucial. As discussed by Abdullahi et al. (2019) and Hanafi et al. (2020), existing literature emphasises the significance of aligning technology strategies with overall business objectives, and

outlines both the challenges and opportunities associated with this alignment. Taking steps to overcome these challenges and incorporating best practices from the literature can significantly enhance the alignment of eThekwini municipality's ICT strategy with its organisational goals. This alignment can lead to increased innovation, more effective service delivery, and greater responsiveness.

When asked about the challenges to implementing the alignment of the ICT strategy, the participants indicated four main concerns: poor communication, executives' lack of training, a knowledge gap, and the incompetence of the ICT department staff. They also noted the importance of all spheres of the municipality, especially executives and ICT departments, as critical aspects that should be improved for effective alignment of the ICT strategy with the objectives of service delivery:
"IDP is too comprehensive for ICT to align. ICT is not involved in decision-making. There is a high reliance on ICT, yet the ICT department is not included in departmental strategic planning; instead, they are only involved at the end of the planning processes." (Participant 3, 2022)
"There is a lack of buy-in from the business executives. There are flaws in the documentation of business processes that make mapping ICT processes challenging. Where business processes are in place, the quality is inadequate and insufficiently detailed." (Participant 4, 2022)

Dairo et al. (2021a) explored the interplay between information technology and the transformation of organisations, emphasising the critical importance of aligning technology strategies with the overall business strategies of an organisation. The authors delved into the challenges, opportunities, and best practices for achieving this alignment, and discussed how organisations need to adapt to technological changes and how such adaptations can lead to improved innovation, service delivery, and responsiveness. The challenges associated with implementing ICT strategic plans in public organisations, particularly in developing countries, are brought to the forefront. The literature notes the nuanced nature of knowledge asset management, including ICT strategic plans, suggesting that whether to hoard or share these assets should be determined based on specific criteria or the organisation's unique circumstances. This underscores the importance of tailoring the approach to sharing and implementing ICT strategic plans according to the specific needs and context of the municipality.

Furthermore, the literature highlights the necessity for structured planning that clearly outlines how ICT will contribute to achieving organisational objectives. This structured planning is crucial for ensuring alignment between ICT goals and broader organisational purposes. The lack of alignment between the ICT strategic plan and the municipality's overall strategy may be attributed to the absence of such structured planning. This underscores the significance of a systematic approach that ensures coherence and integration between ICT initiatives and the overarching organisational strategy.

5.2.2.2. Symptoms of lack of alignment

One question intended to determine if there were any symptoms of a lack of alignment between the ICT department situated within the office of the city manager cluster and the municipality's business of service delivery. The ICT department is overseen by a Chief Information Officer who reports directly to the City Manager. When there is a lack of alignment between ICT and the business, several issues may arise, which can indicate that the ICT infrastructure, systems, and processes are not effectively supporting the goals and objectives of the business:

"Business units are working in silos. There may be a disconnect between the goals of the ICT department and the broader business objectives, resulting in misdirected efforts and inefficiencies. Technology can only assist certain actions, not the entire strategy; without a solid corporate strategy, and business and ICT strategies diverge." (Participant 3, 2022)

"We have too many applications. Inadequate integration of application and technology and misalignment of technical and business solutions. Some executives get into the trap of doing things the same way, ignoring ICT strategy." (Participant 7, 2022)

The symptoms outlined, such as insufficient communication and collaboration, duplicated application systems, working in silos, and a lack of connection between corporate and ICT governance, collectively point to a significant lack of alignment between the ICT department and the municipality's business of service delivery. These issues, as expressed by the participants and observed by the researcher, indicate that the ICT infrastructure, systems, and processes may not be effectively supporting the broader goals and objectives of the business. The quote from Participant 3

emphasises the potential consequences of a lack of alignment, including business units working in silos and a disconnect between ICT goals and broader business objectives. This misalignment can lead to misdirected efforts and inefficiencies, highlighting the importance of a solid corporate strategy that aligns business and ICT strategies.

Participant 7 further contributes insights into the challenges, mentioning issues such as too many applications, inadequate integration, and a misalignment of technical and business solutions. The observation that some executives ignore the ICT strategy and continue doing things the same way indicates a potential resistance to embracing ICT driven changes and a lack of alignment between leadership priorities and ICT initiatives. The researcher's observation of several gaps within the municipality, including poor communication and a weak link between good governance and ICT governance, underscores the broader impact of alignment issues. Additionally, the mention of too many disparate systems highlights the challenges posed by a lack of integration, which can hinder the seamless flow of information and coordination between different departments. The reference to Khawan (2019) further supports the notion that governance processes within municipalities may struggle to address complex ICT-related issues, leading to unmet business expectations. This emphasises the need for a comprehensive approach to aligning ICT strategies with broader organisational goals, ensuring effective governance, communication, and integration of technology solutions.

The symptoms identified collectively paint a picture of challenges arising from a lack of alignment, emphasising the need for strategic interventions to address communication gaps, enhance governance processes, and promote integration for effective ICT support of service delivery objectives. The researcher observed that the municipality has several gaps, which highlights a lack of alignment between its ICT strategy and its service delivery objectives. These include poor communication, a weak link between good governance and ICT governance, and too many disparate systems that must be addressed. To support this, Khawan (2019) argued that over time, municipalities' governance processes fail to come to terms with increasingly sophisticated ICT-related issues, resulting in unmet business expectations.

The symptoms indicating a lack of alignment between ICT and the business align with existing literature, underscoring the crucial requirement for effective communication strategies, municipality-ICT alignment, and a customer-centred approach. These elements are essential to ensure that ICT infrastructure, systems, and processes effectively support the municipality's goals and objectives. The findings emphasise the significance of aligning ICT capabilities with municipality strategies to prevent misdirected efforts, inefficiencies, and challenges in municipality performance. Addressing these symptoms necessitates a concerted effort to enhance communication, alignment, and customer-cantered service delivery within the municipality's ICT and municipality operations. This proactive approach is key to fostering synergy between ICT initiatives and the broader municipality objectives.

5.2.2.3. Factors for alignment

The participants suggest improving alignment by promoting cross-functional collaboration, automating manual processes, leveraging technology for data analytics and business intelligence, providing ongoing training for management and staff, involving ICT in strategic planning, and enhancing communication channels. The participants were asked to highlight the most critical factor in improving the ability of ICT to play a more significant role in the municipality:

"The emphasis on knowledge management and the centralisation of ICT decisions should influence the senior management's understanding of ICT. People must also grasp their organisational functions to increase their effectiveness and efficiency. Training and workshops should be provided on an ongoing basis." (Participant 4, 2022)

"They should help with customer service so that efficiency improvements may be gained, and all unnecessary costs can be avoided. ICT management should be included as part of institutional strategic planning, and ICT plans should be established in compliance with IDPs." (Participant 5, 2022)

The participants' suggestions for improving alignment between ICT and the municipality's objectives reflect a comprehensive approach that involves various strategies and interventions. Key recommendations include promoting cross-functional collaboration, automating manual processes, leveraging technology for data analytics and business intelligence, providing ongoing training for management and

staff, involving ICT in strategic planning, and enhancing communication channels. Participant 4 emphasises the importance of knowledge management and centralising ICT decisions to influence senior management's understanding of ICT. This includes the idea that individuals within the organisation should understand their roles to enhance effectiveness and efficiency. The call for ongoing training and workshops underscores the dynamic nature of technology and the need for continuous skill development to keep pace with advancements.

The findings show that the participants were aware of the most critical factors needed to improve the ability of ICT to play a more significant role in eThekwini municipality. The participants showed that the municipality should consider a formative evaluation strategy, including upper-level training management, engaging stakeholders' cross-border collaboration, or creating a model that incorporates upper-level management training. The participants' suggestions for improving alignment between ICT and the municipality's objectives reflect a comprehensive approach that involves various strategies and interventions. Key recommendations include promoting cross-functional collaboration, automating manual processes, leveraging technology for data analytics and business intelligence, providing ongoing training for management and staff, involving ICT in strategic planning, and enhancing communication channels. Participant 4 emphasises the importance of knowledge management and centralising ICT decisions to influence senior management's understanding of ICT. This includes the idea that individuals within the organisation should understand their roles to enhance effectiveness and efficiency. The call for ongoing training and workshops underscores the dynamic nature of technology and the need for continuous skill development to keep pace with advancements.

Participant 5 highlights the significance of ICT in customer service for efficiency gains and cost avoidance. The recommendation to integrate ICT management into institutional strategic planning aligns with the idea that ICT should be a core component of overall organisational strategy. The emphasis on compliance with Integrated Development Plans (IDPs) suggests an integrated approach that aligns ICT initiatives with broader municipal objectives. The participants' awareness of critical factors for improving the role of ICT in the municipality indicates a nuanced understanding of the challenges and potential solutions. The mention of a formative

evaluation strategy and engagement in cross border collaboration suggests a strategic, multifaceted approach to addressing alignment issues.

The reference to Saldanha et al. (2020) underscores the importance of alignment strategies coming from both ICT and business perspectives. This collaborative approach is crucial for successful strategy alignment. Bhattacharya's (2018) argument about the influence of cultural, political, financial, and social factors on strategy alignment further emphasises the complexity of the alignment process and the need to consider a holistic set of factors. Furthermore, Bhattacharya (2018) argued that strategy alignment with ICT is also influenced by many other factors, such as cultural, political, financial, and social, hence a failure or lack of recognition of any of these aspects broadly affects the business. The participants' recommendations align with best practices in organisational alignment, emphasising the ongoing training, strategic planning, collaboration, and the integration of ICT into the broader organisational strategy. The acknowledgment of various factors influencing alignment aligns with the recognition that achieving alignment is a multifaceted challenge that requires a comprehensive and integrated approach.

5.2.3. ICT service reliability and security

The participants expressed concern about the reliability and security of ICT services, citing delays in basic service requests, manual data collection processes that are prone to errors, and vulnerabilities to fraud and cyberattacks. When asked about the reliability and security of eThekwini's ICT services, seven participants strongly expressed their dissatisfaction, stating that they do not consider ICT services to be reliable and secure.

"I don't think ICT services are reliable and secure based on the fact that even when you have to log a call for something so simple like the change of the laptop battery charger. You know that is a service that ICT provides; it may take three weeks to get it for something that is this simple. This refers to the reliability of the services that ICT provides." (Participant 1, 2022)

The concerns expressed by participants regarding the reliability and security of eThekwini's ICT services highlight the significant challenges facing the municipality in delivering efficient and secure ICT services.

Specifically, the issues raised by Participant 1 pertain to delays in basic service requests, indicating inefficiencies in the ICT service delivery process.

"No, we've been quite lucky not to have been seriously hacked. If people can use the system to conduct fraud, and the system allows them to do so without being halted, it means that our systems are insufficiently secure." (Participant 5, 2022)

The above responses broadly represent the perspectives provided regarding the reliability and security of eThekwini's ICT services when it comes to service delivery. The concerns raised by the participants regarding delays in service requests and manual data collection processes are consistent with the literature on the importance of efficient and timely service delivery (Kalonda and Govender, 2021). Furthermore, vulnerabilities to fraud and cyberattacks underscore the need for robust information security measures (Chung et al., 2021). The unintended consequences associated with technology-enabled work activities, such as error minimisation and access to updated information, underscore the potential impact of reliable and secure ICT services on work processes. This resonance with participants' concerns is noted in the study by Ogundaini et al. (2021). Additionally, the literature supports the participants' emphasis on reliability and security in eThekwini's ICT services by highlighting the importance of energy efficiency, bandwidth consumption, and improved quality of service in the intelligent selection of cloud communication. This is reflected in the study by Sarwar et al. (2023).

Furthermore, the broader societal impact of reliable and secure ICT services is underscored by the potential of ICT diffusion to reduce poverty through financial inclusion, which aligns with the participants' concerns. This societal impact is relevant to the municipality's service delivery and security considerations, as emphasised in the study by Verma et al. (2023). Moreover, the challenges faced in e-Government, such as low bandwidth, inadequate ICT infrastructure, and technological obsolescence, as highlighted by Sugebo & Sekhar (2020), draw attention to broader systemic issues that may affect the reliability and security of eThekwini's ICT services. The concerns raised by participants regarding the reliability and security of eThekwini's ICT services find support in the literature. Addressing vulnerabilities, enhancing security measures, and mitigating unintended consequences are emphasised in the literature as crucial steps to ensure the effective and secure delivery of ICT services.

5.2.3.1. Impactful changes in ICT strategy

Participants were asked to highlight the critical changes in the ICT strategy that have had the most significant impact on the municipality over the last five years:

"The ICT strategy and the charter for the steering committee were both approved. RMS finally went live. Harnessing the power of data, organisations can gain insights into patterns, trends, and performance indicators, enabling data-driven decision-making and improved service delivery, however eThekwini has still not yet taken advantage of these changes." (Participant 2, 2022)

The adoption of data analytics and business intelligence, as highlighted by Participant 2, is in line with the growing recognition of the value of harnessing data for informed decision-making (Lucia Masilela and Nel, 2021). The changes outlined, such as the implementation of enterprise resource planning systems, adoption of mobile devices, emphasis on cybersecurity, filling of key positions, and the launch of a Revenue Management System (RMS), indicate a significant evolution in the ICT landscape of eThekwini municipality. These initiatives suggest a strategic focus on modernising technology infrastructure, enhancing operational efficiency, and addressing key challenges like cybersecurity. Analysing the impact and outcomes of these changes could provide valuable insights into the effectiveness of the municipality's ICT strategies.

"Wi-Fi has been installed on public buses. Access to reliable internet connectivity has become crucial. Initiatives such as expanding broadband infrastructure, implementing Wi-Fi networks, and bridging the digital divide have been instrumental in improving connectivity and enabling digital services." (Participant 6, 2022)

It is clear from the participants that there are many critical changes in ICT strategies that have had significant impacts on organisations in general, which can be used to the benefit of eThekwini municipality. Moreover, the implementation of Wi-Fi on public buses, as noted by Participant 6, reflects the broader trend of expanding digital connectivity initiatives to improve access to reliable internet (Malatji et al., 2021). The critical changes in the ICT strategy that have had a substantial impact on the municipality over the last five years include the approval of the ICT strategy and the charter for the steering committee, the implementation of the RMS, and the potential for harnessing the power of data for data-driven decision-making and improved service

delivery. However, despite these advancements, the municipality has not fully capitalised on these changes, as noted by Amrani et al. (2022).

The impact of ICT on health service delivery, as highlighted by Addo and Agyepong (2020) has been noteworthy, leading to reduced workload, improved patient waiting times, and minimised errors. The positive changes brought about by the eHealth initiative in Tanzania, impacting various departments and services, further emphasise the transformative potential of ICT in healthcare (Simon and Mushi, 2019). Additionally, ICT has played a significant role in enhancing the provision of social services in low-income countries, with a positive effect on service delivery, as indicated by Evans (2022). These changes underscore the transformative potential of ICT in service delivery and decision-making processes, highlighting the need for the municipality to fully leverage these advancements for improved outcomes. The existing literature provides valuable insights into the positive impact of ICT on various sectors, emphasising the importance of maximising the potential of these technological advancements for the benefit of the municipality and its constituents.

5.2.4. Measuring ICT value

The participants acknowledged that there is a lack of practical tools for measuring the value of ICT investments. Benefit realisation models are considered important, but the unique nature of benefits derived from ICT investments makes quantification challenging. The participants were asked to highlight a practical set of tools that could measure the value of eThekwini municipality's ICT investments:

"We are still extremely poor in terms of a value realisation model; inadequate. It is because most of our benefits are about efficiency and effectiveness and are not especially bankable." (Participant 3, 2022)

"Not really; we are lagging when it comes to ICT." (Participant 7, 2022)

The observation about the lack of a value realisation model for ICT investments resonates with the challenges organisations often encounter in assessing the tangible benefits of such investments (Prakash, 2019). It became evident in the discussions with the municipal officials that the ICT department within eThekwini municipality has not been receiving the necessary attention. Aligning the ICT strategy with municipality service delivery objectives goes beyond simply achieving maturity.

