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INYUVESI YASETHEKWINI YEZOBUCHWEPHESHE

Blockchain-Based Digital Records Management for Auditing Process: A Case Study of Msunduzi Local Municipality.

By

Khulekani P. Zuma 20935347

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Faculty of Accounting and Informatics, Department of Information Systems, Postgraduate Studies, Durban University of Technology

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Supervisor: Prof M. Rajkoomar (PhD)

Co-Supervisor: Prof N. Naicker (PhD)

DECLARATION

I, Khulekani P. Zuma, declare that:

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(ii) This dissertation has not been submitted for any degree or examination at any other university.

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DEDICATION

I offer this work in heartfelt dedication to the cherished memory of my late grandmothers, Phetheni N Zuma (Gontane/MaNkayishane) and Siphiwo Zuma (MaMsenteli), as well as their beloved husband, my late grandfather Majoka Zuma (Mahlamvana). Additionally, I dedicate this work to the enduring memory of my late father, Ngcebo Zuma (Mthwalo), who departed this world when I was just a mere six months old. May their souls rest in eternal peace, and may their enduring light continue to brighten my path in this journey of life.

ABSTRACT

The Auditor General of South Africa frequently identifies poor records management as a major issue during auditing process, resulting in absence of supporting documentation and challenges in proving allegations of misconduct in Municipalities. To address this issue, the study explores the importance of a functional digital records management system and the feasibility of using blockchain technology to enhance records transparency, authenticity, security, and privacy in Msunduzi Local Municipality. It seeks to determine whether the municipality has a digital records management system, assess the potential benefits of blockchain technology, and investigate the likelihood of improved audit results through its implementation. This research employed the Records Continuum Model as a theoretical framework. Post-positivist paradigm and qualitative research approach were used in this study. The study collected data using semi-structured interviews with 15 participants from records management and auditing staff in the municipality, and data was analyzed using thematic analysis. Results from this study indicate that Msunduzi Local Municipality needs a functional digital records management system, which may positively impact audit processes. The use of blockchain technology is perceived as a viable solution to enhance records transparency, authenticity, security, and privacy. Participants in the study believe that implementing blockchain can significantly improve audit results and mitigate issues like maladministration and negative cash flows. Recommendations include the urgent establishment of a digital records management system and a feasibility study on integrating blockchain technology to strengthen records management and auditing practices in the municipality. These measures are seen as essential for promoting transparency and accountability in the public sector.

Keywords: records management, block-chain technology, digital records management, auditor general

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LIST OF ABBREVIATIONS

4IR	Fourth Industrial Revolution
AGSA	Auditor General of South Africa
AI	Artificial Intelligence
BCT	Blockchain Technology
DLT	Distributed Ledger Technology
GRAP	Generally Recognized Accounting Practices
IOT	Internet of Things
RCM	Records Continuum Model

LIST OF TERMINOLOGY

Accountability: Accountability refers to the obligation of individuals or organizations to take responsibility for their actions, decisions, and their consequences, often in the context of transparency, ethical behavior, and compliance with rules and regulations (Shonhe and Grand 2018).

Auditing Process: The auditing process is a systematic examination and evaluation of an organization's financial statements, operations, or processes by an independent party to ensure accuracy, compliance with standards, and to identify areas for improvement or risk mitigation (Ngoepe and Ngulube, 2016).

Blockchain Technology: Blockchain technology is a decentralized and distributed digital ledger system that records transactions across multiple computers in a way that is secure, transparent, and tamper-resistant, often associated with cryptocurrencies like Bitcoin (Liu and Song, 2020).

Digital Records Management: Digital records management is the systematic process of creating, organizing, storing, retrieving, and securing digital documents and data to ensure efficient access, compliance, and preservation of information within an organization (Ngoepe, Jacobs and Mojapelo 2022).

Distributed Ledger Technology: Distributed ledger technology (DLT) is a broader concept encompassing various technologies like blockchain, where data is stored across a network of computers, making it more resilient, transparent, and resistant to unauthorized changes (Yasir and Kusuma 2021).

Records Authenticity: Records authenticity ensures that a document or record is genuine, unaltered, and can be verified as an accurate representation of the information it claims to contain, typically through digital signatures or other authentication methods (Rogers 2016).

Records Immutability: Records immutability means that once data or information is recorded, it cannot be altered, deleted, or tampered with, ensuring the integrity and trustworthiness of the record, often associated with blockchain technology (Stančić and Bralić 2021).

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 Introduction

Public organizations encounter various risks on a daily basis, which can impact the reliability of their records and the efficiency of internal controls. These risks include financial losses, negative cash flows, and, in extreme cases, bankruptcy leading to liquidation (Ngoepe 2017). While it may be challenging for organizations to completely avoid risks, the key lies in identifying and effectively managing the risks they are exposed to. Records management plays a crucial role in this process by aiding in the identification and assessment of risks. Proper risk management is essential for creating a robust control environment, which provides management with the necessary assurances that the organization can achieve its objectives while maintaining an acceptable level of residual risk (Ngoepe 2014). By integrating risk management practices into their records management processes, public organizations can proactively address potential risks, implement adequate internal controls, and safeguard the integrity of their operations.

Efficient records management is essential for the smooth functioning and success of everyday business operations (Chikomba, Rodrigues and Ngoepe 2021). In the modern era, municipality information is predominantly generated, received, stored, and transmitted in electronic formats. This encompasses various electronic mediums such as emails and their attachments, word processing documents, spreadsheets, web pages, and databases. Even formal documents like tax returns, license and permit applications, and agency submissions, including daily spending reports, are typically originated in electronic formats. Therefore, digital records management entails the effective management of these electronic files and documents, treating them as official records (Mosweu and Ngoepe 2019).

According to Ngoako (2011), the public sector deals with a substantial amount of records and information, surpassing any other industry in this regard. These records play a crucial role in ensuring efficient public service delivery and holding the government accountable during auditing processes. Therefore, it underscores the importance of maintaining meticulous records management to uphold government accountability within a democratic society.

Effective digital records management plays a significant role in various aspects of governance, including the auditing process, risk management, and broader corporate governance (Ngoepe and Ngulube 2015). In South Africa, the lack of adequate supporting documentation has led to many governmental bodies receiving disclaimer reports from the Auditor-General of South Africa (AGSA) on an annual basis (Ngoepe 2017). This issue is exacerbated by the fact that records management is not considered a requirement for a robust financial management infrastructure in many governmental bodies. Consequently, implementing proper records management becomes a crucial tool to foster a

culture of clean audits. Unfortunately, in most governmental bodies, records management is not included in the audit scope, and records management specialists are not part of the audit committees. As a result, negative audit opinions from AGSA continue to be a common occurrence for many governmental bodies (Ngoepe and Ngulube 2015). Addressing this deficiency and incorporating records management into the audit process could help improve transparency, accountability, and overall financial management practices within the public sector.

Amid the fourth industrial revolution (4IR), there have been continuous advancements in technological adoption across both public and private sectors. One notable innovation resulting from 4IR is blockchain technology, initially introduced in finance applications such as decentralized digital money (Bitcoin) by Nakamoto in 2008. As blockchain boasts captivating features like decentralization, trustworthiness, absence of transaction fees, and secure data storage (Norman 2017), it has expanded its influence into diverse industries, becoming a prevalent technology capable of creating a visible and distributed online database (Distributed Ledger Technology). This database consists of interconnected data structures, known as blocks, forming the characteristic chain, hence the name "blockchain" (Norman 2017). A blockchain is a decentralized database containing records of various information, transactions, documents, or records. It operates on the principles of distributed ledger technology (DLT). The term "blockchain" is derived from the combination of "block," representing a complete set of contents, and "chain," indicating the interconnection of these blocks. As transactions occur, the chain expands linearly, and the process of encrypting a new block, particularly in the context of cryptocurrencies, is known as mining. In a blockchain network, each connected computer or node stores information about all transactions, but the database itself only retains the hash values of the data (Stančić 2018).

Msunduzi Local Municipality is located within the uMgungundlovu District Municipality in the KwaZulu-Natal province of South Africa. It encompasses the city of Pietermaritzburg, which serves as the capital city of the KwaZulu-Natal province and is also the primary economic center within the uMgungundlovu District Municipality. The municipality is strategically positioned on the N3 highway, a major transportation route connecting Durban and Pietermaritzburg. This location makes it a key junction within an industrial corridor that spans from Durban to Pietermaritzburg, enhancing its significance as a hub for economic activities and trade.

Msunduzi Local Municipality is one of the seven Local Municipalities operating under the uMgungundlovu District Municipality. The other Local Municipalities within the district are uMshwathi, uMngeni, Mpofana, Impendle, Mkhambathini, and Richmond. With its central location, economic importance, and connection to major transportation routes, Msunduzi Local Municipality

plays a vital role in the socio-economic development and growth of the region, contributing to the overall progress of KwaZulu-Natal province and South Africa.

According to Ntuli (2020), Msunduzi Municipality has faced significant challenges, leading to a regression in its audit opinion to a disclaimer. The issues identified include non-compliance with key legislation, poor financial management practices, and the questionable awarding of tenders to municipal officials. Internal control deficiencies have also been noted as a contributing factor to the municipality's audit disclaimer. In a November report from the Auditor General, Kimi Makwetu, it was revealed that the financial statements submitted by Msunduzi for the financial year ending in June 2017 did not meet the requirements of the Municipal Financial Management Act. Furthermore, the municipality failed to provide the necessary information and documents as evidence for the audit opinion, mainly due to inadequate systems for record management (Ntuli 2018).