It is a crucial step that has far-reaching effects, positively impacting various areas within the organisation The alignment will enable the utilisation of ICT investments while simultaneously enhancing service delivery by streamlining processes and improving efficiency. In addition to operational benefits, the constructive interaction between ICT strategy and municipality service delivery objectives will also foster improved decision-making capabilities. With a solid alignment in place, stakeholders can engage in meaningful ways throughout all stages of planning and implementation. (Aklilu and Kagiso, 2020). This inclusive approach ensures that their valuable insights contribute to strategic decisions that benefit the entire community. Moreover, when there is synchronisation between technology goals and organisational objectives, it allows for greater adaptability amidst changes prevalent in today's dynamic environment. Integrating emerging technologies into existing frameworks as part of an aligned strategy across ICT infrastructure systems or platforms deployed within municipal operations will allow municipalities to remain agile enough to embrace new opportunities.

Laudon and Laudon (2015) discuss the concept of a value realisation model that encompasses various dimensions of value creation, including financial returns, strategic alignment, customer satisfaction, and innovation. Adopting a comprehensive value realisation model, organisations can ensure that ICT investments contribute not only to operational improvements but also to sustainable competitive advantage and financial gains. Therefore, it is essential for eThekwini municipality to reassess its approach to ICT investment and value realisation, aligning ICT initiatives with strategic business objectives and prioritising initiatives that deliver tangible financial benefits. This may involve conducting a thorough cost-benefit analysis, identifying key performance indicators related to financial outcomes, and continuously monitoring and evaluating the impact of ICT investments on the organisation's bottom line. Measuring the value of ICT investments is a complex task, as acknowledged by participants who highlighted the lack of practical tools for this purpose. The unique nature of benefits derived from ICT investments makes quantification challenging, particularly in the context of the eThekwini municipality. This challenge is compounded by factors such as insufficient ICT knowledge and skills, limited resources and infrastructure, and the absence of clear investment criteria and strategy in ICT for schools.

Furthermore, the benefits of ICT investments often revolve around efficiency and effectiveness rather than traditional financial metrics, making it difficult to quantify their value. Insights from Al-Busaidi & Al-Muharrami (2020) provide a deeper understanding of the impact of ICT investment on financial performance indicators, emphasising that ICT value extends beyond traditional profitability metrics. This aligns with the notion that the benefits derived from ICT investments are not especially bankable, as highlighted by Participant 3. Additionally, the study by Bhandari (2020) underscores the challenges arising from the lack of ICT knowledge and skills, which further contributes to the difficulty in measuring the value of ICT investments. These results underscore the multifaceted nature of these challenges, encompassing factors such as insufficient ICT knowledge and skills, limited resources and infrastructure, and the absence of clear investment criteria and strategy. These references collectively support the participants' acknowledgment of the lack of practical tools for measuring the value of ICT investments, contributing to a comprehensive understanding of the complexities involved in this endeavour.

5.2.4.1. Improving business-ICT communications

A question about how to improve communication was intended to design a standard mechanism to align eThekwini municipality's ICT strategy with its strategic goals for effective service delivery. Suggestions for improving communication included regular updates, newsletters, intranet portals, open-door policies, involvement of senior management in decision-making, strategic meetings with department heads, and clear mandates for communication and alignment:

“Ensure that staff members are kept informed about ICT updates, initiatives, and changes that may impact their work. This can include regular email updates, newsletters, or dedicated communication sessions to discuss ICT-related topics and gather feedback.” (Participant 1, 2022)

Keeping staff informed through regular updates and communication sessions aligns with research on the media richness theory, which emphasises the need for an effective communication channel (Jonathan et al., 2021).

"It's all about being aware. It is more about interacting, and it is not just a one-time occurrence. It is a never-ending dialogue between the business and ICT about raising awareness. There is a need for formal communication channels that facilitate effective information flow between different departments, units, and stakeholders. This can

include regular meetings, email updates, newsletters, and intranet portals dedicated to business and ICT communications." (Participant 2, 2022)

The involvement of senior management in ICT decision-making and the establishment of clear mandates and roles for communication and alignment are crucial elements in promoting organisational success. Senior management plays a pivotal role in steering ICT strategies, ensuring they align with broader organisational goals. This requires a commitment to transparency and accountability. This can be achieved by promoting open-door policies, encouraging feedback and suggestions from staff, and recognising and rewarding effective communication practices. Wang et al. (2018) agreed on the need to establish clear mandates and roles for communication and alignment and outlined the responsibilities of both business and ICT in facilitating effective communication and alignment efforts. Additionally, strong communication skills allow the head of ICT to collaborate with other departments, understand their needs and requirements, and incorporate them into the ICT strategy.

5.3 Conclusion

In conclusion, the qualitative data presented in this chapter provided valuable insights into the current state of ICT alignment within eThekwini municipality. The themes and sub-themes that emerged from the research shed light on the involvement of top officials in ICT strategy formation, the formal approval and communication of the ICT strategic plan, the importance of alignment, the challenges to alignment, the symptoms of lack of alignment, factors for alignment, ICT service reliability and security, impactful changes in ICT strategy, measuring ICT value, and improving business-ICT communications.

The findings highlight the critical role of alignment between the municipality's ICT strategy and its strategic objectives for effective service delivery. The challenges and symptoms of lack of alignment underscore the need for improvements in communication, collaboration, and the adoption of best practices to enhance alignment. The impact of changes in ICT strategy, such as the adoption of data analytics and business intelligence, Wi-Fi installations, and cybersecurity measures, demonstrates the potential for ICT to drive innovation and improve service delivery. Furthermore, the need for practical tools to measure the value of ICT investments and the importance of improving business-ICT communications cannot be overstated.

Effective communication channels, the involvement of senior management, and a culture of open and transparent communication can facilitate alignment and enhance the value of ICT within the municipality. Overall, this research provides a comprehensive understanding of the current state of ICT alignment within eThekwini municipality and offers valuable recommendations for improving that alignment and leveraging ICT to enhance service delivery and achieve strategic objectives.

CHAPTER SIX: DISCUSSION OF RESULTS

6.1 Introduction

The previous chapter presented the study's findings, where the data collected from the structured questionnaires and semi-structured interviews were analysed and interpreted. In this chapter, the results obtained from the analysis of both the quantitative and qualitative data, which were discussed in Chapter 4 and Chapter 5, are presented. These empirical findings are discussed in relation to the existing literature, and, where applicable, the researcher critiques the literature.

The present study's recommendation for robust ICT governance structures echoes the insights of White and Black (2018), who emphasised the pivotal role of governance frameworks in aligning ICT initiatives with strategic objectives. This viewpoint was also shared by (Sibanda, 2020). The main objective of this chapter is to examine the conclusive evidence derived from the results and the literature review. The aim is to translate these findings into practical recommendations that effectively address the objectives outlined in the study's introduction. This chapter thus seeks to contribute to the existing knowledge in the field and identify critical areas for further research. The information and insights gathered through this research can be utilised to enhance organisational culture within an eThekwini municipality.

6.2 Integration of qualitative and quantitative results discussion

Research objective one: Investigate the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery

The researcher employed statistical tests and data analysis procedures to introduce a quantitative dimension to the study. This approach enabled a rigorous examination of the relationship between the variables related to aligning the ICT strategy with the municipality's strategic objectives for service delivery. The substantial dataset, comprising responses from 331 participants, added statistical robustness to the findings. As indicated in Chapter 4, the quantitative results pointed to a significant lack of alignment between eThekwini municipality's ICT strategy and strategic objectives for service delivery.

The respondents largely disagreed or strongly disagreed with statements concerning the comprehensiveness of the ICT strategy, its alignment with the municipality's strategy, the understanding of ICT capabilities by business units, and the definition and documentation of ICT goals and objectives. Consistently, the mode values were recorded as 4 (strongly disagree), suggesting a prevailing trend of disagreement among respondents. The kurtosis values, indicating the distribution of responses, were less than 3, suggesting a leptokurtic distribution and further emphasising the consensus of disagreement. These findings corroborate previous research that has explored ICT strategy alignment. They indicate that eThekwini municipality lacks a well-defined ICT strategy and that there is a disconnect between the ICT strategy and the municipality's overall strategic objectives. The study also suggests a lack of understanding and recognition of ICT capabilities by business units, as well as a deficiency in defining and documenting ICT goals and objectives. It is worth noting that these results stand in contrast to a study conducted by Alaeddini et al. (2017), which underscores the significance of aligning a municipality's ICT strategy with its overall strategy as a pivotal factor in determining the impact of ICT governance on organisational performance. According to their research, a strong alignment between the ICT strategy and the overall strategic objectives of the municipality enhances the effectiveness of ICT governance practices and their contribution to organisational performance. Such alignment ensures that ICT initiatives and investments directly align with a municipality's goals, priorities, and desired outcomes.

The alignment of the ICT strategy with the municipality's strategy is crucial for maximising the benefits of ICT initiatives in the public sector. According to scholars such as Chen and Zhang (2018) and Kim and Lee (2019), aligning ICT strategies with organisational objectives is fundamental to achieving efficiency and effectiveness in service delivery. When integrating ICT initiatives with broader business goals, municipalities can enhance decision-making processes, allocate resources more effectively, and prioritise investments strategically (Chen & Zhang, 2018). This alignment fosters better coordination among different departments and promotes the optimal utilisation of ICT resources, leading to improved overall organisational performance (Kim & Lee, 2019).

Furthermore, the integration of ICT strategies with municipal objectives contributes significantly to the organisation's success by enhancing service delivery mechanisms. Research by Gupta and Sharma (2018) emphasised that a well-aligned ICT strategy ensures seamless communication, streamlined operations, and enhanced citizen engagement. When ICT initiatives are strategically aligned with a municipality's goals, services can be delivered more efficiently and responsively, leading to increased citizen satisfaction (Gupta & Sharma, 2018). Aligning a municipality's ICT strategy with its strategic objectives is pivotal for efficient resource allocation, improved decision-making, and enhanced service delivery. These benefits contribute to the overall success of an organisation, ensuring that its ICT initiatives align with its mission and vision. Consequently, the research underscores the importance of establishing strong alignment mechanisms between the municipality's ICT strategy and its general strategy to maximise the positive impact of ICT governance on organisational performance. Such alignment ensures that ICT initiatives are well-aligned with the municipality's priorities, effectively supporting the achievement of strategic objectives. These findings collectively point to gaps and a lack of alignment between the ICT strategy and the strategic objectives of eThekwini municipality, highlighting areas for improvement in formulating and aligning the strategies to better support service delivery objectives.

The qualitative data analysis provided invaluable insights into the challenges, opportunities, and perceptions related to the alignment of ICT strategy within the municipality. It unveiled nuances and complexities that might have remained concealed through the quantitative questionnaire alone. When methodically describing these emerging thematic patterns and relationships within the phenomenon under study, the researcher was able to offer a comprehensive and holistic understanding of the alignment of eThekwini municipality's ICT strategy with its strategic objectives.
The participants' feedback illuminated several key challenges associated with the current state of alignment. One prominent issue was the limited understanding and following of the current ICT strategic plan within the organisation. Furthermore, participants cited a lack of alignment between the ICT strategy and the Integrated Development Plan (IDP), which is a crucial strategic document for the municipality. The findings also indicated varying levels of involvement in the formulation of the ICT strategy within eThekwini municipality. While some participants, such as the Chief

Strategy Officer and the Deputy Head of the ICT department, actively participated in the formulation of the ICT strategy, others, like the Internal Auditor, played a role in ensuring its implementation. The involvement of top officials in ICT strategy formation aligns with the principles outlined in the King IV corporate governance code, which places significant emphasis on accountability, transparency, and direction-setting across all aspects of an organisation's operations, including ICT matters. Involving top officials, particularly the Municipal Manager, in ICT strategy formation aligns with the principles of good corporate governance (Institute of Directors and King Committee on Corporate Governance, 2016). Furthermore, the SALGA ICT guidelines underscore the critical role of the Municipal Manager in ICT governance. This guideline recognises the Municipal Manager's responsibility for ICT governance and reporting to the ICT Steering Committee and Council. This reinforces the idea that ICT governance is a top-level responsibility and should be treated with the same level of importance as other governance functions within the organisation. The involvement of top officials in ICT strategy formation ensures that decisions related to ICT align with the overall strategic objectives of the municipality and adhere to the principles of good corporate governance.

It also promotes accountability and transparency in ICT-related matters, contributing to improved decision-making and the effective implementation of ICT initiatives that support the organisation's goals. Moving on to the second research question, the participants acknowledged the existence of a formally approved ICT strategic plan, however they expressed concerns about its effectiveness and alignment with the municipality's overall strategy. Some participants indicated that new projects were being executed outside the scope of the ICT strategy, indicating a lack of alignment, while others highlighted the need for innovation and improvement, such as automating manual tasks like water consumption meter readings. Overall, the findings underscore the need for improvement in ICT alignment within eThekwini municipality. Achieving better alignment necessitates ensuring that the ICT strategic plan is effectively communicated and understood by relevant stakeholders. Additionally, increased involvement of the ICT department in departmental strategic planning can facilitate improved coordination and alignment between the ICT and business objectives. Innovation and automation should also be considered to enhance the effectiveness of the ICT strategy in supporting the municipality's strategic goals.

The quantitative findings, as outlined in Chapter 4, substantiated the qualitative insights, affirming the challenges related to alignment. These quantitative results indicated a lack of alignment between the ICT strategy and the municipality's strategic objectives for service delivery. Qualitative insights into alignment challenges, such as poor communication, the limited involvement of business managers in ICT strategy formulation, and a culture that is not conducive to alignment, are consistent with the quantitative findings. When combining these two types of data, the study unveils a consistent lack of alignment between eThekwini municipality's ICT strategy and its strategic objectives for service delivery. This synthesis of qualitative and quantitative data enriches our understanding of alignment challenges. While the qualitative data provide a nuanced exploration of participants' perspectives and experiences, the quantitative data lend statistical support and evidence of the prevalence of alignment issues. The integration of these findings offers a holistic view of the alignment landscape within the municipality.

Research objective two: Contributing factors for aligning eThekwini municipality's ICT strategy with its strategic objectives

This study investigated the factors that contribute to aligning the municipality's ICT strategy with its strategic objectives. These findings highlight the critical factors that influence alignment, and the challenges organisations face in achieving it. Factors such as understanding stakeholder needs, collaboration and coordination, resistance to change, resource constraints, legacy systems, ICT governance, and rapid technology advancements were identified as critical elements impacting ICT alignment. These findings resonate with the existing literature that discusses the multi-faceted nature of alignment challenges (Abdullahi et al., 2019; Hanafi et al., 2020). Achieving alignment requires addressing not only technological considerations, but also organisational and cultural aspects. One major challenge emphasised by the participants is the issue of poor communication between different stakeholders, particularly between the business and ICT functions. This lack of effective communication hampers the understanding of roles and responsibilities in implementing the alignment of the ICT strategy. It also impedes ICT decision-makers in terms of making technology decisions that are aligned with the municipality's strategy and vision. Another challenge highlighted is the executives' lack of training

and knowledge regarding their roles in achieving alignment. The participants noted that executive management needs to be educated on how they fit into the alignment process and must also understand their business processes better. Without this understanding, it is challenging for ICT to ensure alignment with the business strategy. These challenges align with the literature regarding the operational and strategic repercussions of misalignment (Aklilu and Kagiso, 2020). The observation that business units work in silos echoes the well-documented challenges of siloed operations hindering organisational agility and innovation (Harlie et al., 2019b). The literature suggests that the municipality should focus on eliminating silos and creating an environment where teams can collaborate effectively. This includes cross-border collaboration and integrating different departments to enhance agility and adaptability to change. There is a need to automate manual processes where applicable and keep up to date with the latest technology; by eliminating legacy processes and embracing automation, the municipality can improve its efficiency and effectiveness. The municipality should thus establish a formative evaluation strategy that includes training upper-level management, engaging stakeholders, and defining clear ICT objectives. This should be supported by an ICT/business plan that focuses on achieving strategic alignment and ensuring a public return on ICT investment (McAdam et al., 2017).