This unfortunate situation led to the municipality being placed under administration for the second time in 2017/18 since the first time in 2010. The following financial year, 2018/19, the city received another negative audit opinion. Management was held responsible for the lack of proper records management, which is essential for providing evidence of the municipality's daily activities (Ntuli 2020). The absence of efficient record-keeping systems and proper financial management has had severe consequences for Msunduzi Municipality, resulting in audit disclaimers and a lack of transparency in its financial affairs. Addressing these challenges and implementing robust records management practices will be crucial for the municipality to regain financial stability, accountability, and public trust.

According to Ntuli (2020), the Msunduzi municipal audit reports from 2016 to 2019 show varying outcomes:

2019: Qualified

In this year, the Auditor-General expressed reservations about the fair presentation of the financial statements. Although there were some departures from Generally Recognised Accounting Practices (GRAP), they were not significant enough to warrant an adverse opinion or a disclaimer of opinion.

2018: Adverse opinion

The Auditor-General issued an adverse opinion for this year, indicating that the annual financial statements did not accurately present the municipality's financial position, results of operations, and cash flows in line with Generally Recognised Accounting Practices (GRAP).

2017: Disclaimer of opinion

For this year, the Auditor-General was unable to form an opinion due to the lack of underlying documentation needed to assess the financial statements. The absence of sufficient supporting documents and substantial amounts in question made it impossible for the Auditor-General to provide any opinion. 2016: Qualified

The Auditor-General expressed reservations about the fair presentation of the financial statements in 2016. Similar to the situation in 2019, there were departures from Generally Recognised Accounting Practices (GRAP), but they were not serious enough to result in an adverse opinion or a disclaimer of opinion.

The varying outcomes in these audit reports highlight the challenges faced by Msunduzi Municipality in maintaining accurate and reliable financial records. The adverse opinion and disclaimer of opinion indicate significant weaknesses in the municipality's financial reporting and record-keeping processes, emphasizing the need for improved financial management and records management practices to ensure transparency and accountability.

1.2 Statement of the problem

The study focuses on the problem faced by Msunduzi Local Municipality, which led to its declaration as unfit to operate independently. This declaration followed the issuance of a disclaimer report by the Office of the Auditor-General of South Africa (AGSA). The negative opinion given by AGSA highlighted significant issues within the municipality, including maladministration, negative cash flows, and the inability to provide up-to-date records of daily spending and activities. As a consequence of these audit findings, the municipality was placed under the supervision and control of the provincial administration. This action was taken to address the serious challenges and deficiencies identified in the municipality's financial management and records management practices. Therefore, this study intended to investigate the root causes and underlying factors that contributed to the issuance of the disclaimer report by AGSA. By understanding and addressing these issues, the study seeks to offer insights and recommendations to help Msunduzi Local Municipality improve its operations, financial management, and records management, ultimately regaining its ability to function independently and serve its constituents effectively.

Therefore, the statement of the problem in this study revolves around the detrimental impact of fraud and corruption on organizations and government departments, particularly affecting service delivery. It highlights that proper records management is seen as a crucial tool in combating and detecting fraud and corruption (Chikomba, Rodrigues and Ngoepe 2021). Effective records management plays a pivotal role in investigating and substantiating cases of fraud and corruption, as well as facilitating

meaningful audits and evaluations of government actions. Reliable, authentic, and accurate records enable organizations and government entities, including municipalities, to trace and hold individuals accountable for fraudulent and corrupt activities. On the other hand, poor records management creates opportunities for fraud and corruption to thrive, as incomplete or missing records make it difficult to substantiate accusations and establish culpability. Therefore, the need for sound records management is emphasized as an essential prerequisite to address and eliminate corruption, fraud, and malpractices. By implementing robust records management practices, organizations and government departments can enhance transparency, accountability, and overall integrity, thereby reducing the likelihood of fraudulent activities and promoting a culture of ethical conduct.

1.3 Aim

The aim of this study was to explore the perception of records management and auditing professionals regarding the potential benefits of a functional digital records management system in supporting the municipal audit process and mitigating fraud and corruption with the adoption of blockchain-based records management as a means to enforce transparent and secure practices.

1.4 Objectives of the study

- To determine whether Msunduzi Local Municipality has a functional digital records management system that adequately supports its daily activities, decision-making processes, and the municipal audit process.
- To investigate the extent to which the current records management system ensures transparency, authenticity, security, and privacy in the municipal records, with the intention of combating fraud and corruption effectively.
- To assess the potential impact of incorporating blockchain technology into the records management system of Msunduzi Local Municipality and its likelihood of contributing to improved audit results, potentially leading to a clean audit outcome.

1.5 Research question

To achieve these objectives, the study addressed the following research questions:

- Does Msunduzi Local Municipality have a functional digital records management system capable of fully supporting its daily activities, decision-making processes, and the municipal audit process?
- How does the current records management system ensure transparency, authenticity, security, and privacy in the municipal records, and how effective is it in combating fraud and corruption?

- How can the integration of blockchain technology into the municipality's records management system potentially lead to improved audit results and contribute to achieving clean audit outcomes?

By exploring these objectives and research questions, the study provides valuable insights and recommendations to support Msunduzi Local Municipality in enhancing its records management practices and ultimately promoting greater transparency, accountability, and efficiency in its operations.

1.6 Significance of the study

The significance of this study lies in its potential to address the issue of poor records management within Msunduzi Municipality, which was identified as a contributing factor to the negative audit outcomes and subsequent placement under administration. The study provides valuable insights and propose solutions to improve the records management practices of the municipality. By exploring the implementation of blockchain-based records management, the study seeks to offer a secure and transparent system for the transaction and exchange of critical information within the municipality. Blockchain's immutable nature ensures that records cannot be tampered with or accessed without authorization, reducing the opportunities for maladministration, fraud, corruption, and negative cash flows. Additionally, blockchain eliminates the need for third-party intermediaries, resulting in cost savings and increased control over the security of the municipality's information.

Implementing a blockchain-based records management system can promote accountability and good governance within the municipality. It ensures that records are accurate, up-to-date, and readily accessible during the auditing process, potentially leading to improved audit outcomes. The availability of proper and up-to-date records is essential for a successful audit, and a well-managed records management system can instil confidence in stakeholders and enhance the municipality's reputation. By addressing the records management challenges and proposing blockchain-based solutions, this study can contribute to the overall improvement of Msunduzi Municipality's operations and financial management. It may lead to greater efficiency, transparency, and trust, ultimately benefiting the municipality, its residents, and other stakeholders involved. Additionally, the study's findings and recommendations may have broader implications for other municipalities and organizations facing similar records management and audit-related challenges, promoting better practices and governance across the public sector.

1.7 Overview of the research methodology

The research methodology for this qualitative study employs an individual semi-structured interview approach to gather data from a population of 15 participants. This approach is well-suited for exploring complex topics and gaining in-depth insights into the participants' perspectives and experiences.

Sampling: The study begins with a census sampling strategy, selecting participants who have expertise or direct involvement in the areas of records management and auditing within the context of Msunduzi Local Municipality. This targeted approach ensures that the participants possess relevant knowledge and can provide valuable insights into the research questions.

Data Collection: Individual semi-structured interviews were conducted with the selected participants. Semi-structured interviews provide a flexible framework where open-ended questions are used as a guide, allowing for probing and follow-up questions to delve deeper into participants' responses. This approach encourages participants to express their views, experiences, and perceptions in their own words.

Interview Process: The interviews are conducted one-on-one to create a comfortable and confidential environment for participants to share their thoughts openly. The interview questions are designed to align with the study's specific objectives, focusing on topics such as the current state of records management, the potential of blockchain technology, and perceptions regarding the impact on audit outcomes.

Data Analysis: Data collected from the interviews are transcribed and analysed thematically. Thematic analysis involves identifying recurring patterns, themes, and concepts within the interview transcripts. This process allows for the organization and interpretation of qualitative data, providing a structured framework to address the research objectives.

Ethical Considerations: Ethical considerations are paramount in this research. Informed consent is obtained from all participants, ensuring they understand the purpose of the study, their role, and the confidentiality of their responses. Efforts are made to protect participants' anonymity and privacy throughout the research process.

Trustworthiness and Validity: To enhance the trustworthiness and validity of the findings, techniques such as member checking (seeking feedback from participants on the accuracy of interpretations) and peer debriefing (discussing findings with colleagues) may be employed. These steps help ensure the rigor and credibility of the qualitative data analysis.

In summary, this qualitative research methodology employs individual semi-structured interviews as the primary data collection method to explore the perceptions and experiences of 15 participants regarding records management, auditing, and the potential impact of blockchain technology within the context of Msunduzi Local Municipality. The approach allows for a rich and nuanced understanding of the research questions and contributes to the overall depth of the study.

1.8 Scope and delimitations of study

The scope of this study is focused on staff members directly involved in records management and auditing within the Msunduzi Local Municipality. The study aims to explore their perceptions regarding the potential benefits of a functional digital records management system and the use of blockchain technology in supporting the municipal audit process and mitigating fraud and corruption. The study is limited to a case study of Msunduzi Local Municipality's records management system. It does not include other municipalities or organizations, which may have different contexts and challenges related to records management and audit processes.

The research methodology used for data collection is qualitative, with semi-structured interviews being the primary method. The study collected data from 15 staff members who were selected as the population of the study, representing a specific subset of the municipality's workforce involved in records management and auditing. The study does not include the perspectives of other stakeholders, such as elected officials, residents, or external auditors, who may have valuable insights on records management and audit-related issues within the municipality.

The current study focuses on specific research questions related to the perception of staff members and the potential benefits of a digital records management system and blockchain technology. The findings and conclusions of the study are limited to the specific context of Msunduzi Local Municipality and may not be directly generalizable to other municipalities or organizations. However, the study's insights and recommendations may have broader implications and provide valuable guidance for similar settings facing records management and audit-related challenges.

1.9 Structure of the Thesis

The structure of the thesis follows a logical progression to present the research comprehensively. Here is a summary of the five chapters:

Chapter one: Introduction and background of the study

This chapter serves as an introduction to the research topic, providing the background and context of the study. It outlines the research objectives and the critical questions formulated to address those objectives. The chapter also explains the rationale for conducting the study, presents an overview of the research methodology, defines key terms, and discusses the limitations and delimitations of the study.

Chapter two: Review of related literature

In this chapter, the researcher reviews relevant literature related to the study's topic. It offers a comprehensive analysis of existing research and theories that inform the research. The chapter may highlight previous studies, concepts, and frameworks that provide a foundation for the current research.

Chapter three: Research methodology

Chapter three details the research design, approach, and methods used in the study. It describes the research design chosen (e.g., case study, qualitative, quantitative), the data collection methods (e.g., interviews, surveys, observations), and the participants (e.g., staff members involved in records management and auditing). The chapter also explains how the data was analysed and interpreted to draw conclusions.

Chapter four: Presentation of results

In this chapter, the researcher presents the findings obtained from the semi-structured interviews conducted with the staff members. The results are organized and presented in a clear and concise manner, potentially using tables, graphs, or other visual aids to enhance understanding.

Chapter five: Discussion of findings, conclusions, and recommendations

The final chapter discusses the main findings in the context of the relevant literature and the research objectives. The researcher interprets the results, identifies patterns, and analyzes the implications of the findings. Conclusions are drawn based on the study's results and objectives. Additionally, the chapter offers recommendations based on the conclusions, suggesting practical solutions or strategies for the municipality to enhance its records management and audit processes. The chapter may also include a list of references cited throughout the thesis, as well as relevant appendices if needed.

1.10 Summary.

In summary, Chapter One of the dissertation serves as an introduction to the research topic, presenting the research problem and background. It outlines the study's objectives and critical questions, providing the rationale for conducting the research. The chapter presents an overview of the research methodology, defining key terms, and discussing the limitations and delimitations of the study. Finally, it outlines the structure of the research report.

The subsequent Chapter Two reviews the relevant literature that informs the study, presenting a comprehensive analysis of existing research, theories, and concepts related to the research topic. It will serve as a foundation for the current research and help contextualize the study within the existing body of knowledge.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The previous chapter serves as an introduction to the study topic, outlining the background information and the research challenge. It outlines the objectives and key questions of the study and provides support for conducting the investigation. The introduction of this chapter sets the stage for a comprehensive review of the literature related to records management and blockchain technology. The purpose of the literature review is to explore previous research conducted by other scholars that is relevant to the current study. By doing so, it aims to gain a deeper understanding of the significance of functional digital records management during auditing and the potential benefits of blockchain technology in records management. This chapter is a two folds, it begins by discussing a theoretical framework and then reviews the related literature.

Garrard (2020) highlights that the literature review goes beyond merely recognizing and contrasting prior research; it also acts as a vital measure to avert redundancy and needless repetition in scholarly investigations. In this particular study, the examination of existing literature will play a pivotal role in sidestepping the duplication of established knowledge and in advancing upon earlier discoveries within the subject area. Harris (2019) definition of a literature review further underscores its purpose as a step-by-step process that involves the identification and evaluation of published and unpublished works related to the topic of interest. This systematic process helps in evaluating the existing body of work in relation to the research problem and documenting the findings to support the current study's objectives.

In summary, this chapter's introduction highlights the importance of conducting a literature review to gain a comprehensive understanding of the research topic and to build on existing knowledge. The review will delve into previous research related to records management and blockchain technology, providing valuable insights for the current study and contributing to its scholarly foundation. The chapter begins with the discussion of the theoretical framework used for this study.

2.2 Theoretical framework: Records Continuum Model

According to Vilakati and Schurink (2021) A theoretical framework of an empirical study refers to the system of concepts, assumptions, expectations, beliefs and theories that informs the research. Frank Upward's Records Continuum Model challenges conventional linear techniques and provides a revolutionary viewpoint on records management. This model views records as a component of a developing continuum, in contrast to traditional models that consider records as static entities with a set lifespan. It highlights how recordkeeping is a part of regular organizational procedures rather than existing as a stand-alone task. The idea of context is fundamental to the approach, acknowledging that business procedures, organizational culture, and regulatory constraints, among other things, influence

the significance and value of data. Records are thought of as dynamic objects that alter with time to reflect their changing use and environment. The approach emphasizes the interdependence of recording systems and promotes adaptability and compatibility to guarantee the ongoing.

This dissertation is founded on the records continuum model. The purpose of the records continuum model is to help initial task analyses involving evidential requirements for recordkeeping. The records continuum model serves as an extensive framework that encompasses the entire organizational recordkeeping process through four essential dimensions: creation, capture, organization, and pluralization. This model employs four axes, namely evidential, transactional, recordkeeping, and identity, to comprehensively depict and understand the multifaceted nature of record management within an organization.

The management of digital records plays a crucial role in enhancing corporate productivity and organizational efficiency. Key tasks within records management include tracking document versions, tracing their movement throughout the corporate process, validating modifications, maintaining record structure and contents, and ensuring secure record exchange. Blockchain technology offers potential benefits in various aspects of records management processes. For instance, when a new version of a record is generated, it can be recorded on the blockchain. This timestamped entry clarifies the exact time of creation, the version produced, and any subsequent modifications. This enables easy tracing and verification of record structure and content if necessary. Moreover, during business operations, records are often shared with external parties. Utilizing the blockchain for listing records can provide essential evidence that a record has remained unaltered (Stančić 2018).

The records continuum model provides a comprehensive framework to ensure successful record-keeping practices. This is achieved by considering four dimensions and utilizing four axes to establish accountability and traceability. The axes encompass identity, transactionality, evidentiality, and recordkeeping containers, addressing questions about who was involved, what actions were taken, what evidence is available, and how records can be retrieved. These aspects are embedded within the four layers of the model, representing the various stages of the record-keeping process: creation, capture, organization, and pluralization. Through this holistic approach, the records continuum model facilitates the effective management of records and their transformation into valuable evidence for collective memory (Upward and Mckemmish 2001).

According to Upward and Mckemmish (2001), records are distinguished from other forms of recorded information by their ongoing involvement in social, business, and various processes, exemplifying their transactional and contextual essence. Their evidential attributes are intrinsic to their distinct identity as records, serving multiple intentions and functions in terms of governance and accountability. Records

play a significant role in establishing individual, group, corporate, and collective memory, shaping identity, and holding value as authoritative sources of information. The concepts of transactionality and contextuality, as expanded upon in the records continuum, are intricate and multifaceted. Transactionality encompasses a wide range of human interactions and relationships, all documented within records across different levels of aggregation. On the other hand, contextuality pertains to the intricate and dynamic social, functional, provenancial, and documentary settings within which records are created, managed, and utilized, spanning across space and time (Upward and Mckemmish 2001).

2.3 The records continuum encompasses several distinct ranges:

- **The Evidential Continuum:** This progression involves tracing, providing evidence, contributing to corporate and individual memories, and ultimately influencing collective memory.
- **The Continuum of Recordkeeping Objects:** This continuum encompasses various stages from (archival) documents to records, further extending to the corporate and individual archives, and culminating in the collective archives.
- **The Continuum of Identity:** This continuum spans across different levels, including individual actors, work groups/units, organizations/corporate bodies, and broader institutions.
- **The Continuum of Transactionality:** This continuum encompasses different degrees of involvement, progressing from specific acts to broader activities, functions, and overarching purposes.

2.4 Usefulness in current study

Integrating blockchain technology within the records continuum model framework would manifest in the following aspects:

- **Evidential Continuum Enhancement:** Blockchain's immutable nature and timestamped records would reinforce the traceability, evidential value, and contribution to corporate and individual memory. It would bolster the credibility and authenticity of records within the continuum.
- **Advanced Recordkeeping Objects:** Blockchain could serve as a secure foundation for the entire spectrum of recordkeeping objects, ensuring the integrity of archival documents, records, corporate and individual archives, and collective archives.
- **Identity Assurance:** Blockchain's decentralized and verifiable identity management could enhance the continuum of identity, enabling secure and trustworthy attribution across actors, work groups, organizations, and institutions.

- **Transactionality Transparency:** The transparency and consensus mechanisms of blockchain align with the continuum of transactionality. It would offer a clear and unalterable record of acts, activities, functions, and purposes, facilitating accountability and accurate representation.
- **Contextual Integrity:** Blockchain's capability to maintain rich, complex, and dynamic contexts aligns with the continuum's emphasis on contextual integrity. It ensures that records retain their contextual relevance throughout creation, management, and usage.
- **Enhanced Collective Memory:** Blockchain's robustness in ensuring data availability and immutability contributes to the preservation and accessibility of records in collective memory, strengthening the overall continuum.