Based on the responses provided by the participants, the most critical factor in improving the ability of ICT to play a more significant role in eThekwini municipality is the need for strategic alignment and collaboration across different levels and departments. Participants' suggestions for improving alignment by promoting cross-functional collaboration, automation, technology utilisation, training, and involving ICT in strategic planning are in line with the literature that advocates for strategic partnerships between business and ICT (Henderson & Venkatraman, 2013). These recommendations underscore the holistic nature of alignment, which involves not only technological considerations, but also cultural and organisational aspects. The participants also pointed out that the ICT department staff may lack the necessary knowledge and understanding of what is important to the business, which makes it difficult for them to effectively align their initiatives with business requirements. Additionally, the lack of involvement of the ICT department in departmental strategic planning and decision-making processes creates a disconnect between ICT and the overall business strategy.

Participants similarly mentioned a lack of buy-in from business executives as well as flaws in the documentation of business processes, which make mapping ICT processes challenging. The importance of cross-functional collaboration is extensively discussed in the literature to bridge the gap between business and ICT functions (Sinha & Sharma, 2018). Automating manual processes and leveraging technology for data analytics resonate with the literature's emphasis on using technology to drive process efficiency and data-driven decision-making (Ominde et al., 2021). Emphasising knowledge management and centralising ICT decisions can improve the understanding and effectiveness of ICT within the organisation, while ongoing training and workshops can enhance skills and knowledge. ICT should also contribute to customer service improvements and help avoid unnecessary costs. ICT management should be included as part of institutional strategic planning, to align ICT plans with IDPs to support the overall organisational goals (McAdam et al., 2017).

The municipality's strategy office should participate in ICT strategic discussions and ensure strategic alignment. To do this, the board and senior management should view ICT as a strategic organisational partner, recognising its importance and potential contribution. These factors highlight the need for strategic alignment, collaboration, knowledge management, training, and a customer-centric approach to improving the role of ICT within eThekwini municipality (Kude et al., 2018). Through addressing these critical factors, the municipality can enhance the effectiveness and impact of ICT in supporting its objectives and service delivery. The quantitative results, as outlined in Chapter 4, validated, and quantified the qualitative insights into alignment challenges, emphasising the importance of better communication, understanding roles and responsibilities, involving business managers, and accountability for ICT assets in achieving alignment between the municipality's ICT strategy and its strategic objectives. The logistic regression analysis further identified these factors as significant predictors for ICT strategy alignment. The combination of qualitative insights and quantitative data enriched the study's findings, offering both depth and statistical support. The qualitative data provided context and a nuanced understanding of alignment challenges, while the quantitative data added robustness and evidence of the prevalence of these challenges. This integrated approach enabled the formulation of evidence-based recommendations and actionable insights that can

guide decision-making and facilitate the alignment of the ICT strategy with the municipality's objectives.

Research objective three: Exploring the role of ICT strategy as an instrument for service delivery.

The research objective focused on understanding how the ICT strategy can be realised as an instrument of eThekwini municipality's strategic service delivery objectives. The concerns expressed by participants regarding the reliability and security of eThekwini's ICT services are indicative of potential vulnerabilities that may undermine effective service delivery and data protection. The acknowledgment of inadequate security measures and potential exposure to cyber threats highlights the need for robust information security measures (Hashem et al., 2018; Furnell & Papadaki, 2016). A focus on cybersecurity aligns with the growing recognition of the importance of securing digital infrastructure against evolving cyber threats. The increasing reliance on ICT services necessitates a robust approach to security, yet the participants mentioned that the municipality lacks a reliable and unambiguous approach to measuring the value of ICT investments. This indicates a lack of clarity on how to assess the impact and effectiveness of ICT initiatives in contributing to the municipality's strategic objectives. The highlighted impactful changes in the ICT strategy within eThekwini municipality underscore the transformative role of technology in driving organisational progress and service delivery improvements. These changes reflect a growing awareness of the strategic potential of ICT investments and the recognition of technology as an enabler for innovation, efficiency, and connectivity.

The adoption of an enterprise resource planning (ERP) system would stand out as a significant change that aligns with the broader trend of integrating organisational processes and data under a unified platform (Nah et al., 2007; Aladwani, 2005). This change often leads to streamlined operations, improved data accuracy, and enhanced decision-making capabilities. The implementation of ERP systems can provide the municipality with the ability to integrate various functions, optimise resource allocation, and facilitate more informed strategic decisions. Participants' recognition of the value of data analytics and business intelligence resonates with the contemporary emphasis on data-driven decision-making (Ward & Peppard, 2016; Chong, 2013). In a rapidly

evolving digital landscape, organisations, including municipalities, are increasingly leveraging data to gain insights, identify patterns, and make informed choices. Participants' mention of Wi-Fi installation on public buses highlights a strategic move towards enhancing digital connectivity for citizens. Bridging the digital divide and providing access to reliable internet services is essential for promoting inclusivity and ensuring that all citizens can benefit from the advantages of digitalization. Such initiatives align with the goal of creating a smart city that enhances citizen engagement and access to public services through digital platforms. The emphasis on cybersecurity, the adoption of mobile devices, and the launch of a Revenue Management System (RMS) signifies the municipality's recognition of the need to adapt to technological trends and challenges. Cybersecurity measures are crucial in safeguarding sensitive information and maintaining public trust. The adoption of mobile devices reflects the growing demand for mobile-friendly services that cater to citizens' changing preferences. The introduction of an RMS demonstrates a commitment to enhancing revenue collection processes and financial management. These impactful changes reflect the municipality's endeavour to align ICT strategy with the overarching goals of enhancing service delivery, citizen engagement, and operational efficiency.

The qualitative data analysis revealed the importance of training, communication, and collaboration in achieving strategic alignment. Participants stressed the need for a culture that facilitates alignment and recognition of ICT's significance in supporting the municipality's objectives for service delivery. They further emphasised the need for collaboration, knowledge management, and the centralisation of ICT decisions, and highlighted the importance of innovation, automation, and staying up to date with the latest technology to improve efficiency and effectiveness. The governance structure was also seen as a critical factor for ensuring alignment. Participants suggested that the municipality's strategy office should participate in ICT strategic discussions to ensure strategic alignment, and that ICT management should be included as part of institutional strategic planning to align their plans with the municipality's overall goals.

Research objective four: Standard mechanism to align the strategies

Based on the responses provided by the participants, eThekwini municipality faces challenges in measuring the value of ICT investments and realising the benefits of these investments. These challenges indicate that the municipality needs to develop a more structured and systematic approach to measuring the value of ICT investments and ensuring that the benefits are effectively realised. This could involve implementing a robust benefit realisation framework, setting clear performance indicators, and establishing mechanisms for monitoring and evaluating the outcomes of ICT projects. The difficulty in measuring the value of ICT investments is a recurring challenge facing organisations. The mention of benefit realisation models by participants reflects the broader discourse on methodologies for assessing the value delivered by ICT initiatives. Haes et al. (2020) suggested investing in building the capacity and knowledge of ICT personnel and other stakeholders to better understand the value of ICT investments, while training programmes and workshops can help create awareness of the benefits that technology can bring to the municipality. Implementing these methods can enhance eThekwini municipality's ability to fully realise the value of its ICT investments, thereby transforming the ICT strategy into a potent instrument for achieving its strategic service delivery objectives. It will also help in addressing the perception that the municipality is lagging in ICT and strengthen its position as a digitally enabled and efficient local government entity.

The suggestions provided by the participants for improving communication, including regular updates, newsletters, and the involvement of senior management, echo the importance of effective communication channels in achieving alignment. These recommendations underscore the need for a dynamic and ongoing dialogue between business and ICT functions. The emphasis on communication resonates with literature that discusses the role of communication in fostering alignment and overcoming miscommunication barriers. Similarly, the involvement of senior management aligns with research stressing their crucial role in fostering a culture of open communication. Based on the responses provided by the participants, it is evident that eThekwini municipality currently lacks a standard mechanism to align its ICT strategy with the municipality's strategic objectives for effective service delivery. Participants mentioned that the municipality lacks a reliable and unambiguous approach to measuring the value of ICT investments, which indicates a lack of clear metrics or tools to evaluate

the impact and effectiveness of ICT initiatives in supporting the strategic objectives. The participants also mentioned a lack of consistency in the development of strategic plans across different units within the municipality. This inconsistency hinders the alignment between departmental goals and the ICT strategy, leading to challenges in supporting service delivery effectively. Some participants expressed additional concerns about the municipality lagging in terms of ICT, indicating a potential lack of prioritisation and attention to ICT initiatives. Given these challenges, eThekwini municipality needs to develop a standard mechanism to align its ICT strategy with its strategic objectives for effective service delivery. This mechanism should address the issues of measuring ICT investment value, benefit realisation, communication, alignment, and strategic planning, and should involve the active involvement of senior management, the creation of clear communication channels, and a structured approach to evaluating the impact of ICT initiatives on service delivery. When it addresses these gaps and implements a standardised approach, eThekwini municipality can improve the alignment of its ICT strategy with its strategic objectives and enhance service delivery outcomes. These objectives should be specific, measurable, achievable, relevant, and time-bound (SMART), and should address key areas such as improving efficiency, enhancing citizen engagement, and enabling digital transformation.

This assessment should involve engaging key stakeholders, including business managers, department heads, and ICT professionals. Based on the needs assessment, the municipality should develop an ICT strategy that aligns with its strategic objectives. This strategy should outline the goals, initiatives, and action plans to leverage technology effectively for service delivery, and consider areas such as infrastructure, applications, data management, cybersecurity, and digital innovation. The municipality should also establish a governance structure that ensures the alignment of the ICT strategy with its strategic objectives, which should include representatives from different departments, senior management, and ICT professionals. The structure should define their roles, responsibilities, and decision-making authority in relation to ICT initiatives, as well as foster collaboration and communication between the ICT department and the other business units. Regular meetings, workshops, and forums should be encouraged to discuss strategic objectives, ICT projects, and progress updates, while a culture of openness,

transparency, and shared ownership of the ICT strategy should be created. ICT projects should be prioritised based on their alignment with the strategic objectives and expected impact on service delivery, with appropriate resources, including budget, manpower, and technology infrastructure, being allocated to support the implementation of these projects. This resource allocation must be aligned with the strategic priorities, and the progress of any ICT initiative must be regularly monitored and evaluated in relation to the strategic objectives. Finally, key performance indicators (KPIs) and metrics must be implemented to track the impact and effectiveness of ICT projects. This information must be used to make data-driven decisions, identify areas for improvement, and ensure continuous alignment with the strategic objectives.

The integration of qualitative and quantitative data strengthens the validity and reliability of the findings by providing multiple perspectives and supporting evidence. It further allows for a deeper understanding of the research topic by capturing both the subjective experiences and perceptions of the participants (qualitative) and objective measurements and statistical analyses (quantitative). The convergence of findings from both types of data provides a more comprehensive and robust interpretation of the research results. Overall, the integration of qualitative and quantitative results in this study enhances the depth and breadth of understanding, validates the research findings, and provides a solid foundation for making recommendations and suggesting future research directions. This demonstrates the value of combining different research methods and data sources to achieve a comprehensive and nuanced understanding of a complex research topic.

6.3 Conceptual framework

The proposed conceptual framework for aligning eThekwini municipality's ICT strategy with its strategic objectives drew upon the foundations of two theoretical frameworks, namely the Strategic Alignment Model (SAM) and the Information Systems Success Model (ISM). Integrating the ISM and the SAM in this conceptual framework provided a comprehensive and structured approach to assess the effectiveness and alignment of the municipality's ICT strategy.

In doing so, it provides a structured approach to evaluate different dimensions of ICT effectiveness, user satisfaction, and organisational impact, leading to informed decision-making and continuous improvement. Figure 6.1 below is suggested as a conceptual model that integrates the factors driving the effective alignment of ICT's strategic objectives.

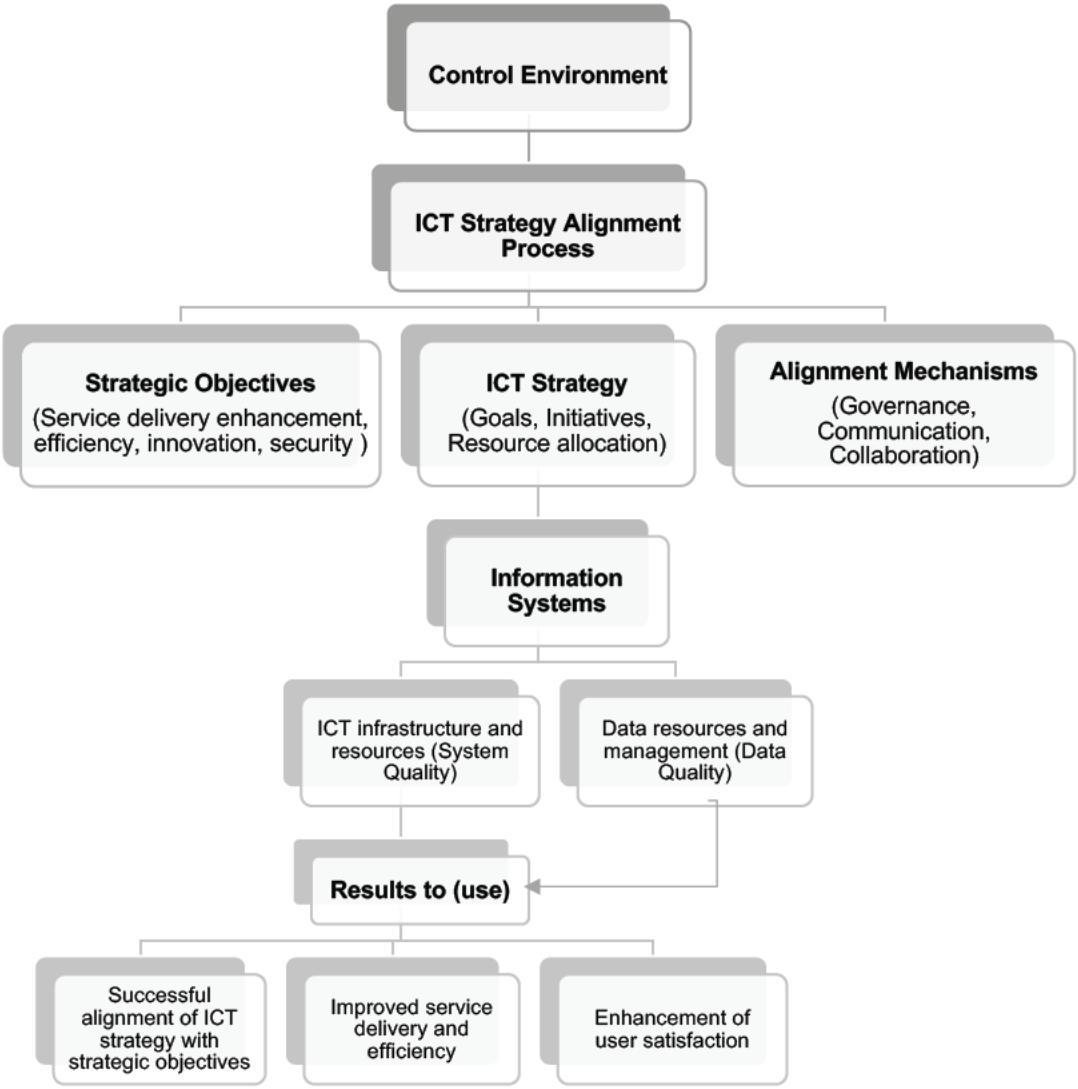

Figure 6.1: Proposed Model

Source: Devised by the Author, 2023

To provide context for the proposed Standard Mechanism to Align the Strategy model, this section discusses the study objectives and the findings from the previous chapters within the framework of the adopted model. The conceptual framework is structured as follows:

6.3.1 Control environment framework

The control environment framework serves as the backdrop against which the alignment process takes place, playing a pivotal role in the successful alignment of the ICT strategy with the organisation's strategic objectives. Effective governance, communication, and collaboration constitute fundamental elements of this control environment. Chapter 6 places significant emphasis on the importance of governance structures and practices in guiding ICT strategy alignment. To establish a foundational understanding of an integrated control environment and its role in guiding and shaping the alignment process of the ICT strategy, it is essential to consider the principles outlined in the King IV Corporate Governance Code. The King IV Code emphasises accountability and direction-setting, which are crucial aspects in shaping the control environment within municipal governance (Hadianto et al., 2018). The study by Hadianto et al. (2018) highlights the importance of reward and punishment policies, coordination and collaboration between local governments, and the integration of internal control system reports into the budgeting system to create a better control environment (Hadianto et al., 2018). This underscores the significance of a well-defined control environment in municipal governance, especially in developing countries.

Examining existing internal governance and compliance policies within the organisation is crucial. This involves understanding the legal landscape governing municipalities, including acts, regulations, and compliance requirements. The study by (Hadianto et al., 2018) discusses the impact of socialisation and institutionalisation on creating strategic culture, which is essential in understanding the legal landscape governing municipalities (Hadianto et al., 2018). Additionally, the research by Fukushima (2020) provides insights into the visibility of technological objects in the landscape, which is relevant when considering the legal and regulatory aspects of the control environment within municipalities (Souza et al., 2021). It is noteworthy that the King IV corporate governance code underscores the significance of accountability and direction-setting in ICT matters involving key officials such as the Municipal Manager (Institute of Directors and King Committee on Corporate Governance, 2016). Moreover, the development planning framework, notably the Integrated Development Plan (IDP) process, plays a crucial role in shaping the organisation's strategic

priorities, including those related to service delivery. Existing research highlights the role of IDPs in aligning a municipality's goals and strategies with community needs and statutory requirements (Mnguni, 2019). Furthermore, the impact of an ICT governance framework on the internal control environment is significant, requiring a profound understanding of a municipality's activities, risks, and controls to manage risk exposure effectively (Rubino et al., 2017). Additionally, the COSO framework has implications for internal control components in the performance of manufacturing companies, emphasising the importance of the internal control environment in organisational performance ("The (COSO) Framework: Implications of Internal Control Components on the Performance Manufacturing Companies", 2023). Furthermore, sustainability strategy and management control systems play a crucial role in family firms, indicating the broader impact of control environment frameworks on organisational sustainability and performance (Caputo et al., 2017). Overall, the control environment framework is essential for guiding ICT strategy alignment, governance, and organisational performance. It encompasses various elements such as governance structures, communication, and collaboration, playing a critical role in shaping strategic priorities and aligning organisational goals with community needs and statutory requirements. This comprehensive approach ensures a robust foundation for effective ICT management and governance within municipal settings.

6.3.2 ICT strategy (goals, initiatives, resource allocation)

Aligning the ICT strategy with strategic objectives must be based on a profound understanding of the organisation’s goals, mission, and vision. The SAM dimension concerning ICT strategy underscores the necessity of a well-defined ICT strategy that harmonises with the overarching business strategy. This includes considerations such as ICT governance and the scope and capabilities of ICT within the organisation. Chapters 5 and 6 reinforce the idea that well-defined objectives are paramount in ensuring that ICT initiatives directly contribute to strategic objectives and desired outcomes (Kude et al., 2018). Notably, the absence of ICT department involvement in departmental strategic planning, as highlighted, signifies a missed opportunity for enhanced alignment. Research underscores the active participation of ICT departments in strategic planning processes to ensure alignment with broader organisational goals (Kamel and Rizk, 2017).

6.3.3 Alignment mechanisms (governance, communication, collaboration)

Governance, communication, and collaboration mechanisms are central to achieving effective alignment between ICT strategy and strategic objectives. Effective governance structures and decision-making processes ensure that ICT investments and initiatives align with the organisation's priorities (Arundel et al., 2019). Ensuring periodic reviews and updates of the ICT strategy to adapt to evolving needs and technological trends is essential, with stakeholder engagement serving as a valuable resource for insights and recommendations (Balafif and Haryanti, 2020). Governance mechanisms are fundamental in ensuring that ICT investments and initiatives are in line with the organisation's priorities. Arundel et al. (2019) emphasise the importance of effective governance structures and decision-making processes in aligning ICT strategy with strategic objectives. These mechanisms provide the framework for making strategic decisions regarding ICT investments, resource allocation, and prioritisation of initiatives to support the organisation's overall strategic direction. Effective governance ensures that ICT resources are utilised in a manner that maximises their contribution to the achievement of strategic objectives. Communication mechanisms also play a pivotal role in achieving alignment between ICT strategy and strategic objectives. Clear and effective communication channels facilitate the dissemination of the organisation's strategic objectives and priorities to the ICT function. This ensures that ICT initiatives and investments are aligned with the broader organisational goals. Additionally, communication mechanisms enable the ICT function to convey its capabilities, challenges, and requirements to the broader organisation, fostering a mutual understanding of how ICT can support strategic objectives.

Collaboration mechanisms are essential for integrating ICT strategy with strategic objectives through cross-functional cooperation and teamwork. Collaboration fosters the alignment of ICT initiatives with the needs and priorities of different business units within the organisation. Through working collaboratively, different departments can ensure that ICT solutions are tailored to meet their specific requirements, thereby contributing to the achievement of the organisation's strategic objectives. Periodic reviews and updates of the ICT strategy are critical for ensuring alignment with evolving needs and technological trends. Balafif and Haryanti (2020) highlight the

importance of regularly revisiting and adapting the ICT strategy to address changing business requirements and technological advancements. This iterative process allows organisations to realign their ICT strategy with strategic objectives, ensuring that it remains relevant and responsive to the dynamic business environment. Stakeholder engagement serves as a valuable resource for insights and recommendations in the alignment of ICT strategy with strategic objectives. Engaging stakeholders, including senior management, business unit leaders, and end-users, allows organisations to gather diverse perspectives and input regarding the alignment of ICT initiatives with strategic objectives. This engagement facilitates the identification of potential alignment gaps and the co-creation of solutions that effectively support the organisation's strategic direction. Governance, communication, collaboration, periodic reviews and updates of ICT strategy, and stakeholder engagement are integral mechanisms for achieving effective alignment between ICT strategy and strategic objectives. These mechanisms provide the framework for decision-making, communication, cooperation, adaptation, and stakeholder involvement, all of which are essential for ensuring that ICT initiatives and investments contribute to the realisation of the organisation's strategic goals. Organisations that prioritise these alignment mechanisms are better positioned to leverage ICT as a strategic enabler and driver of business success.

6.3.4 Strategic objectives (service delivery, efficiency, innovation, security)

Fundamental organisational goals, such as enhancing service delivery, improving efficiency, promoting innovation, and enhancing security, form the bedrock of the alignment process. The disconnect between the ICT strategy and the municipality's IDP underscores the need for better coordination. Research suggests aligning the ICT strategy with the IDP to ensure a coherent approach to organisational impact (McAdam et al., 2017). Furthermore, investments in automation and technology utilisation can significantly boost efficiency and effectiveness within the organisation (Chung et al., 2021). Additionally, Zahir et al. (2020) provide evidence that ICT skills contribute to improved service delivery and job performance. Furthermore, Nyasulu and Chawinga (2018) discuss how service automation and robotics, driven by information and communication technologies, lead to continuous advancement in service efficiency and customer experience.

Wang et al. (2018) highlight the impact of personalisation and compatibility with past experience on e-banking usage, indicating the role of ICT in enhancing service innovation. Additionally, Haque and Hoque (2021) demonstrate how ICT facilitates information delivery systems, contributing to the efficiency of agricultural practices. Furthermore, the importance of security in the context of ICT alignment is evident in the literature. Saravanakumar and Tjprc (2018) discuss the implications of Industry 4.0 for security in contemporary organisations, emphasising the need for information strategies to address security concerns. Anand et al. (2018) also highlight the transformation of information security governance, indicating the evolving role of ICT in ensuring security. The alignment of ICT strategy with strategic objectives such as service delivery, efficiency, innovation, and security is supported by a wealth of literature. The findings underscore the significant impact of ICT on enhancing service delivery, improving efficiency, fostering innovation, and addressing security concerns within various organisational contexts.

6.3.5 ICT infrastructure and resources

This dimension pertains to the essential ICT skills, infrastructure, and processes for executing ICT strategies. Technical and human resources, encompassing hardware, software, networks, and personnel, play a critical role in ICT strategy implementation. Legacy systems and manual processes, often outdated, can hinder efficiency and alignment. The ISM considers technical aspects such as system reliability, performance, ease of use, and flexibility, which are crucial for user satisfaction. The strategic deployment of technology to streamline processes and enable data-driven decision-making aligns with contemporary recommendations (McAdam et al., 2017). Furthermore, investing in robust information security measures remains vital for preserving the confidentiality, integrity, and availability of ICT systems (Ward & Peppard, 2016). The e-government framework, as outlined in a Department of Telecommunications and Postal Services document from 2017, emphasises the establishment and management of dependable, accessible, and cost-effective centralised service centres. This vision is closely aligned with the principles stated in the SITA Act No. 88 of 1998, which underscores the potential of shared infrastructure and services to enhance the efficient use of ICT and improve efficiencies throughout the public service.

Furthermore, this alignment is reflected in Principle 13 of the Government Wide Enterprise Architecture (GWEA) framework. According to GWEA, it is advisable to exercise control over the diversity of technology solutions used across the government (Makovhololo and Open Innovations Oct, 2018). This control serves to mitigate challenges related to maintenance and procurement complexity and harness the advantages of economies of scale. In the context of ICT strategy alignment, this implies that the government should strive to consolidate and centralise ICT resources and services. In doing so, it can reduce the complexities associated with managing a diverse range of technologies and systems. Instead, the focus should be on standardising and optimising ICT solutions to achieve greater efficiency and cost-effectiveness. This approach ensures that ICT strategies are harmonised with the overarching goals of promoting shared services and streamlining technology infrastructure, contributing to better alignment with the government's strategic objectives for service delivery.

6.3.6 Data resources and management

This dimension assesses the accuracy, relevance, completeness, and timeliness of information generated by the system, which is essential for effective decision-making. Data resources, encompassing data collection, storage, processing, and analysis, are pivotal for supporting the ICT strategy and achieving organisational objectives. The research emphasises the strategic importance of data in improving resource allocation, service delivery, and citizen satisfaction (Kude et al., 2018). Developing clear performance indicators and metrics for assessing the quality and relevance of information is essential, as supported by the literature (Applegate et al., 2020).

This dimension, which assesses data resources and management, plays a pivotal role in supporting ICT strategy and achieving organisational objectives. This aligns with the broader understanding that effective data management requires the establishment of robust measures to evaluate the accuracy, relevance, completeness, and timeliness of data. Through implementing clear performance indicators, organisations can ensure that the information generated by the system meets the necessary standards for supporting decision-making processes and achieving organisational objectives.

The emphasis on the strategic importance of data in improving resource allocation, service delivery, and citizen satisfaction underscores the need for clear performance indicators and metrics to assess the quality and relevance of information. These insights highlight the critical role of data resources and management in supporting ICT strategy and organisational objectives.

6.3.7 Successful alignment of eThekwini municipality's ICT strategy with its strategic objectives

The successful alignment of eThekwini municipality's ICT strategy with its strategic objectives is a multifaceted endeavour with far-reaching implications for service delivery, efficiency, and user satisfaction. The literature underscores the importance of engaging with business managers, providing training, and ensuring user understanding of ICT's role in achieving strategic objectives. This aligns with the advocacy for cross-functional collaboration and knowledge management as highlighted by Sinha and Sharma (2018). The involvement of business managers and the provision of training are essential components of ensuring that ICT initiatives are aligned with the broader organisational goals and that users are equipped to leverage ICT effectively to achieve strategic objectives. Furthermore, regular measurement and assessment of societal impact are crucial aspects of successful alignment, resonating with research on the importance of tracking the impact of ICT initiatives and communicating these benefits to the public (Henderson & Venkatraman, 2013). This emphasis on measurement and assessment aligns with the broader understanding that the impact of ICT initiatives should be systematically evaluated and communicated to stakeholders, including the public, to demonstrate the value generated through the alignment of ICT strategy with strategic objectives.

The conceptual framework developed for aligning eThekwini municipality's ICT strategy with its strategic objectives aligns with existing literature, emphasising the critical role of governance, communication, and collaboration in achieving ICT strategy alignment with organisational strategic objectives. This comprehensive framework incorporates all dimensions from both the Strategic Alignment Model (SAM) and the Information Systems Management (ISM), highlighting the interconnected nature of governance, communication, collaboration, and knowledge management in the alignment process.

Additionally, the framework underscores the importance of ICT infrastructure, effective data management, and clear objectives in the alignment process, acknowledging the foundational role of these elements in supporting successful alignment. Aligning the ICT strategy with eThekwini municipality's strategic objectives holds the promise of increased resource efficiency, enhanced service delivery, and greater citizen satisfaction. Through drawing on the insights from the literature and leveraging a comprehensive framework that encompasses governance, communication, collaboration, knowledge management, ICT infrastructure, data management, and clear objectives, the municipality can position itself to realise the full potential of ICT in driving organisational success and delivering value to its stakeholders.

6.4 Chapter summary

This chapter serves as a critical component of the research study, a thorough analysis is presented, encompassing both quantitative and qualitative results, aimed at elucidating the alignment of eThekwini municipality's ICT strategy with its strategic objectives. The integration of these findings not only contributes to the enrichment of existing knowledge in the field of organisational culture but also illuminates potential avenues for future research. The discourse delves into key facets such as governance, communication, collaboration, data resources and management, elucidating the transformative outcomes associated with successful alignment, including enhanced service delivery, heightened efficiency, and increased user satisfaction.

Leveraging insights from established literature, the chapter underscores the strategic significance of data in optimising resource allocation, service delivery, and citizen satisfaction. It accentuates the pivotal roles played by governance, communication, and collaboration in attaining the alignment of ICT strategy with organisational strategic objectives. Moreover, the chapter underscores the imperative of engaging with business managers, facilitating training, and ensuring comprehensive user comprehension of ICT's role in realising strategic objectives. The importance of ongoing measurement and assessment of societal impact is also emphasised, reflecting a commitment to continually evaluate and enhance the efficacy of ICT initiatives.

The amalgamation of quantitative and qualitative results enables the researcher to draw cogent conclusions and formulate informed recommendations, fostering improved ICT strategy alignment and bolstering effective service delivery within eThekwini municipality. This comprehensive analysis, coupled with the integration of existing knowledge, not only advances our understanding of ICT strategy alignment but also lays the groundwork for future research pursuits. It provides valuable insights into the intricate dynamics and potential avenues in aligning ICT strategy with strategic objectives within a municipal context.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

Chapter seven serves as the culmination of this research study, providing essential conclusions and recommendations regarding the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery. This chapter synthesises the findings from both the quantitative and qualitative research methods to offer a comprehensive perspective on the study's objectives. Before delving into the specific conclusions and recommendations, it is essential to acknowledge the significance of this research. The alignment of an ICT strategy with a municipality's strategic objectives is a critical facet of modern governance and organisational success, especially in the context of service delivery. This chapter outlines the key takeaways from the study, discusses the implications, and offers practical recommendations for stakeholders.

Moreover, it briefly outlines areas within the research topic that warrant further investigation, emphasising the study's contribution to the broader body of knowledge in this field. Upon concluding this chapter, readers will have acquired a profound understanding of the alignment obstacles confronting eThekwini municipality. Additionally, they will have access to practical recommendations aimed at mitigating these challenges, resulting in enhanced service delivery, and heightened organisational performance.

The objectives of the study were as follows:

1. To investigate the alignment of eThekwini municipality's ICT strategy with its strategic objectives for service delivery.
2. To establish the contributing factors for aligning eThekwini municipality's ICT strategy with its strategic objectives.
3. To explore how eThekwini municipality's ICT strategy can be realised as an instrument of its strategic objectives for service delivery.
4. To design a standard mechanism to align eThekwini municipality's ICT strategy with the strategic objectives for effective service delivery.
5. To make recommendations on the alignment of eThekwini municipality's ICT

strategy with its strategic objectives for effective service delivery.