The present study aims to underscore the crucial role of incorporating records management as an essential component of the auditing process. Auditing heavily relies on the presence of accurate documents or records. The absence of up-to-date records jeopardizes the effectiveness of audits, as they serve as vital references to verify the accuracy of claims made by municipalities or individuals regarding their daily operations. Consequently, meticulous record maintenance emerges as the sole pathway to achieving a clean audit outcome. Auditors rely on records to determine and assert the integrity or deficiencies in audit results, as emphasized by (Ngoepe and Ngulube 2016). Therefore, by integrating blockchain technology, the records continuum model could benefit from enhanced security, traceability, transparency, and contextual fidelity, elevating its effectiveness in managing records and their evolving significance over time.

2.5 Digitization of records

In the context of the 4th Industrial Revolution (4IR), the digitization of records has become an essential aspect of modern information management (Tsvuura and Ngulube 2021). Digitally preserved records should possess certain characteristics, namely authenticity, reliability, integrity, and usability, to ensure their credibility and usefulness (Tsvuura 2023).

Digital records can be created through two main processes. The first is the digitization of analog or paperbased records, where physical documents are converted into a digital format. This process involves capturing the information contained in the analog record and converting it into binary code that can be stored in a computer file. The second method involves records that are "born digitally," meaning they are generated directly in digital format without any analog counterpart (Ndlebe and Dewah 2021). Digitization offers a significant advantage in records management by separating the preservation of the content or information from the physical object or medium that carries the information. In traditional preservation methods, the document and its content were inseparable, making it challenging to ensure long-term preservation. With digitization, the information content is

extracted from the physical object and saved separately as digital data. This allows for more efficient and effective preservation, as the digital records can be stored, managed, and accessed independently from the physical medium (Ndlebe and Dewah 2021).

By digitizing records, organizations can benefit from improved accessibility, ease of sharing, and reduced physical storage requirements. Additionally, digitization enhances data security and facilitates efficient search and retrieval processes, leading to increased productivity and streamlined workflows. However, it is crucial to implement proper protocols and standards during the digitization process to ensure the accuracy and authenticity of the digital records. Effective metadata management, encryption, and backup strategies are essential to maintain the integrity and reliability of digitized records throughout their lifecycle (Nkholedzeni 2021).

Overall, digitization plays a vital role in modern records management, enabling organizations to harness the power of digital technology for efficient and secure preservation of information. Properly digitized records can significantly enhance the accessibility, usability, and longevity of valuable information assets, contributing to more effective decision-making and better organizational performance.

2.6 The importance of a functional records management system

According to De Mingo (2016) digital records management serves as a fundamental tool to promote transparency in public administrations. It enables the creation of high-quality records with attributes like authenticity, reliability, and integrity, while also facilitating the tracking of decision making processes over time (traceability). Additionally, it lays the groundwork for effective planning of programs, events, and budgets. By streamlining and standardizing record-keeping procedures, it brings simplification and standardization into the process. Moreover, it ensures rapid accessibility to information, reinforcing its reliability. Furthermore, digital records management aids in preserving records for the long term (De Mingo 2016). When effectively implemented in municipalities, these practices have the potential to enhance audit outcomes significantly.

According to De Mingo and Martinez (2018), having access to accurate and comprehensive records plays a crucial role in increasing the likelihood of exposing corruption. These records provide the necessary evidence to hold officials accountable and, if necessary, prosecute wrongdoers. De Mingo and Martinez (2018) further propose that for this to be achievable, public administrations must adopt efficient records management systems, allocate resources for their maintenance and development, and, most importantly, have well-trained staff. Records management offers various possibilities to prevent corruption effectively. It is essential to establish good practices that ensure the creation of necessary records, which serve as evidence of public servants' activities. This practice allows for traceability of

information, enhancing accountability processes, and maintaining the chain of custody for records. Ultimately, this guarantees the integrity and reliability of records over time.

According to Penn and Pennix (2017), digital records management offers a systematic approach to ensure the creation, management, and accessibility of reliable and authentic information regarding business activities for as long as needed. While it may not directly prevent corruption or enhance transparency, it does enhance an organization's capabilities in these areas, which can lead to improved audit results. Consequently, it contributes to better management practices and increases an organization's legitimacy. To establish effective records management, Penn and Pennix (2017) highlight the necessity for mandatory directives and regulations.

Digital records serve as proof of adhering to regulations, and effective records management ensures that this evidence is securely stored and easily accessible. When there is a lack of control or proper management of records and information, meeting transparency obligations and providing public access to information becomes challenging. Additionally, preventing corruption, which can lead to negative auditing outcomes, becomes difficult due to various threats and risks that can compromise the quality of information (Namukasa 2017).

A functional digital records management system holds great importance in combating corruption and promoting public sector integrity. This system helps address four common risks associated with corruption. Firstly, by ensuring the creation and existence of records, it provides evidence to prevent the manipulation or distortion of information. Secondly, it controls access to information, preventing unauthorized changes or insider misuse of data. Thirdly, it enhances traceability, allowing for better monitoring and identification of any suspicious activities. Lastly, it protects against unauthorized destruction of records, preserving critical evidence (Nalumansi 2019).

Digital records management plays a crucial role in enhancing audit outcomes, provided that essential records are created and maintained within reliable systems, ensuring the completeness and integrity of evidence regarding decisions and operations (Mosweu and Ngoepe 2019). According to De Mingo (2016), it is vital to create and retain records within electronic systems to preserve their authenticity, reliability, and integrity over time, enabling the ability to verify these qualities. Additionally, De Mingo (2016) highlights that using records management systems allows for traceability of information during audits back to its original source (record). This system also enables monitoring of all operations or transactions associated with the record via metadata, from its creation and capture within the system. This capability aids in identifying any improper or unauthorized access to information and provides evidence of potential manipulation or deletion of documentation.

The electronic records management system must have the capability to track changes or falsifications in records. The absence of proper recordkeeping controls would raise suspicions of tampering. In this context, even if the original record is no longer available, the recordkeeping system should have preserved evidence of who accessed it, when they accessed it, and who appraised or destroyed it and when (Marutha and Ngulube 2018).

2.7 Records management and auditing

Inadequate records management leads to unfavourable audit outcomes, regardless of whether it occurs in the public or private sector. Auditing is a crucial process that benefits all sectors, and achieving positive results hinges on proper documentation (records management) to demonstrate reliability and accountability within the audited sector (Dikotla and Mokgolo 2023). Misplaced or unrecoverable supporting documentation during auditing greatly increases the likelihood of negative audit results, which can severely damage the sector's reputation (Mosweu and Ngoepe 2019). Therefore, proper records management is essential for ensuring that the necessary information is readily accessible and well-documented during audits. It plays a pivotal role in proving the sector's compliance with regulations and standards, as well as demonstrating transparent financial and operational practices. Without accurate and complete documentation, auditors may encounter difficulties in verifying the sector's activities, leading to unfavourable audit outcomes.

By prioritizing robust records management practices, organizations can mitigate the risk of negative audit outcomes. This involves establishing systematic processes for record creation, storage, retrieval, and security. Digital records management systems, in particular, offer significant advantages in terms of efficiency, accessibility, and data protection (Chikomba, Rodrigues and Ngoepe 2021). Addressing records management deficiencies can positively impact the overall image of the sector, ensuring that it operates with transparency and accountability. It is a proactive step towards safeguarding the sector's reputation and promoting a culture of good governance (Makgahlela 2021).

Poor records management poses a significant risk to the auditing process and can result in negative outcomes that may adversely affect the sector's standing. Prioritizing proper records management is a crucial step in ensuring positive audit results and reinforcing the sector's trustworthiness and credibility in the eyes of its stakeholders and the public. Mosweu and Ngoepe (2019) findings further support the notion that poor records management can create opportunities for fraud and corruption. In the absence of complete and reliable records, it becomes challenging to substantiate allegations and prove or disprove fraudulent activities. This lack of documentation leaves room for ambiguity and makes it difficult to hold individuals accountable for their actions.

Negligence in proper documentation can lead to unfavourable audit outcomes, as auditors may encounter difficulties in verifying the accuracy and authenticity of financial transactions and other activities (Osebe, Maina and Kurgat 2018). This can raise concerns about the sector's financial integrity and governance practices, negatively impacting its reputation and credibility. Both records management and auditing play crucial roles in ensuring transparency, accountability, and risk management in both public and private sectors. A well-functioning records management system not only provides the necessary evidence to support audit processes but also facilitates risk identification and mitigation. Proper and accurate (up-todate) records management can significantly improve audit outcomes, as auditors can rely on reliable information to assess the sector's compliance and financial performance.

The synergy between records management and auditing is essential for fostering a culture of good governance and integrity within organizations. By effectively managing records and ensuring compliance with auditing standards, sectors can enhance their overall operations, reduce the risk of fraud and corruption, and achieve positive audit results. In conclusion, the relationship between poor records management and negative audit outcomes is clear. A robust records management system, in conjunction with effective auditing practices, is essential for enhancing accountability and transparency, mitigating risks, and ultimately leading to positive audit results in both public and private sectors.

2.8 Records management and accountability

By maintaining accurate and up-to-date records, the government can provide documentary evidence to support its actions and decisions. This evidence is crucial for justifying budget allocations, demonstrating compliance with financial regulations, and showcasing responsible and transparent governance (Naidoo and Ramphal 2018). Proper records management empowers the government to function efficiently and effectively while being accountable to the public and stakeholders. Furthermore, transparent records management enables the government to respond to media reports and public inquiries with credible and verifiable information. When faced with allegations or suspicions of corruption or maladministration, having readily accessible records allows the government to address these issues promptly and transparently, thereby maintaining public trust (Dikotla and Mokgolo 2023).

Records management plays a pivotal role in ensuring accountability within the government sector. Corruption, fraud, and maladministration are hazardous diseases that can erode the integrity of the government and compromise its financial resources at all levels (Marona 2016). David (2017) observations highlight the link between poor records management and the prevalence of unlawful actions, such as unauthorized procurements, illegal expenditures, and failure to collect rates and taxes. Proper records management is crucial in preventing such occurrences, as it ensures the retention of appropriate financial and accounting records. With well-maintained records, it becomes more

challenging for individuals to engage in fraudulent activities or manipulate contracts for personal gain (Xanthopoulou and Plimakis 2021). The existence of comprehensive documentation facilitates transparency and accountability, making it easier to detect a David (2017) perspective emphasizes the importance of integrating records management, accounting, and auditing in the public sector to ensure transparency, probity, and integrity in handling public funds. The combination of these disciplines provides layers of control that are essential for effectively managing financial resources and preventing corruption and fraud.

However, the challenge lies in the frequent absence of a robust records management layer in governmental financial control systems. Many government entities overlook the importance of dedicated records management, which can lead to deficiencies in accountability and transparency (Marona 2016). While accountants and auditors acknowledge the necessity of records to carry out their duties effectively, they may not fully grasp the significance of a comprehensive records management system. A wellstructured records management system is fundamental to the proper functioning of accounting and auditing processes in the public sector (Naidoo and Ramphal 2018). Therefore, it serves as the foundation for accounting practices, ensuring that financial records are accurate, complete, and reliable. Additionally, it introduces controls that protect crucial audit trails, enabling auditors to trace and verify financial transactions with confidence.

Addressing this challenge requires raising awareness about the crucial role of records management in the public sector's financial control processes. Recognizing the value of records management can lead to improved accountability, more effective financial management, and a stronger defence against corruption and fraud (Nalumansi 2019). Therefore, combining records management, accounting, and auditing is essential for securing transparency, probity, and integrity in handling public funds. An effective records management layer complements accounting and auditing practices, providing a strong foundation for financial control and accountability. Encouraging a deeper understanding of the significance of records management among accountants and auditors is vital for optimizing financial processes and ensuring responsible governance in the public sector and investigate any potential wrongdoings (Ngoepe 2017).

In conclusion, records management is a critical component of achieving accountability in the government sector. It acts as a safeguard against corruption, fraud, and maladministration by providing the necessary evidence to uphold transparency, responsible governance, and effective resource management. A well implemented records management system helps the government function excellently and reinforces its commitment to being a responsible and transparent entity accountable to the public it serves.

2.9 Records management as risk management tool.

Records management systems serve as risk management tools by monitoring record movement and establishing audit trails to detect unauthorized actions on records. Reliable records, with clear authorizations, designated individuals, and dates, act as evidence to identify misuse, abuse, and noncompliance with financial instructions and regulations. This makes records management an effective preventive measure against corruption and fraud, as it can provide valuable evidence in such cases (Mosweu and Ngoepe 2019).

The ability of records management systems to trace the history of records within an organization acts as a deterrent, discouraging individuals from engaging in illicit activities due to the risk of being caught through audit trails (Mojapelo and Ngoepe, 2021). Additionally, these systems enhance transparency and accountability in various business processes by maintaining authentic records with a clear chain of custody and linking specific actions to authorized individuals and dates (Ngoepe and Ngulube 2014). Furthermore, the value of records management goes beyond financial matters, as it aids in adhering to legal and regulatory requirements, particularly in industries where compliance is critical, such as healthcare and legal sectors (Mojapelo and Ngoepe, 2021).

Therefore, records management systems play a pivotal role as risk management tools, offering the ability to track records, create audit trails, and establish connections between actions and authorized individuals, making them essential for identifying and mitigating fraud and ensuring ethical conduct (Mojapelo and Ngoepe, 2021; Shepherd and Yeo, 2003; Upward et al. 2011). Organizations should prioritize and enhance their records management practices to maintain trust, transparency, and compliance as technology advances and regulations evolve.

In most instances, records consistently present the strongest evidence of major types of fraud. They have the potential to reveal instances of mis-classification, mis-description, and under-valuation of goods and services. The significance of records management systems lies in their role as a control mechanism that complements other control systems like internal and external audits. By regulating the movement and physical security of financial records, these systems greatly diminish the opportunity for tampering or removal. When effectively applied, these control systems collectively act as a deterrent against fraud. Furthermore, the records themselves can be instrumental in detecting fraud and facilitating the recovery of losses (Alles et al. 2006; Duranti and Rogers 2012).

The management of records within an organization is crucial for documenting activities and processes, allowing people to understand what has been accomplished and how. This integral role in corporate governance is highlighted by Ngoepe (2017). Despite government entities having internal audit functions and audit committees, they still receive unfavorable audit results from AGSA due to

inadequate records management, a significant audit report finding as pointed out by Ngoepe. Ngoepe and Ngulube (2016) assert that auditing, risk management, and records management are interrelated and essential components for organizations. They argue that by regarding records management as a risk management concern, it can gain prominence, move beyond its limited scope, and become more influential within the public sector. The recognition of records management as a management issue by public officials and senior civil servants is essential for ensuring compliance with record-keeping regulations and fostering a culture of effective record creation, maintenance, and utilization.

2.10 Types of Audit Outcomes

The following represents the type of audit outcomes (Mojapelo and Ngoepe, 2021):

- **Unqualified Opinion** - No Findings: In this scenario, the Auditor-General confirms without reservation that the municipality's financial statements accurately represent its financial position and adhere to Generally Recognised Accounting Practices (GRAP).
- **Unqualified Opinion** - Emphasis of Matter Items: Similar to an Unqualified Opinion with no findings, the Auditor-General draws attention to specific matters in the financial statements that require particular consideration.
- **Qualified Opinion-** The Auditor-General expresses concerns about the accurate presentation of the financial statements. While there may be some departure from Generally Recognised Accounting Practices (GRAP), it is not severe enough to warrant an adverse opinion or a disclaimer of opinion.
- **Adverse Opinion-** This type of opinion is issued when the auditor determines that the annual financial statements fail to depict the municipality's financial position, operational results, and cash flows in accordance with Generally Recognised Accounting Practices (GRAP).
- **Disclaimer of Opinion-** When the Auditor-General lacks essential underlying documentation necessary to form an opinion, a disclaimer of opinion is issued. This could occur due to the absence of documentation or significant uncertainties that prevent the issuance of any opinion on the financial statements.

2.11 Blockchain Technology.

Nakamoto (2008) initially proposed the concept of blockchain, which combines various technologies such as distributed ledgers, cryptography, hashing, and consensus mechanisms. In the blockchain system, each transactional record is stored within a series of data blocks and shared across a peer-to-peer network (Swan 2015). Each node within the network retains a duplicate of the blocks, with each block containing a distinctive cryptographic block header that confirms the block's content, along with a timestamp, the previous block header, and the specifics of the transactions.

Blockchain is a decentralized transactional database technology used to securely validate and record transactions across a large number of participants, referred to as nodes. This system ensures consistency and resistance to tampering (Glaser 2017) and (Beck, Müller-Bloch and King 2018). As per research conducted by (Ali, Ally and Dwivedi 2020), blockchain technology has the potential for various applications, including recording transactional information, maintaining medical records, facilitating legally binding agreements, monitoring the movement of goods, storing individual credit records, verifying the origin of artworks, and ensuring secure payments through supply chain integration, among other advancements and methods. According to (Beck, Müller-Bloch and King 2018), blockchain can be classified as a form of distributed ledger technology that provides a guarantee of tamper-resistant storage for archived information, such as certificates. Numerous studies have indicated that blockchain has the potential to decrease transactional uncertainty, insecure conditions, and uncertainty by enabling comprehensive transparency of transactions and the inclusion of consistent and verified information among all participants in the network.

The primary aim of blockchain technology for both businesses and governments is to streamline the exchange of information and transactions that necessitate authentication and trust (Yli-Huumo et al. 2016). It achieves this by distributing and storing identical information across various nodes, with new information only being appended once consensus is reached among the nodes. This design prevents the alteration or removal of previously recorded data, allowing all nodes to trace the historical record while still permitting the addition of new transactions. The process of recording transactional details across multiple nodes is referred to as a distributed ledger. This approach minimizes reliance on a central authority and mitigates the risks associated with manipulation or system failures since all nodes possess complete information (Yli-Huumo et al. 2016).

Blockchain technology proves particularly valuable in scenarios involving changes in ownership and the secure storage of critical documents such as certificates, licenses, government rulings, and legislation. It offers significant utility in e-government advancement by potentially yielding advantages for both society and government. These advantages encompass cost and complexity reduction, the implementation of shared and reliable processes, enhanced traceability of audit trails, and the establishment of trustworthy recordkeeping (Palfreyman 2015). Existing literature predominantly concentrates on tackling the technological obstacles associated with employing Blockchain Technology (BCT) for peer-to-peer (P2P) procedures (Yli-Huumo et al. 2016). Conversely, limited attention has been dedicated to the capacity of BCT in meeting societal requirements. Moreover, there is a dearth of systematic investigation into the potential applications of BCT for government advancement (Ølnes 2016).