7.2 Fulfilment of research objectives

The primary objective of this research was to align eThekwini municipality's ICT strategy with its strategic objectives for service delivery. This overarching goal was achieved by addressing several sub-objectives, each of which contributed to a comprehensive understanding of the alignment challenges and opportunities:

This objective was addressed comprehensively in the study by employing statistical tests, data analysis procedures, and qualitative insights to investigate the alignment. The findings consistently pointed to a significant lack of alignment between the ICT strategy and the municipality's strategic objectives for service delivery. Both quantitative and qualitative data supported this conclusion, thus research objective one was met. This means that the municipality is still lagging as far as ICT alignment with service provision is concerned. The responses of the participants highlighted that the municipality is facing several challenges, including a lack of two-way communication, insufficient knowledge in the ICT department about what is important to the business, a lack of collaboration, and poor ICT governance. eThekwini municipality should thus prioritise the development of a clear and well-defined ICT strategy that aligns with the municipality's overall strategic objectives for service delivery. This strategy should be based on a thorough understanding of the organisation's goals, mission, and vision, and should outline specific, measurable ICT initiatives that directly support the municipality's service delivery priorities. Efforts should be made to improve communication and collaboration between the ICT department and other business units within the municipality. Regular meetings, workshops, and forums should be organised to facilitate dialogue and ensure that ICT initiatives are well-aligned with the needs and requirements of different departments. This collaborative approach will help in breaking down silos and foster a culture of shared ownership of the ICT strategy.

The study identified and explored various contributing factors that impact the alignment of the ICT strategy with the municipality's strategic objectives. These factors included governance, communication, collaboration, technology utilisation, and

knowledge management, among others. The research provided a rich understanding of these factors through qualitative and quantitative analysis, therefore research objective two was met. The researcher observed that the participants were aware of the most critical factor needed to improve the ability of ICT to play a more significant role in eThekwini municipality, i.e., they noted that the municipality should consider a formative evaluation strategy that includes upper-level training management, and/or creating a model that incorporates upper-level management training. This shows that the participants want the municipality to consider all facets of life, from economic to environmental. In addition, the study concluded that ICT strategy alignment will help to redress unintended consequences related to service delivery.

The study explored how the ICT strategy could be realised as an instrument for achieving the municipality's strategic objectives, including the role of ICT infrastructure, data resources, and other enablers in supporting alignment. Recommendations and insights were provided to guide the realisation of this alignment, therefore research objective three was met. The ICT and general strategies were explored during the data collection phase; however, it was found that there is no defined ICT strategy that can be realised as an instrument of eThekwini municipality's strategic objectives for service delivery. This is associated with the fact that there was no clear understanding of ICT strategy among most respondents. Business managers should thus be actively involved in the formulation of the ICT strategy at the departmental level, as their input and understanding of business processes are crucial for ensuring that ICT initiatives are tailored to meet the specific needs of each department and contribute to the overall strategic objectives. To enhance the understanding of ICT capabilities and value among stakeholders, investment in training and knowledge management is essential. Regular training programmes and workshops should be provided to ICT personnel and other stakeholders to improve their awareness of the benefits that technology can bring to the municipality. ICT governance should be strengthened, and top officials, including the Municipal Manager, should be actively involved in the ICT strategy formation and decision-making processes. Their accountability and direction-setting in ICT matters will ensure proper oversight and alignment with the municipality's overall strategic objectives (Jung, 2019).

The fourth objective was to design a standard mechanism to align an ICT strategy with eThekwini municipality's strategic objectives for effective service delivery. While the study provided a conceptual framework and recommendations for improving alignment, it has not offered a fully designed "standard" mechanism in a prescriptive sense, but rather offers guidance and recommendations for the municipality to establish alignment mechanisms. The framework and recommendations thus serve as a foundation for designing and implementing such mechanisms, partially meeting research objective four. The researcher observed that by implementing an ICT strategic plan, eThekwini municipality would benefit from improved communication, aligning their ICT strategy with the municipality's other strategies, and putting people first. Communication and collaboration need to be improved between the municipality and other agencies; between the council and the municipality; among council, the municipality, and citizens; and amongst municipal employees. The municipality should also develop a standardised mechanism for aligning its ICT strategy with the municipality's strategic objectives for effective service delivery. This mechanism should define the clear roles and responsibilities of stakeholders involved in the strategic planning process and ensure consistency in the development of strategic plans across different units within the municipality. To address the challenges in measuring the value of ICT investments, eThekwini municipality should establish a benefit realisation framework. This framework should outline clear metrics and performance indicators to evaluate the impact of ICT projects on service delivery outcomes, which will help in demonstrating the return on investment (ROI) of ICT initiatives and justify further investments. Engaging stakeholders in this process will provide valuable feedback and recommendations for improvement, ensuring continuous alignment with the municipality's strategic objectives (Jonathan et al., 2021).

The study concludes with a series of recommendations aimed at aligning eThekwini municipality's ICT strategy with strategic objectives to enhance service delivery. Firstly, it is advised that the municipality develops a clear and well-defined ICT strategy in alignment with its overall strategic goals. This strategy should be collaboratively developed with input from key stakeholders, outlining specific goals, initiatives, and action plans to effectively leverage technology for service delivery (Arundel et al., 2019). Additionally, robust ICT governance structures and decision-making processes

are essential to ensure alignment with strategic priorities. This involves involving senior management in ICT decision-making and establishing mechanisms for regular monitoring and evaluation of ICT projects' impact on service delivery (Alaeddini et al., 2017). Strengthening this governance framework involves positioning the head of the ICT department as a senior executive and ensuring the department's autonomy within the organisational structure. Furthermore, fostering better collaboration and communication between the ICT department and other business units is crucial. Regular meetings, workshops, and forums should be encouraged to facilitate discussions on strategic objectives, ICT projects, and progress updates (Nolan and McFarlan, 2005). Additionally, providing training and capacity-building programs for ICT personnel and stakeholders enhances their understanding of the value of ICT investments and their alignment with strategic objectives. Prioritising ICT projects based on alignment with strategic objectives and allocating appropriate resources, including budget and manpower, are imperative (Balafif and Haryanti, 2020). It is also recommended that the municipality evaluates and modernises its legacy systems and infrastructure to meet current and future business requirements.

A structured benefit realisation model should be developed to measure the value of ICT investments effectively and ensure that benefits are realised (Balafif and Haryanti, 2020). Moreover, fostering a culture of innovation within the municipality encourages the adoption of innovative technologies to enhance service delivery and meet evolving citizen needs (Nolan and McFarlan, 2005).To further align the ICT strategy with strategic objectives, the municipality should consider implementing smart city technologies, such as smart water and smart electricity systems, to optimise service delivery efficiency (Arundel et al., 2019). Lastly, periodic review and update of the ICT strategy to adapt to changing technological trends and emerging needs, while engaging stakeholders for continuous improvement, are recommended (Alaeddini et al., 2017). Implementing these recommendations will empower eThekwini municipality to fortify the alignment of its ICT strategy with its strategic objectives, thereby elevating service delivery outcomes and efficiently harnessing technology to meet the needs of its residents and communities.

7.3 Conclusion

The literature indicated that the connection between ICT strategic alignment and the governance of ICT should be positive. To achieve business / ICT alignment, organisations must make decisions that consider the organisational objectives as well as the ICT objectives. Aligning the ICT strategy with the municipality's strategy is a vital factor driving ICT governance's effect on an organisation's performance. Previous research (Saputra et al., 2019, Sibanda, 2020, Sugebo and Sekhar, 2020) shows that all facets of life, which include social, economic, environmental, and technological aspects, are key factors in aligning ICT strategy and business. For this reason, ICT plays a significant role in an organisation, which is why implementing an aligned strategy is critical. Several authors (Tauté, 2020, Vinti, 2019, Sembodo Suroso et al., 2018, Mwadiwa and Maleho, 2022) indicated that the integration of administrative processes and ICT could be significantly improved through continued research on strategic alignment in the public sector to examine South Africa's perspectives on ICT governance and their relationship with ICT value delivery. The findings from the literature review also highlighted that ICT alignment should involve multiple layers of employees, not only the top management. The research findings suggest that aligning the ICT strategy with the strategic objectives of eThekwini municipality would be a crucial factor in driving effective ICT governance and improving organisational performance. A study by Ngqondi and Mauwa (2020) similarly emphasised the importance of strategic alignment between ICT and business objectives to ensure that ICT resources are utilised efficiently and effectively in fulfilling a municipality's overall goals.

The involvement of top officials, particularly the Municipal Manager, in ICT strategy formation aligns with principles of good corporate governance, such as accountability and direction-setting in ICT matters. This involvement would ensure the proper oversight and governance of ICT initiatives and help in making well-informed decisions that support the municipality's strategic direction. A study by Makovhololo and Open Innovations Oct (2018) highlighted the importance of using approved South African government planning frameworks, such as the Framework for Strategic Plans and Annual Performance Plans and the Government-wide Enterprise Architecture (GWEA), to guide the alignment of ICT and business strategies. Through adherence

to these frameworks, the municipality can secure its ICT initiatives' alignment with national standards and best practices.

Moreover, the research indicates that a well-formulated ICT strategy is crucial for successful alignment and the realisation of desired outcomes. Additionally, the research findings emphasise the importance of involving business managers in formulating the ICT strategy at the departmental level. This collaboration will ensure that ICT initiatives are aligned with the specific needs and objectives of different business units, leading to more effective use of ICT resources. Overall, the study highlights the importance of alignment between the municipality's ICT strategy and its general strategic objectives for effective service delivery. Through aligning the ICT strategy with the organisation's goals, leveraging government planning frameworks, and involving top officials and business managers, the eThekwini municipality can enhance its ICT governance, optimise resource utilisation, and improve overall organisational performance in the rapidly evolving digital landscape.

7.4 Evaluation methodology

The evaluation process in this study encompassed five fundamental elements, each of which contributed to a comprehensive assessment of the research. These elements were carefully designed to ensure the research's quality, validity, and relevance:

7.4.1 Foundational element

The evaluation began by scrutinising the foundational element, which focused on the literature review. This assessment examined the literature review's relevance and comprehensiveness concerning its alignment with the research objectives. It ensured that the literature review provided a solid foundation for the study, justified the research problem's significance, and supported the chosen research methodology. The literature review in this study drew upon various sources to build a comprehensive understanding of the research topic. These sources encompassed three primary categories:

- **Primary literature:** This category included published sources such as reports and government publications, which were comprised of Acts, White Papers, and planning documents. Additionally, primary literature encompassed

unpublished manuscripts like memorandums and committee minutes. These documents served as foundational sources of information, providing insight into the official policies, regulations, and internal communications relevant to the research topic.

- **Secondary literature:** The secondary literature consisted of books and scholarly journals, which offered in-depth analyses, theoretical frameworks, and academic perspectives on the subject matter, while contributing to the development of the study's research framework and methodology.

- **Tertiary literature:** The tertiary literature was comprised of tools and resources designed to facilitate the location of primary and secondary literature. This category included indexes and abstracts, which helped the research to identify and access relevant research articles and publications. Additionally, professional websites and newspaper sources within the tertiary literature category provided contemporary insights, news articles, and expert opinions related to the research area.

Combining official documents, academic research, and contemporary insights allowed for a thorough examination of the research problem, which effectively informed the research process.

7.4.2 Traditional element

A mixed method data collection process was employed, which encompassed both qualitative and quantitative research techniques. This element assessed the appropriateness and rigour of each research segment, ensuring that the selected research methods aligned with their respective research objectives. Further, it verified the quality and validity of the data collected within each segment. This approach allows for a comprehensive evaluation of research objectives, ensuring that the selected methods align appropriately with their respective goals. The use of mixed methods reflects a recognition of the diverse aspects of the research questions or objectives that may be best addressed through different types of data. Qualitative methods, such as interviews or open-ended surveys, can provide in-depth insights into participants' perspectives and experiences. On the other hand, quantitative methods, such as

surveys with structured questions or statistical analyses, allow for the systematic examination of patterns and relationships within large datasets. The traditional element underscores the importance of rigor in each research segment, ensuring that the chosen methods are appropriate for the specific research goals and contribute to a comprehensive understanding of the research questions. This includes considerations of the reliability and validity of both qualitative and quantitative data, promoting the overall robustness of the research design. This traditional element aligns with established research practices, where a combination of qualitative and quantitative methods is often employed to provide a more holistic and nuanced understanding of complex phenomena.

7.4.3 Inferential consistency element

The inferential consistency element in the research process is centred on evaluating the adequacy and appropriateness of the methodology for addressing the research questions. This evaluation is conducted by assessing the inferential consistency and coherence of the research process, confirming that the selected methodology effectively supports the study's objectives. The primary goal of this element is to ensure that the research derives valid and reliable inferences from the collected data. Inferential consistency involves the logical and systematic progression from data collection to drawing conclusions or making inferences about the broader population or phenomena under study. This element ensures that the chosen methodology aligns with the research questions and objectives, allowing for meaningful and well-supported conclusions. The evaluation considers the coherence of the research process, checking for consistency in the application of methods and procedures throughout the study. It verifies that the inferential steps, such as statistical analyses or qualitative interpretations, are logically connected and contribute to the overall coherence of the research findings. It ensures that the study's inferences are grounded in sound reasoning, valid data, and appropriate analytical techniques. This approach is crucial for building confidence in the reliability and validity of the research findings, ultimately enhancing the credibility of the study as a whole.

7.4.4 Utilisation element

The utilisation element in the research process focuses on how similar studies and findings can inform the development of the research's artifact or solution. This evaluation draws upon existing research to identify guiding principles and best practices that can contribute to addressing the research issues. It leverages relevant literature to inform the research's design and the development of a solution. In essence, the utilisation element recognises the value of existing knowledge and research in shaping and enhancing the current study. Through reviewing and incorporating findings from similar studies, researchers can benefit from established frameworks, methodologies, and insights that have proven effective in related contexts. This element involves a thoughtful integration of relevant literature to inform various aspects of the research, including the conceptual framework, research design, and the development of a practical solution or artifact. It ensures that the research is built on a foundation of existing knowledge and aligns with established practices in the field.

Through leveraging insights from similar studies, the utilisation element contributes to the robustness of the research and the development of a solution that is not only theoretically grounded but also practical and applicable in real-world contexts. This approach helps avoid the duplication of efforts, promotes efficiency in addressing research issues, and enhances the overall utility and relevance of the research findings and artifacts.

7.4.5 Consequential element

The consequential element in the research process emphasises the evaluation of potential consequences resulting from the research findings and artifacts. It underscores that the true assessment of these consequences will only occur once the artifact, in this case, an ICT strategy alignment solution, is implemented in a real-life context. This approach allows for a comprehensive examination of the research's quality and relevance. The evaluation of consequences involves considering the practical implications and impact of the research in a real-world setting. It recognises that the true effectiveness and outcomes of the research can only be fully understood when the proposed solution is put into action within the dynamic and practical

environment it is designed for. When focusing on the implementation and observing the consequences in a real-world context, researchers gain insights into the practical utility, feasibility, and sustainability of the proposed artifact or solution. It allows for the identification of any unforeseen challenges, benefits, or adaptations that may arise during the implementation phase. The consequential element contributes to the overall rigor of the research by acknowledging that the true test of its quality and relevance lies in the tangible outcomes and consequences observed during and after the implementation of the proposed solution. This holistic evaluation approach enhances the credibility and applicability of the research, ensuring that it not only contributes to theoretical knowledge but also addresses practical challenges and provides meaningful solutions in real-world scenarios.

7.4.6 Artifact evaluation

The artifact evaluation process involved assessing how well the designed solution (an ICT strategy alignment mechanism) supported the resolution of the research problem. Evaluation was an ongoing process, with micro-evaluations occurring at each design decision. Research questions were developed to guide the evaluation of each iteration of the artifact design. This systematic evaluation aimed to demonstrate the utility, quality, and efficacy of the ICT strategy alignment mechanism, ensuring its alignment with the study's focus on ICT strategy alignment within the eThekwini municipality.

7.5 Contribution of the research study

The research study makes a multifaceted contribution that spans knowledge, practices, and policymaking, establishing its significance and relevance in several domains. Addressing real-world challenges encountered by the eThekwini municipality, the study adds practical insights to the theoretical understanding of how organisations, particularly in the public sector, can effectively align their ICT strategies with overarching objectives. The study enhances academic understanding of ICT strategy alignment by providing a nuanced perspective. It delves into the complexities faced by a municipal government, enriching the existing body of knowledge in the field of ICT governance and strategic alignment. The study offers concrete and actionable recommendations tailored to the challenges and prospects identified within the eThekwini municipality. These recommendations provide practical guidance for

enhancing ICT strategy alignment within the municipal context. Through the specific case study of eThekwini municipality, the research study becomes a valuable resource for practitioners, policymakers, and organisational leaders. It offers real-world insights that can inform and improve ICT strategies and practices within similar entities. Policymakers can benefit from the study's findings, which highlight the challenges and prospects associated with ICT strategy alignment in a municipal setting. The research offers implications for shaping policies that support effective ICT governance and alignment within the public sector. The study's focus on a municipal government case study provides guidance for policymakers dealing with similar entities. It offers a practical lens through which policymakers can address the unique challenges faced by municipalities in aligning their ICT strategies with broader objectives. In essence, the research study's main contribution lies in its ability to bridge the gap between theory and practice, offering valuable insights, recommendations, and implications for improving ICT strategy alignment. This contribution extends beyond the immediate context of the eThekwini municipality, making it a valuable resource for diverse organisations, government bodies, and policymakers seeking to enhance their ICT governance and strategic alignment for effective service delivery.

Engaging in this research has been a transformative journey, impacting both my personal and academic development in profound ways. On a personal level, the research process has polished crucial skills, including research and analytical capabilities. The thorough literature review and analysis of existing studies have sharpened critical thinking, fostering a deeper understanding of the challenges faced by the eThekwini municipality in aligning strategic objectives with ICT strategy. The necessity to address complex issues has nurtured creative problem-solving abilities, enabling me to approach challenges systematically and devise practical solutions. Managing the intricacies of a research project has improved project management skills, emphasising effective time management and organisational capabilities. Moreover, translating research findings into a comprehensive document has refined written communication skills, ensuring clarity in conveying complex ideas.

In summary, the research process has not only contributed to academic enrichment but has also equipped me with practical skills essential for personal and professional growth. The ability to meaningfully contribute to real-world problem-solving, coupled with refined academic knowledge, positions me to make valuable contributions in both

academic and professional settings. This holistic development underscores the transformative impact of rigorous research endeavours on personal and academic growth.

7.6 Limitations of the research study

This study is focused exclusively on the eThekwini municipality in KwaZulu-Natal; thus, the findings may not be universally applicable. The municipality's unique characteristics and challenges may differ from those of other regions, potentially limiting the generalisability of the study's conclusions. Further, the study primarily relied on the perspectives of the municipality's top officials, thus it is essential to acknowledge that the perspectives of other stakeholders, such as existing investors or private entities operating within the municipality, were not necessarily represented in the findings. A more comprehensive view of the alignment challenges and opportunities could have been achieved by including a broader range of stakeholders. Within the municipality itself, the study interviewed selected senior officials, therefore the perspectives of other staff members who are directly involved in the day-to-day implementation of ICT initiatives were not fully captured. Their insights could have provided valuable operational perspectives.

Data collection for this study encountered delays due to the busy work schedules of the respondents, which extended the data collection process beyond the initially planned timeline. These scheduling challenges, while understandable in a professional context, impacted the study's efficiency. Given the limited resources associated with public sector agencies, completely automated and sustaining service delivery activities across all municipality areas may be unachievable in the short term. The study also constrained itself to a government entity and left out other stakeholders, such as private entities.

7.7 Recommendations for further studies

Several factors were identified and discussed in the literature review, which relate to the municipality's ICT strategy as it applies to service delivery. Taking into consideration that information and technology is a multi-faceted process, further

research could be conducted that focuses on a larger sample and involves more stakeholders as participants. Investigating the impact of emerging technologies, such as artificial intelligence, blockchain or the Internet of Things (IoT), on the alignment of ICT strategies with organisational goals would also be beneficial, as understanding how these technologies can be effectively integrated into a municipality's strategy is crucial for staying relevant in a rapidly changing technological landscape. Laudon and Laudon (2015) emphasise the crucial role of organisational culture and structure in shaping the effectiveness of ICT strategies. It delves into how the alignment of information systems with organisational goals is influenced by cultural factors, including norms, values, and shared beliefs. Additionally, it explores the structural aspects that either facilitate or impede the integration of ICT strategies within an organisation.

In drafting the ICT policy document, it's imperative to include robust provisions for security and protection of ICT assets. This entails establishing comprehensive access control policies delineating user privileges based on roles and responsibilities within the organisation. Measures such as user authentication, role-based access controls, and adherence to the principle of least privilege should be clearly outlined to regulate access to sensitive information and systems. Additionally, the policy should encompass guidelines for data encryption, network security protocols, and regular security audits to mitigate risks of unauthorised access, data breaches, and cyber threats. A study could also explore the role of organisational culture and structure in facilitating or hindering ICT strategy alignment; identifying cultural and structural factors that support alignment efforts can guide efforts to create a conducive environment for successful alignment. Exploring these areas of research can provide valuable insights for policymakers, ICT leaders, and practitioners seeking to optimise ICT strategy alignment for effective service delivery and overall organisational success. These studies can inform evidence-based practices and contribute to the advancement of the field of ICT governance and strategic planning in the context of public service delivery.

7.8 Summary

In summary, the research underscores the challenges faced by the eThekwini municipality in aligning its strategic objectives with its ICT strategy. Key

recommendations for improvement include the establishment of a well-defined ICT strategy, fostering collaboration among stakeholders, ensuring the active involvement of top officials, and implementing a standardised mechanism for measuring the value of ICT investments. Addressing these challenges and adopting the proposed strategies holds the potential to significantly enhance the alignment of the municipality's ICT strategy, thereby effectively supporting its overarching objectives for service delivery. The findings of this research offer practical insights that can guide policymakers, ICT leaders, and practitioners in their efforts to optimise ICT strategy alignment within the context of public service delivery.

REFERENCES

ABDULLAHI, M., SHEHU, U. & USMAN, B. 2019. Impact Of Information Communication Technology On Organisational Productivity In The Nigeria Banking Industry: Empirical Evidence. 3**,** 1-9.

ADDO, K. K. & AGYEPONG, P. K. 2020. The Effects of Information and Communication Technology on Health Service Delivery at Tafo Government Hospital. *E-Health Telecommunication Systems and Networks*.

AGBEBI, M., XUE, G. & YU, Z. 2021. China-powered ICT Infrastructure Lessons from Tanzania and Cambodia. South African Institute of International Affairs.

AGSA, A. G. 2018. Consolidated general report on the audit outcomes of local government 2016-17.

AHMAD, A. J. & THORNBERRY, C. 2018. On the structure of business incubators: de-coupling issues and the mis-alignment of managerial incentives. *The Journal of Technology Transfer,* 43**,** 1190-1212.

AHMED, T., YANG, C., YANG, H. & MAHMOOD, S. 2022. The Impact of Empowering Leadership on Job Performance of Higher Education Institutions Employees: Mediating Role of Goal Clarity and Self-Efficacy. *Psychology Research and Behavior Management*.

AHRIZ, S., BENMOUSSA, N., EL YAMAMI, A., MANSOURI, K. & QBADOU, M. 2018. An Elaboration of a Strategic Alignment Model of University Information Systems based on SAM Model. *Engineering, Technology & Applied Science Research,* 8**,** 2471-2476.

AJIBADE, P. & MUTULA, S. M. 2020. Promoting SMEs Effectiveness Through Innovative Communication Strategies and Business-It Alignment. *Problems and Perspectives in Management*.

AKLILU, A. & KAGISO, M. 2020. CHALLENGES IN THE IMPLEMENTATION OF INTEGRATED DEVELOPMENT PLAN AND SERVICE DELIVERY IN LEPELLE-NKUMPHI MUNICIPALITY, LIMPOPO PROVINCE. *International Journal of Economics and Finance Studies* [Online], 1.

AKO-NAI, A. & SINGH, A. M. 2019. Information technology governance framework for improving organisational performance. *South African Journal of Information Management,* 21**,** 1-11.

ALAEDDINI, M., ASGARI, H., GHARIBI, A. & RASHIDI RAD, M. 2017. Leveraging business-IT alignment through enterprise architecture—an empirical study to estimate the extents. *Information Technology and Management,* 18**,** 55-82.

ALAEDDINI, M. & MIR-AMINI, M. 2020. Integrating COBIT with a hybrid group decision-making approach for a business-aligned IT roadmap formulation. *Information Technology and Management* [Online], 21.

ALBERTO LEITE, C. M., REJANE MARIA DA COSTA, F. & EDNA DIAS, C. 2018. Analysis of Conversation Competencies in Strategic Alignment between Business Areas (External Control) and Information Technology Areas in a Control Body. *Information* [Online], 9.

AMES, H., GLENTON, C. & LEWIN, S. 2019. Purposive sampling in a qualitative evidence synthesis: a worked example from a synthesis on parental perceptions of vaccination communication. *BMC Medical Research Methodology,* 19**,** 26.

ANAND, R. R., MEDHAVI, S., SONI, V., MALHOTRA, C. & BANWET, D. K. 2018. Transforming Information Security Governance in India (A SAP-LAP Based Case Study of Security, IT Policy and E-Governance). *Information and Computer Security*.

ARUNDEL, A., BLOCH, C. & FERGUSON, B. 2019. Advancing innovation in the public sector: Aligning innovation measurement with policy goals. *Research Policy,* 48**,** 789-798.

BALAFIF, S. & HARYANTI, T. 2020. IT balanced scorecard (IT BSC) based strategic framework for assessing the impacts of Business Strategic-IT alignment. 821.

BHATTACHARYA, P. 2018. Aligning Enterprise Systems Capabilities with Business Strategy: An extension of the Strategic Alignment Model (SAM) using Enterprise Architecture. *Procedia Computer Science,* 138**,** 655-662.

BLANCHFLOWER, T. M. 2018. Leavy, P. (2017). Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches. New York, NY: The Guilford Press. ISBN 9781462514380. 300 pp. (Paperback). *Family and Consumer Sciences Research Journal,* 47**,** 101-102.

BOURDEAU, S., HADAYA, P. & LUSSIER, J.-E. 2018. Assessing the Strategic Alignment of Information Systems Projects: A Design Science Approach. *Projectics / Proyéctica / Projectique,* 20**,** 115-154.

CÂMARA, A. L., MARIA DA COSTA FIGUEIREDO, R. & CANEDO, E. D. 2018. Analysis of Conversation Competencies in Strategic Alignment between Business Areas (External Control) and Information Technology Areas in a Control Body. *Information,* 9**,** 166.

CANEDO, E. D., PARENTE DA COSTA, R., VIEIRA AMARAL, L. H., COUTINHO, M., DANIEL AMVAME NZE, G. & DE SOUSA JUNIOR, R. T. 2019. Proposal of an Implementation Methodology of ICT Processes. *Information,* 10**,** 327.

CASTROUNIS, A. 2019. AI for people and business : a framework for better human experiences and business success. First edition. ed. Sebastopol, CA: O'Reilly Media, Inc.

CHAWANA, T. & ADEBESIN, F. 2021. The current state of measuring return on investment in user experience design. *South African Computer Journal,* 33**,** 22-36.

CHUNG, D., MA, Q., SUN, Z., ZHAO, J. & LIU, Z. 2021. A Statistical Framework for Data Purification with Application to Microbiome Data Analysis. *bioRxiv*.

CORDOVA, A. & STANLEY, K. D. 2021. Public-private partnership for building a resilient broadband infrastructure in Puerto Rico. *Telecommunications Policy,* 45.

COTTIES, A. & ENAIFOGHE, A. 2019. South Africa's decentralization problems of citizenry participatory democracy in local municipality development. *AFFRIKA Journal of Politics, Economics and Society,* 9**,** 91-116.

CRESWELL, J. W. & CRESWELL, J. D. 2018. *Research design : qualitative, quantitative, and mixed methods approaches,* Thousand Oaks, California, SAGE Publications, Inc.

CRESWELL, J. W. & PLANO CLARK, V. L. 2018. *Designing and conducting mixed methods research,* Thousand Oaks, California, SAGE.

CRESWELL, J. W. & POTH, C. N. 2018. *Qualitative inquiry & research design : choosing among five approaches,* Thousand Oaks, California, SAGE.

DAIRO, M., ADEKOLA, J., APOSTOLOPOULOS, C. & TSARAMIRSIS, G. 2021a. Benchmarking strategic alignment of business and IT strategies: opportunities, risks, challenges and solutions. *International Journal of Information Technology,* 13**,** 2191-2197.

DAIRO, M., ADEKOLA, J., APOSTOLOPOULOS, C. & TSARAMIRSIS, G. 2021b. Benchmarking strategic alignment of business and IT strategies: opportunities, risks, challenges and solutions. *International Journal of Information Technology : An Official Journal of Bharati Vidyapeeth's Institute of Computer Applications and Management,* 13**,** 2191-2197.

DARUSALAM, OMAR, N., JANSSEN, M., SAID, J. & SOHAG, K. 2023. The influence of ICT diffusion and globalization on the quality of governance: A study using panel data from ASEAN countries. *Information Development,* 39**,** 46-59.

DELONE, W. H. & MCLEAN, E. R. 2016. Information Systems Success Measurement. *Foundations and Trends® in Information Systems,* 2**,** 1-116.

DENZIN, N. K. & LINCOLN, Y. S. 2018. *The SAGE handbook of qualitative research,* Thousand Oaks, California, SAGE.

DLAMINI, B., TAPERA, J. & CHIVASA, S. 2017. Can Sound Corporate Governance Alleviate Corporate Failure? A Study of the Zimbabwean Financial Services Sector. *Journal of Economics and Behavioral Studies*.

DUBROV, D. 2023. The Relationship Between Involvement in the Use of Information and Communication Technologies and Family Social Capital. *Психология Журнал Высшей Школы Экономики*.

DZINGAI, I. & FAKOYA, M. B. 2017. Effect of Corporate Governance Structure on the Financial Performance of Johannesburg Stock Exchange (JSE)-Listed Mining Firms. *Sustainability*.

ELIWA, H. K., JELODAR, M. B. & POSHDAR, M. 2022. Information and Communication Technology (ICT) Utilisation and Infrastructure Alignment in Construction Organizations. *Buildings,* 12**,** 281.

ELSTON, D. M. 2018. Sample size. *Journal of the American Academy of Dermatology,* 79**,** 635.

EZE, S. C., OLATUNJI, S., CHINEDU-EZE, V. C. & BELLO, A. O. 2019. Key success factors influencing SME managers' information behaviour on emerging ICT (EICT) adoption decision-making in UK SMEs. *The Bottom Line,* 31**,** 250-275.

FLICK, U. 2018. The Sage handbook of qualitative data collection. Los Angeles: Sage Reference.

FLICKINGER, M. & ZSCHOCHE, M. 2018. Corporate divestiture and performance: an institutional view. *Journal of Management & Governance,* 22**,** 111-131.

FONSECA, L., RODRIGUES, C. & CAPELLERAS, J.-L. S. 2021. The organisational adaptation of universities to smart specialization: the emergence of strategic network interface units. *European Planning Studies,* 29**,** 1514-1537.

FOUAD, S. H. L. & GOUVEA, R. 2018. The U.S.-Brazil relationship opportunity: Business synergies for a dynamic global environment. *Thunderbird International Business Review,* 60**,** 497-510.

FOURIE, D. & MALAN, C. 2020. Public Procurement in the South African Economy: Addressing the Systemic Issues. *Sustainability,* 12**,** 8692.

GODBLESS, E. E. & ISRAEL, O. E. 2022. Managing Information Communication Technology and Effectiveness of Electricity Distribution Companies: A Re-Strategizing and Evolving Paradigms. *Asian Journal of Social Sciences and Management Studies*.