When analyzing blockchain technology, the primary focuses are trust and decentralization, as highlighted by (Ølnes and Jansen 2021) and (Seebacher and Schüritz 2017). The security of blockchain technology is maintained through a proof of work process, which eliminates the need for third-party involvement in verifying and documenting transactions. This process empowers blockchain users to circumvent dependence on external entities for the security of their transactions and assets (Böhme et al. 2015).

The blocks within a blockchain are dispersed across different nodes, which are computers utilized by authorized peers, and they are not centrally stored. Each block includes a timestamp indicating its creation, the hash of the preceding block, and transactional data (Nakamoto 2008). In the context of a municipal study, a block could encompass data detailing the amount of money disbursed to a contractor by the municipality, particulars of the municipal official sanctioning the funds, information about the recipient contractor, and specifics of the services to be provided by the contractor, including estimated deadlines. This data, when compiled into a record, is distributed to ledger systems held by various departmental heads in the municipal framework (nodes). These departmental heads must collectively approve the accuracy of the information within the record (block), and if the majority of heads confirm its correctness, the record is securely linked or chained to other related records (blocks) in an unalterable format, giving rise to the term "blockchain" (Zhang, Xue and Huang 2016).

2.11.1 Types of blockchain

- **Private blockchain**

A private blockchain is a type of blockchain network that operates with restricted access, typically limited to a specific group of participants or organizations (Puthal et al. 2018). Unlike public blockchains, which are open and decentralized, private blockchains are more centralized and often used by businesses, consortiums, or government entities for various purposes. Private blockchains offer greater control and privacy, as participants are usually known and permissioned (Capece and Lorenzi 2020). These networks are commonly utilized for internal processes, supply chain management, smart contracts, and data sharing among trusted parties (Arulmozhi, Sheeba and Devaneyan 2022). While private blockchains sacrifice some of the decentralization and transparency associated with public blockchains, they offer advantages in terms of scalability, efficiency, and compliance with regulatory requirements. The choice between public and private blockchains depends on the specific use case and the desired level of control and privacy.

Private blockchains are characterized by their more centralized governance structure, where a designated entity or consortium has authority over network operations (Swan 2015). This centralization often allows for faster transaction processing and lower energy consumption compared to public

blockchains. Additionally, private blockchains are better suited for scenarios where participants need to comply with specific regulations or privacy requirements, as the network's permissioned nature provides more control over who can access and interact with the blockchain. However, it's important to note that the trade-off for enhanced control and privacy is a reduced level of transparency and decentralization (Puthal et al. 2018). Deciding whether to use a private or public blockchain depends on the specific needs of the participants and the use case, with private blockchains being a valuable tool for organizations seeking the benefits of blockchain technology while maintaining a controlled and permissioned environment.

- **Public blockchain**

A public blockchain is a decentralized and open digital ledger that allows anyone to join the network, participate in transactions, and view the entire transaction history (Beck, Müller-Bloch and King 2018). In contrast to private blockchains, public blockchains are permissionless, meaning there are no restrictions on who can access and interact with the network. They are typically maintained by a distributed network of nodes, which can be operated by anyone, and rely on a consensus mechanism, often proof of work (PoW) or proof of stake (PoS), to validate and record transactions (Puthal et al. 2018). Public blockchains are known for their transparency, security, and censorship resistance. They are commonly associated with cryptocurrencies like Bitcoin and Ethereum, but their applications extend to various fields, including smart contracts, decentralized applications (DApps), and tokenized assets. Public blockchains offer a high level of trust and decentralization, but they may have scalability and privacy challenges that need to be addressed for broader adoption (Arulmozhi, Sheeba and Devaneyan 2022).

Public blockchains are often referred to as permissionless blockchains because they allow anyone to become a participant in the network without needing approval or special access. This open and decentralized nature is a fundamental characteristic that sets public blockchains apart from their private counterparts (Agbo and Mahmoud 2020).

According to Capece and Lorenzi (2020) key features of public blockchains include:

- **Transparency**: All transactions and data on a public blockchain are visible to all participants, ensuring transparency and accountability.
- **Decentralization**: Public blockchains are maintained by a distributed network of nodes, making them resistant to central control or single points of failure.

- **Security**: The security of public blockchains is enforced through cryptographic techniques and consensus mechanisms, making it extremely challenging for malicious actors to manipulate the system.
- **Censorship Resistance**: Public blockchains are designed to be resistant to censorship, as no central authority can control or restrict access to the network.
- **Global Accessibility**: Public blockchains are accessible from anywhere in the world, making them a truly global and borderless technology.
- **Incentives**: Many public blockchains use incentives, such as cryptocurrency rewards for miners or validators, to encourage participation and maintain the integrity of the network.

Public blockchains have found a wide range of applications beyond cryptocurrencies, including supply chain management, identity verification, and decentralized finance platforms. However, challenges such as scalability, energy consumption, and privacy concerns are ongoing areas of development and research in the public blockchain space. Despite these challenges, public blockchains have demonstrated their potential to disrupt traditional systems and enable innovative solutions across various industries (Agbo and Mahmoud 2020).

➢ **federated blockchain (Consortium blockchain)**

A federated blockchain, also known as a consortium blockchain, is a type of blockchain network that combines elements of both public and private blockchains. In a federated blockchain, control over the network is shared among a limited group of pre-selected participants, such as organizations, institutions, or businesses. These participants collaborate to validate transactions and maintain the blockchain, making it more decentralized than a purely private blockchain but more restricted than a public blockchain Joshi, Han and Wang (2018).

According to Beck, Müller-Bloch and King (2018) key characteristics of a federated blockchain include:

- Permissioned Network: Federated blockchains are permissioned, meaning that participants are invited and vetted before they can join the network. This offers a degree of control and security.
- Decentralization: While not as open as public blockchains, federated blockchains still feature decentralization, as they are maintained by multiple participants, reducing the risk of central points of failure.

- Consensus Mechanism: These blockchains use consensus mechanisms that are determined by the consortium members, such as a group of companies reaching a consensus on validating transactions.
- Enhanced Privacy: Compared to public blockchains, federated blockchains offer improved privacy, as only trusted members have access to the data.
- Efficiency and Scalability: Federated blockchains can often process transactions more efficiently and at a higher speed compared to public blockchains, making them suitable for specific use cases.

Federated blockchains are commonly used in situations where multiple organizations need to collaborate on a shared blockchain but want to maintain control and privacy. They are applied in various industries, including supply chain management, financial services, and healthcare, to streamline processes and data sharing among trusted partners. While they offer a balance between control and decentralization, it's essential to have a well-defined governance structure among the consortium members to ensure the network's proper operation and security.

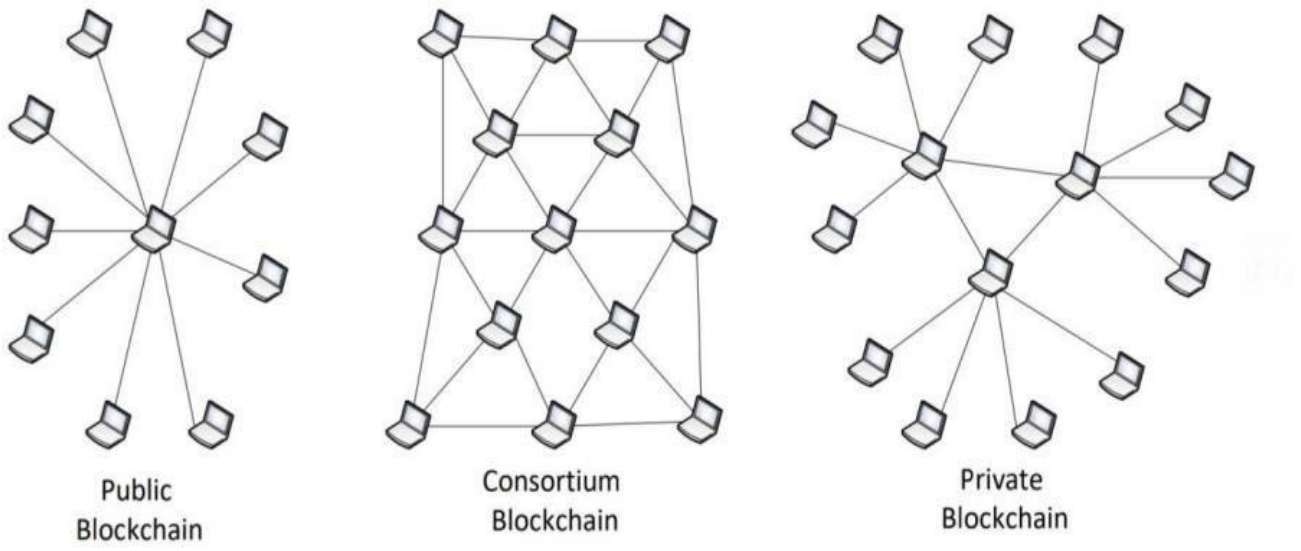

Figure 2.1: Patterns of the different types of blockchain.

Source: (Joshi, Han and Wang 2018)

2.11.2 Application and benefits of blockchain in records management

Blockchain-based records management offers a multitude of benefits that can revolutionize data and record-keeping practices for organizations and institutions. It provides a heightened level of security through cryptographic techniques, ensuring the integrity and authenticity of records while making them resistant to unauthorized tampering (Pawar and Vanarote 2020). Transparency is a hallmark feature,

allowing all participants on the blockchain network to access and verify information, fostering trust and real-time auditing. Immutability ensures that once data is recorded, it becomes practically impossible to alter or delete, creating a permanent and tamper-proof record history (Yang et al. 2019). Decentralization, operating on a network of nodes, reduces the risk of a single point of failure (Ismail, Materwala and Hennebelle 2021).