GUTU, K. 2019. *Strategic management in small and medium enterprises : a case study of Harare, Zimbabwe.*

HADIANTO, A., SALOMO, R. V. & PANGGABEAN, M. S. S. R. 2018. Built the Effective Internal Control System in Local Governments of Developing Countries : A Case Study on Tegal City. *International Journal of Engineering & Technology*.

HAES, S., GREMBERGEN, W., JOSHI, A. & HUYGH, T. 2020. Enterprise Governance of IT.

HANAFI, R., WIBOWO, L. A. & RAHAYU, A. Organization and IT Strategic Alignment, Determination of IT Process Priorities using COBIT 5. 2020 International Conference on Advancement in Data Science, E-learning and Information Systems (ICADEIS), 20-21 Oct. 2020 2020. 1-6.

HANIM, W. 2018. The Implementation of Drinking Water Supply System in Decentralization Era. *Trikonomika*.

HANKEL, A., HEIMERIKS, G. & LAGO, P. 2019. Green ICT Adoption Using a Maturity Model. *Sustainability,* 11**,** 7163.

HANZAH, N. & SULAIMAN, H. 2018. An Empirical Analysis of Social Dimension Factors Towards Better IT Service Quality for Malaysian Public Agencies. *International Journal of Engineering & Technology*.

HAQUE, M. E. & HOQUE, M. Z. 2021. Utilisation and Effectiveness of ICT as Agricultural Information Delivery System in Thakurgao, Bangladesh. *South Asian Journal of Social Studies and Economics*.

HARIYANTO, H. & ANWAR, M. Socio-technical Approach to Agricultural Information Systems Development. 2019/04 2019. Atlantis Press, 469-474.

HARLIE, M., HAIRUL, RAJIANI, I. & ABBAS, E. W. 2019a. Managing information systems by integrating information systems success model and the unified theory of acceptance and usage of technology. *Polish Journal of Management Studies,* 20**,** 192-201.

HARLIE, M., HAIRUL, H., RAJIANI, I. & ABBAS, E. W. 2019b. MANAGING INFORMATION SYSTEMS BY INTEGRATING INFORMATION SYSTEMS SUCCESS MODEL AND THE UNIFIED THEORY OF ACCEPTANCE AND USAGE OF TECHNOLOGY. *Polish Journal of Management Studies,* 20**,** 192-201.

HELIN, A. & DAHLBERG, T. 2017. Volume, Benefits and Factors That Influence Inter-Municipal ICT Cooperation in Relation to ICT-related Social Services and Healthcare Services. *Finnish Journal of Ehealth and Ewelfare*.

HERNANDEZ, L. L. C., PEREZ, T. V. & SILVA, H. F. C. 2019. Strategic planning model of information technology that allows alignment with the IT4+ model. 1257.

INSTITUTE OF DIRECTORS 2016. *King IV report,* [South Africa], Institute of Directors in Southern Africa.

JING, X., YAN, Z. & PEDRYCZ, W. 2018. Security data collection and data analytics in the internet: A survey. *IEEE Communications Surveys & Tutorials,* 21**,** 586-618.

JONATHAN, G. M. 2023. *Information Technology Alignment in Public Organisations: Towards Successful Digital Transformation.*

JONATHAN, G. M., HAILEMARIAM, K. S., GEBREMESKEL, B. K., YALEW, S. D., IEEE 12TH ANNUAL INFORMATION TECHNOLOGY, E. & MOBILE COMMUNICATION CONFERENCE VANCOUVER, B. C. C. O. O. 2021. Public Sector Digital Transformation: Challenges for Information Technology Leaders. *2021 IEEE 12th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON).* IEEE.

JUNG, D. 2019. "Assessing citizen adoption of e-government initiatives in Gambia: A validation of the technology acceptance model in information systems success". A critical article review, with questions to its publishers. *Government Information Quarterly,* 36**,** 5-7.

KALONDA, J. K. & GOVENDER, K. 2021. Factors Affecting Municipal Service Delivery. *African Journal of Public Affairs,* 12**,** 1-26.

KAMEL, S. & RIZK, N. 2017. ICT Strategy Development.

KARLSEN, J. T. 2020. The Project Steering Committee, Project Governance and Trust: Insights From a Practical Case Study. *Management Research Review*.

KAUR, N., VEDEL, I., EL SHERIF, R. & PLUYE, P. 2019. Practical mixed methods strategies used to integrate qualitative and quantitative methods in community-based primary health care research. *Family practice,* 36**,** 666-671.

KETTUNEN, P., HEINO, H., RASINKANGAS, J. & JAUHIAINEN, J. S. 2020. Addressing Local Sustainability: Strategic Thinking in the Making. *Scandinavian Journal of Public Administration*.

KHAMBULE, I. 2022. Territorial Impact and Responses to COVID-19 in South Africa: Case Studies of eThekwini Metropolitan Municipality and KwaDukuza Local Municipality. *World,* 3**,** 513-529.

KHAN, I. & ZAHID, S. N. 2020. The Impact of Shari'ah and Corporate Governance on Islamic Banks Performance: Evidence From Asia. *International Journal of Islamic and Middle Eastern Finance and Management*.

KHAWAN, S. 2019. (Implementing and Alignment the Information and Communication Technology (ICT) Strategic Planning, with the Organization's Strategic Planning in Government Sector) (Preparation, Implementation, Challenges and Proposed Solutions). *SSRN Electronic Journal*.

KHUNOETHE, H., REDDY, P. S. & MTHULI, S. A. 2021. Performance Management and the Integrated Development Plan of the Msunduzi Municipality in South Africa. *NISPAcee Journal of Public Administration and Policy,* 14**,** 161-187.

KLIER, J., KLIER, M. & MUSCHTER, S. 2017. How to manage IS requirements in complex public sector structures: toward an action design research approach. *Requirements Engineering,* 22**,** 419-432.

KOSTOSKA, O. & KOCAREV, L. 2019. A Novel ICT Framework for Sustainable Development Goals. *Sustainability,* 11**,** 1961.

KUDE, T., LAZIC, M., HEINZL, A. & NEFF, A. 2018. Achieving IT-based synergies through regulation-oriented and consensus-oriented IT governance capabilities. *Information Systems Journal,* 28**,** 765-795.

KUSRINI, E., SAFITRI, W. & HELIA, V. N. 2019. Identify Key Success Factors Using Interpretive Structural Modeling (ISM) : A Case Study in Small and Medium Enterprise in Indonesia. *IOP Conference Series: Materials Science and Engineering,* 697**,** 012015.

LAPPI, T. M., AALTONEN, K. & KUJALA, J. 2019. Project governance and portfolio management in government digitalization. *Transforming Government: People, Process and Policy,* 13**,** 159-196.

LUCIA MASILELA & NEL, D. 2021. The role of data and information security governance in protecting public sector data and information assets in national government in South Africa. *Africa's Public Service Delivery & Performance Review* [Online], 9.

MAGNUSSON, E. & MARECEK, J. 2015. *Doing interview-based qualitative research : a learner's guide,* Cambridge, Cambridge University Press.

MAKOVHOLOLO, M. L. 2016. *Effects of enterprise architecture adoption on ICT standardisation across South African government departments.*

MAKOVHOLOLO, M. L. & OPEN INNOVATIONS OCT, O. 2018. Effects of GWEA Implementation on ICT Standardisation Across SA Government Departments. *2018 Open Innovations Conference (OI).* IEEE.

MALAKOANA, M. S. 2016. *Water service delivery in eThekwini Municipality : perceptions and processes in Johanna/Boxwood Road informal settlement.*

MALATJI, M., MARNEWICK, A. L. & VON SOLMS, S. 2021. Cybersecurity Policy and the Legislative Context of the Water and Wastewater Sector in South Africa. *Sustainability,* 13**,** 291.

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.

MAMOKHERE, J. 2019. An Assessment of Reasons Behind Service Delivery Protests: A Case of Greater Tzaneen Municipality. *Journal of Public Affairs*.

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)*.

MAMOKHERE, J., MUSITHA, M. & NETSHIDZIVHANI, M. 2021. The implementation of the basic values and principles governing public administration and service delivery in South Africa. *Journal of Public Affairs*.

MARCHÃO, J., REIS, L. & MARTINS, P. V. Business Areas and Processes Alignment in ICT Framework. 2020 15th Iberian Conference on Information Systems and Technologies (CISTI), 24-27 June 2020 2020. 1-4.

MASCHAL, S. Critical Success Factors of Implementing Enterprise Resources Planning (ERP) System in Sourcing: The case of ethio telecom. 2017.

MASIYA, T., DAVIDS, Y. & MANGAI, M. 2021. Factors affecting the performance of South African municipal officials: stakeholders' perspectives. *Commonwealth Journal of Local Governance***,** 97-115.

MATARUKA, L. T., MUZURURA, J. & MKUMBUZI, W. P. 2023. Information System Management and Zimbabwe Manufacturing Firms Performance. A Structural Equation Modeling Analysis. *International Journal of Multidisciplinary Research and Analysis*.

MAWELA, T., OCHARA, N. M. & TWINOMURINZI, H. 2017. E-Government Implementation: A Reflection on South African Municipalities. *South African Computer Journal*.

MBANDLWA, Z., DORASAMY, N. & FAGBADEBO, O. 2020. LEADERSHIP CHALLENGES IN THE SOUTH AFRICAN LOCAL GOVERNMENT SYSTEM. *Journal of Critical Reviews,* 7**,** 1642-1653.

MCADAM, R., BITITCI, U. & GALBRAITH, B. 2017. Technology alignment and business strategy: a performance measurement and Dynamic Capability perspective. *International Journal of Production Research,* 55**,** 7168-7186.

MCFARLAN 1984. Strategic grid of impacts of IT applications Harvard Business Review, 62(3), 98-103.

MEISSNER, R. 2022. eThekwini's green and ecological infrastructure policy landscape: research paradigms, theories and epistocrats. *International Environmental Agreements: Politics, Law and Economics,* 22**,** 543-560.

MELNYK, L., SINEVIČIENĖ, L., LYULYOV, O., PIMONENKO, T. & DEHTYAROVA, I. 2018. Fiscal Decentralization and Macroeconomic Stability: The Experience of Ukraine's Economy. *Problems and Perspectives in Management*.

MESSEGHEM, K., BAKKALI, C., SAMMUT, S. & SWALHI, A. 2018. Measuring Nonprofit Incubator Performance: Toward an Adapted Balanced Scorecard Approach. *Journal of Small Business Management,* 56**,** 658-680.

MGABHI, M. P. 2021. *Performance evaluation of a South African aluminium manufacturing company based in Pietermaritzburg : the Balanced Scorecard approach.*

MNGUNI, N. P. 2019. *The impact of information systems on internal processes and service delivery in eThekwini Municipality.*

MOLALE, T. B. 2019. Participatory communication in South African municipal government : Matlosana local municipality's Integrated Development Plan (IDP) processes. *Communicare : Journal for Communication Sciences in Southern Africa,* 38**,** 57-75.

MOLALE, T. B. 2022. Participatory Communication in South African Municipal Government. *Communicare Journal for Communication Studies in Africa*.

MUTHWA, E. X. 2019. *Assessing the impact of absenteeism policies on service delivery in the uMgungundlovu District Municipality in KwaZulu-Natal.*

MWADIWA, K. F. & MALEHO, L. M. 2022. Digitilisation of Corporate Communication Amidst Covid-19 Pandemic: Case of a District Municipality in Gauteng Province. *Journal of Public Administration,* 57**,** 573+.

MZELEMU, M. V. 2019. *The roles of traditional leaders and ward councillor in service delivery : a case of Ward 4 of Umdoni Local Municipality.*

NAEEM, S. & ALI, M. 2021. Fiscal Decentralization and Gender Parity in Developing Asia. *Numl International Journal of Business & Management*.

NAVARRO-GALERA, A., LOZANO, M. R., VALENCIA, P. T. & RÍOS-BERJILLOS, A. D. L. 2017. Promoting Sustainability Transparency in European Local Governments: An Empirical Analysis Based on Administrative Cultures. *Sustainability*.

NCAMPHALALA, M. & VYAS-DOORGAPERSAD, S. 2022. The Role of Information and Communication Technology (ICT) on the Transformation of Municipalities Into Smart Cities for Improved Service Delivery. *International Journal of Research in Business and Social Science (2147-4478)*.

NGQONDI, T. & MAUWA, H. 2020. Information technology governance model for a low resource institution with fragmented it portfolio. *South African Journal of Higher Education,* 34**,** 246-262.

NYASULU, C. & CHAWINGA, W. D. 2018. The Role of Information and Communication Technologies in the Delivery of Health Services in Rural Communities: Experiences From Malawi. *Sa Journal of Information Management*.

ODOYO, C., OGINDA, M., OBURA, J., AILA, F., OJERA, P. & SIRINGI, E. 2013. Effect of Information Systems on Revenue Collection by Local Authorities in Homa Bay County, Kenya. *Universal Journal of Accounting and Finance,* 1**,** 29-33.

OMINDE, D., OCHIENG, E. G. & OMWENGA, V. O. 2021. Optimising ICT infrastructure performance in developing countries: Kenyan viewpoint. *Technological Forecasting & Social Change,* 169.

PADAYACHEE, I. & SHANO, R. M. 2019. Factors influencing it-business strategic alignment in the context of business process re-engineering. *Journal of Contemporary Management,* 16**,** 621-652.

PASHUTAN, M., ABDOLVAND, N. & HARANDI, S. R. 2022. The impact of IT resources and strategic alignment on organisational performance: The moderating role of environmental uncertainty. *Digital Business,* 2.

PEREIRA, G. V., PARYCEK, P., FALCO, E. & KLEINHANS, R. 2018. Smart governance in the context of smart cities: A literature review. *Information Polity,* 23**,** 143-162.

PEREIRA, I., OLIVEIRA, H. C. & ST CONFERENCE ON SUSTAINABLE DEVELOPMENT: INDUSTRIAL FUTURE OF TERRITORIES, I. F. T. 2020. Public Sector Sustainability in the Balanced Scorecard - A Portuguese City Council Case. *E3S Web of Conferences,* 208.

PONELIS, S. R. & HOLMNER, M. A. 2015. ICT in Africa: Enabling a Better Life for All. *Information Technology for Development,* 21**,** 1-11.

POUR, M. J., MATIN, H. Z., YAZDANI, H. R. & ZADEH, Z. K. 2019. A Comprehensive Investigation of the Critical Factors Influencing Knowledge Management Strategic Alignment. *Knowledge Management & E-Learning International Journal of Advanced Science and Technology, 29(6), pp. 1272-1280.*

PRAKASH, A. Industrial Development and ICT in Africa: Opportunities, Challenges and Way Forward. 2019 nternational Journal of Information Management, 49, pp. 342-353.

QUEIROZ, M. M. & FOSSO WAMBA, S. 2019. Blockchain adoption challenges in supply chain: An empirical investigation of the main drivers in India and the USA. *International Journal of Information Management,* 46**,** 70-82.

RAMOS, L. F., LAMEIRAS, M., SOARES, D. & AMARAL, L. 2021. Who Is Behind the Scenes of the ICT Backstage? A Study of the ICT Resources in Local Governments.

RANGARAJAN, V., ONKAR, P. S., DE, K. & DEIRDRE BARRON, A. 2022. A descriptive phenomenological approach to perception of affective quality in design inspiration. *Design Studies,* 78**,** 101072.

RAUTENBACH, I. M., VENTER, R. & MALHERBE, E. F. J. 2018. Constitutional law. Seventh edition. ed. Durban: LexisNexis South Africa.

RODRÍGUEZ-ESCOBAR, J. A. & GONZÁLEZ-BENITO, J. 2017. The Effect of Strategic Alignment on Purchasing Management. *Management Research Review*.

SAFITRI, E., PRATAMA, A., FURQON, M., MUKHLIS, I., AGUSSALIM & FAROQI, A. 2020. *Interaction Effect of System, Information and Service Quality on Intention to Use and User Satisfaction*.

SALDANHA, T. J. V., LEE, D. & MITHAS, S. 2020. Aligning Information Technology and Business: The Differential Effects of Alignment During Investment Planning, Delivery, and Change. *Information Systems Research* [Online], 31.