The use of Blockchain technology in records management processes has gained significant attention in recent years. Its decentralized and transparent nature makes it an ideal solution for ensuring data integrity, security, and accountability in managing records. Blockchain technology, which is essentially a distributed ledger system, allows for the secure and transparent storage of data (Allouche et al. 2021). Through its cryptographic methods, each block in the blockchain contains a hash of the previous block as well as transaction data and a timestamp, creating an immutable and verifiable chain of records (Satybaldy, Subedi and Nowostawski 2022).

One of the main advantages of using blockchain technology in records management is its immutability. Blockchains have a built-in mechanism that ensures that once data is recorded, it cannot be altered or tampered with. This immutability feature of blockchain technology makes it an ideal solution for maintaining the accuracy and integrity of records (Arulmozhi, Sheeba and Devaneyan 2022). The immutability of blockchain technology ensures that records cannot be modified or deleted once they are stored, guaranteeing the accuracy and integrity of the data (Ismail, Materwala and Hennebelle 2021). This is especially important in records management, where the preservation of accurate and unaltered records is crucial for legal and regulatory compliance, as well as for maintaining trust and accountability. Moreover, the transparency of blockchain technology allows for increased visibility and trust in the records management process.

Klechikov, Pryanikov and Chugunov (2017) deliberates the use of blockchain in creating unified registers for state and municipal orders, as well as databases for documents and court decisions. Attaran (2022) highlights how blockchain can simplify record management for governments, including storing birth, death, and property ownership certificates securely. Gopalakrishnan (2020) proposes a blockchainbased waste tracking system for smart cities, enhancing transparency and coordination among stakeholders. Ayele (2021) explores the use of blockchain, specifically Ethereum, for preserving digital land records, ensuring security and immutability. These papers demonstrate the potential of blockchain technology in improving municipal records management through enhanced security, transparency, and efficiency.

This technology streamlines record-keeping processes, cutting out intermediaries and administrative overhead, ultimately reducing costs. Blockchain also offers accessibility, traceability, data privacy,

disaster recovery, and long-term archiving capabilities. It simplifies compliance and auditing, enhances accountability, and supports asset tokenization (Klechikov, Pryanikov and Chugunov 2017). Smart contracts, often integrated with blockchain, automate complex workflows, boosting productivity and reducing errors. Its global accessibility makes it suitable for international organizations and cross-border transactions. While the benefits are clear, selecting the right blockchain platform, establishing governance, and ensuring data privacy and security compliance are crucial for maximizing these advantages and addressing potential challenges (Ayele 2021).

2.12 Chapter Summary

In this chapter, an extensive examination of the literature pertinent to the study was conducted. Theoretical foundations were established, and a comprehensive analysis of various dimensions of records management using Blockchain technology was presented. Chapter Three will detail the methodology employed in this study to address the research objectives.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction.

The significance of research methodology in the research process is highlighted by Ngulube (2015), as it serves as a lens through which the researcher examines and addresses a social phenomenon to answer research questions. Ngulube (2005) underscores key components of a research design, including defining the population and its acquisition, outlining sampling techniques, describing instruments, explaining data collection and processing methods, and detailing statistical data treatment. Leedy and Ormrod (2005) further define research methodology as the overarching approach guiding a researcher throughout a research project. This chapter delves into the chosen methodology for the current study, elucidating its alignment with the research objectives and providing insight into the methodological journey undertaken.

In line with the perspectives presented by Ngulube and Leedy and Ormrod the research methodology is a fundamental aspect of any study, shaping the researcher's perspective and guiding the entire research process. It serves as a structured framework that enables systematic investigation and analysis of the chosen subject. By adhering to a well-defined research methodology, researchers can ensure the reliability, validity, and rigor of their findings.

Ngulube's assertion that research methodology acts as a lens underscores how the approach taken influences the way a researcher comprehends and interprets the social phenomenon under study. This lens determines the tools, techniques, and procedures used to collect and analyze data, thereby influencing the depth and breadth of insights gained. Furthermore, Ngulube's delineation of key elements in a research design, such as population definition, sampling procedures, data collection methods, and statistical treatment, underscores the meticulous planning and systematic execution required for a robust research endeavor. These elements collectively contribute to the overall quality and credibility of the research outcomes.

Leedy and Ormrod's characterization of research methodology as a general approach echoes the idea that it provides a guiding framework for the entire research project. This overarching approach not only shapes the selection of research tools and techniques but also ensures the coherence and consistency of the study. In essence, this chapter serves as a prelude to the subsequent discussion on the specific research methodology adopted for the present study. By delving into the theoretical underpinnings and perspectives of research methodology, it establishes the foundation for understanding how the chosen methodology aligns with the research goals and contributes to the exploration and analysis of the study's subject matter.

3.2 Research paradigm

There are various epistemological paradigms that can be used to underpin research. According to Ambira, (2016:22-27), the four most popular research paradigms associated with research in records management are positivism, interpretivism, pragmatism and post-positivism. The Post-positivism was considered best-suited for this study as it gives the researcher the flexibility in using qualitative research methods.

Post-positivist paradigm

The post-positivist paradigm, also known as post-positivism or critical realism, emerged in response to the limitations of positivism in social science research. While positivism emphasizes objective observation and measurement to uncover universal laws, post-positivism acknowledges the complexity and subjectivity of social phenomena (Tacheva, 2016). Researchers recognize their own perspectives, biases, and interpretations, which can influence outcomes. Post-positivism asserts that knowledge is tentative and probabilistic, allowing for interpretation and revision based on new evidence. Unlike positivism, it acknowledges the role of values and theoretical perspectives in research (Tacheva, 2016). Post-positivism encourages a variety of methods, including quantitative and qualitative approaches, to study social phenomena comprehensively. Reflexivity, where researchers critically reflect on their assumptions, is emphasized. This paradigm offers a nuanced approach, recognizing the interplay between researchers and phenomena, and embracing uncertainty to contribute to our understanding of the social world (Kabak, Hinckeldeyn and Dekkers, 2024:1-29).

3.3 Research design

The qualitative research design employed in this study involves the collection, analysis, and interpretation of data through the observation and exploration of people's actions and expressions (Kothari and Garg 2019). Specifically, the study follows a case study research approach within the realm of qualitative research. Case study research aims to provide a comprehensive and in-depth examination of one or more cases, such as municipal audit results (Kothari and Garg 2019).

Furthermore, this research design falls under the category of interpretive research. It seeks to uncover and understand behaviours by gathering individuals' perceptions, opinions, attitudes, and beliefs concerning a contemporary issue, in this case, municipal audit outcomes. This approach emphasizes exploring the underlying meanings and context of participants' responses to gain insights into the topic under investigation.

This qualitative design is well-suited for delving into the complex and nuanced aspects of the municipal audit results and their relationship with records management practices. By focusing on detailed case studies and interpreting participants' perspectives, this approach allows for a comprehensive exploration of the subject matter. Through this interpretive lens, the research seeks to go beyond surface-level observations and delve into the underlying motivations, values, and contextual factors that influence records management and its impact on audit outcomes. By capturing the richness of participants' experiences and viewpoints, the study aims to provide a deeper understanding of how records management practices intersect with audit results within the municipal context.

In essence, this qualitative design is a powerful tool for uncovering the intricate interplay between records management and audit outcomes, shedding light on the various dimensions that contribute to the overall effectiveness and reliability of the audit process in municipalities. The forthcoming sections will outline the specific methodology and procedures adopted to carry out this qualitative research, offering insights into how the study's objectives will be achieved.

3.3 Population.

The research population refers to a specific group of individuals or objects that constitute the primary focus of a scientific investigation. It is a well-defined collection of entities sharing similar characteristics (Denzin and Lincoln 2018). In the context of this study, the population comprises individuals from the auditing unit and records management unit, also known as the registry, at Msunduzi Municipality.

The population for this study consisted of 15 participants, comprising 9 members from the registry (records/document management) staff and 6 members from the auditing staff of Msunduzi Municipality. Notably, the term "registry" is synonymous with the records management unit within the municipality. As the entire population of the study comprised these 15 participants, census sampling process was applied, and all individuals were included in the research due to the manageable size of the population.

When dealing with a small population size in research methodology, employing a census sampling approach can be a valuable strategy. Census sampling involves collecting data from every member of the population rather than selecting a subset for study (Kenny et al., 2021). This method is particularly advantageous when the population size is small and manageable, allowing researchers to gather comprehensive and detailed information without the need for sampling techniques that may introduce sampling error. By conducting a census of the entire population, researchers can achieve high accuracy and representation in their findings, providing a complete understanding of the characteristics and attributes within the population (Kenny et al., 2021). Additionally, census sampling eliminates the need to extrapolate findings from a sample to the broader population, enhancing the reliability and validity of

the research outcomes. However, it's essential to consider practical considerations such as resource availability and feasibility when opting for a census approach, as it may require more time and effort compared to sampling methods. Overall, census sampling is a robust method for studying small populations, ensuring thorough data collection and comprehensive analysis of research variables (Halpern-Manners, Helgertz, Warren, and Roberts, 2020).