SALIM, N., AB RAHMAN, M. N. & ABD WAHAB, D. 2019. A systematic literature review of internal capabilities for enhancing eco-innovation performance of manufacturing firms. *Journal of Cleaner Production,* 209**,** 1445-1460.

SANDKUHL, K. & SEIGERROTH, U. 2019. Method engineering in information systems analysis and design: a balanced scorecard approach for method improvement. *Software & Systems Modeling,* 18**,** 1833-1857.

SAPUTRA, D. A., ALIF, I., WIJAYA, R. A., SUCAHYO, Y. G. & HAMMI, M. K. Role of IT in IT Governance Practices Maturity Perspective. 2019 International Conference on Advanced Computer Science and information Systems (ICACSIS), 12-13 Oct. 2019 2019. 325-330.

SARAVANAKUMAR, S. & TJPRC 2018. The Service Automation and Robotics in Hospitality Industry, a Study on Business Implications. *International Journal of Mechanical and Production Engineering Research and Development*.

SARGENT, J. & AHMED, A. 2017. What Is IT for Social Impact?: A Review of Literature and Practices. *IEEE Technology and Society Magazine,* 36.

SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2019. *Research Methods for Business Students Ebook,* Harlow, UNITED KINGDOM, Pearson Education, Limited.

SAWNG, Y.-W., KIM, P.-R. & PARK, J. 2021. ICT investment and GDP growth: Causality analysis for the case of Korea. *Telecommunications Policy,* 45**,** 102157.

SCHOBURGH, E. D. & RYAN, R. 2017. Handbook of research on sub-national governance and development. Hershey: Information Science Reference.

SEKARAN, U. & BOUGIE, R. 2013. *Research Methods for Business: A Skill-Building Approach,* Chichester, West Sussex, United Kingdom, John Wiley & Sons Ltd.

SEMBODO SUROSO, J., HARISNO, MAURITSIUS, T. & SETYAWAN, A. 2018. Information System Strategic Planning for Department of Housing and Settlement Region in the Jakarta Provincial Government - Indonesia. *MATEC Web Conf.,* 164**,** 01018.

SERGEEVA, N., MAHALINGAM, A., CLEGG, S. & SANKARAN, S. 2020. ICT for External Stakeholder Management: Sociomateriality From a Power Perspective. *Construction Management and Economics*.

SHARMA, E. 2020. Developing ICT adoption model based on the perceived awareness and perceived usefulness of technology among telecom users. *International Journal of Technology Enhanced Learning,* 12**,** 99-114.

SIBANDA, M. 2020. *A Strategy for good IT Governance in South African Municipalities.* Nelson Mandela Metropolitan University.

SIMON, E. D. & MUSHI, A. 2019. eHealth as the Trigger Initiative That May Foster Development in Health Care Delivery in Tanzania.

SINGH, G., HALARI, A. & SATOH, W. 2019. Corporate Governance Mechanisms and Risk-Taking in South Africa. *International Journal of Business Governance and Ethics*.

SOLTANI, E. 2020. Business and project strategy alignment: ICT project success in Iran. *Technology in Society,* 63.

SOUZA, D., HASENACK, H., JONGMAN, R. H. G. & SATTLER, M. A. 2021. Greenway Network: A Participatory Planning Approach for Municipalities of the South Region of Brazil. *Journal of Landscape Ecology*.

SUGEBO, T. & SEKHAR, K. 2020. Current status, challenges, and opportunities of e-Government in Ethiopia: The case of Wachemo University. *Journal of Public Affairs*.

TAUTÉ, N. 2020. The use of collaborative partnerships to improve service delivery in South African local government. *Journal of Contemporary Management,* 17**,** 62-85.

TRAN, T., PHAN, H. A., LE, H. V. & NGUYEN, H. T. 2020. ICT Integration in Developing Competence for Pre- Service Mathematics Teachers: A Case Study from Six Universities in Vietnam. *International Journal of Emerging Technologies in Learning (iJET),* 15**,** pp. 19-34.

TSOKOTA, T., VON SOLMS, R. & VAN GREUNEN, D. 2017. An ICT Strategy for the Sustainable Development of the Tourism Sector in a Developing Country: A Case Study of Zimbabwe. *THE ELECTRONIC JOURNAL OF INFORMATION SYSTEMS IN DEVELOPING COUNTRIES,* 78**,** 1-20.

TU, C. Z., YUAN, Y., ARCHER, N. & CONNELLY, C. E. 2018. Strategic value alignment for information security management: a critical success factor analysis. *Information & Computer Security,* 26**,** 150-170.

TUNC, A. O. & ASLAN, P. 2020. Business management and communication perspectives in industry 4.0. Hershey, PA: IGI Global, Business Science Reference.

VARGA, M. 2019. ICT Innovation Management for the Economic Development Purposes. *B&h Electrical Engineering*.

VERMA, A., GIRI, A. K. & DEBATA, B. 2023. Does ICT Diffusion Reduce Poverty? Evidence From SAARC Countries. *Poverty & Public Policy*.

VERMEIREN, C., RAEYMAECKERS, P. & BEAGLES, J. E. 2019. In Search for Inclusiveness: Vertical Complexity in Public-Nonprofit Networks. *Public Management Review*.

VINCENT NG, C. P., YOUNG-CHANG HOU,. Proceedings of the 2nd International Conference on E-commerce, E-Business and E-Government. 2018 Hong Kong, Hong Kong. Association for Computing Machinery.

VINTI, C. 2019. Appeal against a decision by a political office bearer as postulated by section 62 of the Local Government: Municipal Systems Act 32 of 2000 : City of Cape Town v Reader revisited. *Stellenbosch Law Review,* 30**,** 447-463.

WÄLITALO, L., ROBÈRT, K.-H. & BROMAN, G. 2020. An Overarching Model for Cross-Sector Strategic Transitions towards Sustainability in Municipalities and Regions. *Sustainability,* 12**,** 7046.

WANG, J., LI, Y.-S., SONG, W. & LI, A.-H. 2018. Research on the Theory and Method of Grid Data Asset Management. *Procedia Computer Science,* 139**,** 440-447.

WANG, Z. & WU, F. 2019. In-Situ Marginalisation: Social Impact of Chinese Mega-Projects. *Antipode,* 51**,** 1640-1663.

WELLER, J. 2021. Professional development for government teaching professionals: can it be realised through the balanced scorecard approach? *Teacher Development,* 25**,** 278-295.

WESSELS, R. G. 2022. Training and development model for municipal frontline staff. *Teaching Public Administration,* 40**,** 42-69.

WONGWUTTIWAT, J. & LAWANNA, A. 2018. The digital Thailand strategy and the ASEAN community. *THE ELECTRONIC JOURNAL OF INFORMATION SYSTEMS IN DEVELOPING COUNTRIES,* 84**,** e12024.

ZAHIR, M. Z., MILES, A., HAND, L. & WARD, E. C. 2020. Sustainable Delivery of Speech-Language Therapy Services in Small Island Developing States Using Information and Communication Technology – A Study of the Maldives. *International Journal of Telerehabilitation*.

ZANIST, Q. 2022. The Impact of Audit Committee Composition and Performance on Financial Reporting Quality in Kurdistan's Industrial Companies. *Qalaai Zanist Scientific Journal*.

ZAPOLSKI, T. C. B. & SMITH, G. T. 2017. Pilot Study. *The Journal of school nursing : the official publication of the National Association of School Nurses,* 33**,** 198-204.

ZERIHUN, M. F. & MASHINGO, M. P. 2022. The quest for service delivery: The case of a rural district municipality in the Mpumalanga province of South Africa. *2022,* 10.

ZHANG, J. & LI, L. 2022. Intelligent Construction Technology Adoption Driving Strategy in China: A Tripartite Evolutionary Game Analysis. *Journal of Environmental and Public Health,* 2022**,** 9372443.

APPENDIX A: CONSENT LETTER

Informed Consent Letter

UNIVERSITY OF KWAZULU NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Greeting participant,

DBA Research project: Doctor of Business Administration(DBA)
Researcher: Ms. Zandile Dlamini
Supervisor: Dr. Xoliswa Majola

My name is **Zandile Virtue Dlamini,** a DBA student at The Graduate School of Business and Leadership of the University of KwaZulu Natal. You are invited to participate in a research project entitled **Aligning Information and Communication Technology (ICT) strategy with eThekwini municipal strategic objectives for service delivery.** The study aims to explore the gap between eThekwini municipality strategic objectives and ICT strategy

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project t at any time with no negative consequences. There will be no monetary gain from participating in this study.

Your views in this interview will be presented anonymously. Neither your name nor identity will be disclosed in any form in the study. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact my supervisor at the number listed above or me.

The questionnaire should take you about thirty **(10)** minutes to complete. I hope you take the time to complete this questionnaire.

In the event of any problems or concerns/questions, you may contact my supervisor at the number listed above or me or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

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Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

APPENDIX B: RESEARCH INSTRUMENTS (QUESTIONNAIRE / INTERVIEW SCHEDULE)

QUESTIONNAIRE: SECTION A

Business Demographic Information

1. **Years of service with your current employer**

0 - 5	5-10	10-20	20-40	40+

2. **Job grading**

Management	Middle Management	Senior Management	Executive Management	Other

3. **Cluster**

Office of Strategic Management	City Managers Operations Office	Economic Development & Planning	Human Settlement Eng. Serv. & Transport	Community and Emergency services
Governance and International relations	Corporate and Human Resources	Finance	Trading Services	Other

4. **To what extent do you agree or disagree with each of the following statements:**

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
ICT strategy					
4.1 eThekwini municipality has a well-formulated strategy					
4.2 The municipality has a well-formulated information and communication technology strategy					

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4.3 The municipality's strategy is well aligned with the ICT strategy					
4.4 ICT team understands the municipality strategy					
4.5 The business units understand the ICT department's capabilities					
4.6 ICT's goals and objectives are defined and documented					
Factors for aligning ICT strategy					
4.7 There are defined roles and responsibilities for stakeholders involved in the strategic planning process					
4.8 There is a culture that facilitates alignment between municipality and ICT decision-makers					
4.9 There is a process in place to ensure that the goals of the ICT strategy are aligned with the municipality's goals					
4.10 ICT capabilities support the business requirements and contribute to expected benefits as included in the enterprise's strategic plan					

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4.11 Business managers are involved in formulating the ICT strategy at the departmental level					
4.12 Business managers give high priority to ICT projects					
4.13 ICT accounts for and protects all ICT assets					
4.14 ICT has developed seamlessly integrated applications and technology solutions into business processes					
4.15 ICT is essential to the organisation's operations					
4.16 The ICT department delivers projects on time and budget, meeting quality standards					
4.17 ICT and management are satisfied with their ability to communicate and negotiate with each other					
4.18 ICT and management share a vision of how ICT will support the business strategy					

I

NTERVIEW: SECTION B

This questionnaire will be used to collect data from semi-structured interviews to answer the research questions. All participants will be asked the same predetermined questions.

1. To what extent you are involved in Information and Communication Technology strategy formation?

_____

_____

_____

2. Are your ICT services reliable and secure?

_____

_____

_____

_____

3. Is there a formally approved and communicated ICT strategic plan that is clearly understood by those who need to translate it into budgets, tactical plans, sourcing and acquisition strategies, processes; and have organisational structures been developed?

_____

_____

_____

_____

4. Is there a process in place that translates business strategy, business expectations, current and future ICT capabilities into an ICT strategic plan?

Yes	No	N/A

5. How important do you think it is to achieve alignment between the municipality's business and Information and Communication Technology strategies?

_____

_____

_____

_____

6. Is the municipality's IDP a well-formulated business strategy?

_____

_____

_____

_____

7. Does the municipality have an ICT Strategy Committee or ICT Council that reviews significant investments on behalf of the board and executive management, and advises the board on strategic ICT decisions?

_____

_____

_____

_____

8. Are there any challenges to the implementation of the alignment of the ICT strategy?

_____

_____

_____

_____

9. What would you consider to be some of the critical changes in the ICT strategy that have had the most significant impact on the Council over the last five years?

_____

_____

_____

_____

10. Who does the top ICT executive or CIO report to?

_____

_____

_____

_____

11. What would you consider the most critical factor to be in improving the ability of ICT to play a more significant role in the Council?

_____

_____

_____

_____

12. How does your municipality evaluate project risk?

_____

_____

_____

_____

13. Why is the state of alignment maturity important to the municipality?

_____

_____

_____

_____

14. How does your municipality de-escalate troubled projects?

_____

_____

_____

_____

15. Name some symptoms of lack of alignment between ICT and the business, if any.

_____

_____

_____

16. How does a Council use ICT to drive its business strategy?

_____

_____

_____

17. In what ways can the Council improve business and ICT communications?

_____

_____

_____

18. How does Council align its strategic priority with business/ICT architecture solutions?

_____

_____

_____

19. Return on investment (ROI) has always been the focus of financial analysts. Why are the intangible benefits of Information and Communication Technology often difficult to quantify for this measurement?

_____

_____

_____

_____

20. Does the eThekwini municipality have a practical set of tools to measure the value of its ICT investments?

_____

_____

_____

_____

APPENDIX C: GATEKEEPER LETTER

POD 7, GROUND FLOOR, INTUTHUKO JUNCTION, 750 MARY THIPHE STREET, UMKHUMBANE, CATO MANOR, DURBAN 4001
TEL: 031 322 4513, FAX: 031 261 3405, FAX TO EMAIL: 086 265 7160, EMAIL: MILE@DURBAN.GOV.ZA, WEBSITE: WWW.MILE.ORG.ZA

For attention:
Chair of Research Ethics Committee
Graduate School of Business and Leadership
College of Law and Management Studies
University of Kwazulu Natal
Westville Campus
Durban
4001

9 June 2021

RE: LETTER OF SUPPORT TO Z.V DLAMINI, STUDENT NO. 214580464 - GRANTING PERMISSION TO USE ETHEKWINI MUNICIPALITY AS A STUDY SITE FOR A DOCTORAL RESEARCH

The Information Management Unit and Municipal Institute of Learning (MILE) in eThekwini Municipality, have considered a request from Zandile Virtue Dlamini, a registered student at UKZN to use eThekwini Municipality as a research study site in fulfilment of a Doctor of Business Administration (DBA) research in eThekwini Municipality. The study is entitled **"ALIGNING INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) STRATEGY WITH ETHEKWINI MUNICIPAL STRATEGIC OBJECTIVES FOR SERVICE DELIVERY ."**

We wish to inform the committee of the **APPROVAL** of this request and hereby assure the student of our utmost co-operation towards achieving her research goals; the outcome which we hope will help this municipality improve on its service offerings using the research outputs. The student is reminded of the conditions agreed to, the ethical considerations as well as the current COVID-19 related regulations as per the Disaster Management Act (2020) when conducting the research. **In return, we stipulate as conditional that the student presents the preliminary results and recommendations of this study to MILE and the impacted units within eThekwini Municipality as soon as possible.**

Wishing the student all the best.

Supported

.....
Mr Robert Dlamini
Head: Information Management Unit
eThekwini Municipality

[redacted]
.....
Dr. Collin Pillay
Program Manager: MILE
eThekwini Municipality

I ...Zandile Virtue Dlamini.....hereby accept as mandatory that I will comply fully as per the conditions stipulated above.

Signed: [redacted] Date: 09.06.2021

APPENDIX D: LETTER FROM THE LANGUAGE EDITOR

JENNIFER RENTON

PO Box 68648
Bryanston
2021
14 November, 2023

To whom it may concern,

This letter is to confirm that I am a professional editor and proofreader and that I have edited Zandile Dlamini's dissertation: *Aligning Information and Communication Technology strategies with eThekwini municipality's strategic objectives for service delivery.*

For any queries, please contact me on jenniferrenton@live.com.

Yours sincerely,

APPENDIX E: ETHICAL CLEARANCE LETTER

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

24 November 2021

Zandile Virtue Dlamini (214580464)
Grad School Of Bus & Leadership
Westville Campus

Dear ZV Dlamini,

Protocol reference number: HSSREC/00003404/2021
Project title: Aligning information and communication technology strategy with eThekwini municipal strategic objectives for service delivery
Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 27 August 2021 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 24 November 2022.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/dd