3.4 Research data collection method: Interview

Data collection is a crucial process in which the researcher gathers information from pertinent sources to address the research problem at hand (Small & Mardis 2018). In this study, an individual semi-structured interview method was chosen as the approach for data collection. This method involves engaging with participants in one-on-one interviews that allow for a flexible and open-ended exchange of information, enabling the exploration of participants' perspectives, experiences, and insights related to the research topic. Through this method, a deeper understanding of the intricate connections between records management and audit outcomes within the municipal context can be achieved.

Daniel and Harland (2018), also attest that an individual interview method involves a structured and purposeful conversation between two individuals. This method is strategically designed to draw out the interviewee's insights and understanding of a particular subject. Individual interviews, including key informant interviews, serve as valuable tools for delving into an individual's beliefs, values, perceptions, emotions, experiences, and viewpoints regarding a specific matter.

The individual interview approach offers a deep exploration of complex issues, enabling the researcher to gain a comprehensive understanding of the contextual factors that influence individual experiences. This method facilitates a nuanced exploration of the connections between records management practices and audit outcomes within the municipal setting, uncovering the underlying dynamics and perspectives that contribute to the research objectives. Through this in-depth engagement with participants, the study aims to extract meaningful and comprehensive insights into the interplay between these crucial aspects.

3.5 Data analysis

Qualitative data encompasses non-numeric information, including materials like interview transcripts, notes, video and audio recordings, images, and text documents. In this study, the data collected falls within the realm of qualitative data. To analyze this data, the approach of thematic analysis was employed, as specified by Kumar (2019). Thematic analysis involves systematically identifying, analyzing, and interpreting recurring patterns (themes) within qualitative data. Through this method, the researcher can uncover meaningful insights, connections, and underlying concepts present in the data. By applying thematic analysis to the collected qualitative data, the study aims to distill key themes that

shed light on the relationships between records management practices and audit outcomes in the context of the Msunduzi Municipality.

Therefore, the method used in this study involves the reinterpretation of narratives shared by participants, taking into account the unique context of each case and the diverse experiences of each respondent. This analysis entails the researcher's re-examination and revision of the original qualitative data. In the current study, a primary data comparison approach was employed. This involved comparing the outcomes derived from qualitative interviews with the existing literature from the literature review, discerning both commonalities and disparities between them (Kumar 2019).

This study used Braun and Clarke (2006:77-101) comprehensive set of thematic analysis procedures:

1. **Familiarizing Yourself with Data**: Begin by transcribing data if needed, followed by thorough reading and re-reading of the data. Take note of initial ideas or impressions that arise during this process.

2. **Generating Initial Codes**: Systematically code interesting features of the data across the entire dataset. Organize and collate data relevant to each code.

3. **Searching for Themes**: Group codes into potential themes that emerge from the data. Collect all data segments related to each potential theme.

4. **Reviewing Themes**: Evaluate themes' coherence and relevance in relation to the coded segments (Level 1) and the entire dataset (Level 2). Develop a thematic 'map' that outlines the analysis's structure.

5. **Defining and Naming Themes**: Continue analyzing to refine the specifics of each theme and the overarching narrative of the analysis. Develop clear definitions and distinctive names for each theme.

6. **Producing the Report**: Conduct a final analysis. Select compelling extract examples, analyze the chosen segments thoroughly, and connect the analysis back to the research question and existing literature. Craft a scholarly report that communicates the analysis effectively.

The above steps encompass a rigorous and systematic approach to conducting thematic analysis, ensuring thorough exploration and interpretation of qualitative data. The subsequent sections will elaborate on how these procedures were implemented in this study, shedding light on the process of deriving meaningful insights from the collected data.

3.6 Reliability and Validity

Research validity and reliability play crucial roles in ensuring the quality of research, especially in the realm of organizational behaviour. Qualitative research, in particular, is well-suited for demonstrating

validity, but it comes with a diversity of methods and techniques, making it challenging to establish a universally accepted validity assessment method (Hayashi, Abib and Hoppen 2019). However, Cypress (2017) underscores the significance of reliability and validity as fundamental aspects of all research. Researchers are strongly advised to meticulously ensure that the chosen research methodology and data collection tools exhibit both validity and reliability, as this is instrumental in showcasing the research's quality (Hayashi, Abib and Hoppen 2019). In this context, the study engaged in pretesting to validate the instrument used for data collection.

The validation process adhered to recommended guidelines for qualitative research, specifically following the intrinsic group, which is the preferred approach for validating qualitative research (Sousa 2014). This method enabled the researcher to assure the trustworthiness of the study by examining aspects like the adequacy, credibility, and reliability of the research questions. Intrinsic guidelines further facilitated peer debriefing, which involved engagement with peers or specialists in the field of data validation. To validate the research questions and the semi-structured interview schedule, the researcher sought the input of Auditors and records management staff who offer professional services to the municipal community. Additionally, a qualitative research expert was consulted to further validate both the research questions and the interview schedule. The expert's insights led to adjustments in the number and structure of interview questions, ultimately resulting in a more streamlined and effective data collection process. Pretesting was also conducted with some of the municipality staff members to ensure that the interview questions were appropriate for the target group, a crucial step in the research process (SDousa 2014).

The pretesting in this study served the purpose of evaluating three key elements: the clarity and ease of understanding of the questions, the potential need for additional items in specific areas, and the identification of any questions to which participants might be hesitant to respond.

3.7 Ethical consideration

Ethical considerations were paramount in the execution of this research study. To ensure ethical standards were upheld:

1. **Informed Consent and Gatekeeper Permission**: Prior to data collection, the researcher obtained informed consent from all participants, outlining the study's purpose, procedures, and potential implications. Additionally, necessary permissions were secured from gatekeepers, granting access to the research premises.

2. **Ethical Clearance**: Recognizing the importance of ethical rigor, the researcher sought and obtained ethical clearance, demonstrating a commitment to adhering to ethical guidelines and ensuring participant well-being.

3. **Confidentiality and Anonymity**: Participants' identities were safeguarded throughout the research process. During interviews, participants were not required to disclose their names. The research findings were presented in a generalized manner to prevent personal identification and maintain confidentiality.

4. **Protection of Identity**: The study ensured that no personal identifiers or specific details were presented in the research outcomes. This approach preserved the anonymity of participants and further bolstered confidentiality.

By adhering to these ethical considerations, the study maintained a high level of integrity and respect for participants' rights and privacy.

3.8 Chapter summary

In this chapter, the research methodology adopted for the study was thoroughly examined and explained. The significance of research methodology in shaping the investigation's approach and outcomes was emphasized, highlighting the rationale behind the chosen qualitative design and individual semistructured interview method. The concept of qualitative data and its analysis through thematic procedures, as proposed by Braun and Clarke (2006), was elucidated. Furthermore, ethical considerations played a crucial role in ensuring the ethical integrity of the study. The steps taken to obtain informed consent, secure gatekeeper permission, apply for ethical clearance, protect participants' identities, and maintain confidentiality were outlined.

With a clear understanding of the research methodology and ethical framework, the upcoming chapter will delve into the presentation of the research results, offering insights into the findings and their implications. This progression ensures a comprehensive exploration of the research topic, from the methodological approach to the substantive outcomes.

CHAPTER FOUR: PRESENTATION OF RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the focus shifts towards presenting the findings derived from the study's methodology, which primarily involved conducting semi-structured online interviews. The overarching objective of this research was to explore the viewpoints of records management and auditing professionals regarding the potential role of a functional blockchain-based digital records management system. The study sought to investigate how such a system could contribute to the prevention of fraudulent and corrupt activities, while simultaneously promoting transparent and secure practices in records and information management. This proactive approach aimed to mitigate instances of maladministration, negative financial outcomes, and the inability to provide accurate and current records during the auditing process. By delving into the perceptions of experts in these fields, the study aimed to shed light on the potential benefits and challenges associated with integrating blockchain technology into records management within the context of fraud prevention and transparent governance. The subsequent sections will delve into the research results, offering an in-depth exploration of the insights gained from the semi-structured online interviews.

The research was guided by the following objectives:

1. **Functional Digital Records Management System**: The first objective aimed to determine whether Msunduzi Local Municipality possesses a functional digital records management system capable of supporting the auditing process. This objective sought to assess the municipality's existing records management infrastructure and its alignment with the requirements of effective auditing practices.

2. **Records management for Transparency, Authenticity, Security, and Privacy**: The second objective focused on investigating the potential benefits of using records management in enhancing records transparency, authenticity, security, and privacy within Msunduzi Local Municipality. The aim was to explore how records management could address key challenges and contribute to maintaining the integrity and reliability of municipal records.

3. **Improved Audit Results with Blockchain Integration**: The third objective aimed to explore the likelihood of achieving improved audit outcomes by integrating blockchain technology into Msunduzi Local Municipality's records management system. This objective sought to uncover the potential impact of blockchain on enhancing audit processes, accuracy, and overall results.

By addressing these objectives through the perspectives of records management and auditing professionals, the study aimed to provide valuable insights into the feasibility, advantages, and potential challenges of employing blockchain technology in the context of municipal records management and auditing.

As highlighted by Braun and Clarke (2006), a theme serves as a significant lens through which the data aligns with the research question, encapsulating patterns of responses or meaning within the dataset. In this study, data collection involved conducting semi-structured online interviews with staff members who play roles in records management and auditing within the municipality. Subsequently, the collected data underwent analysis through the thematic analysis approach, following the guidelines outlined by Braun and Clarke (2006). By adopting this methodology, the study sought to unearth and comprehend the underlying patterns and meaningful insights within the participants' responses. The thematic analysis process enabled the identification and exploration of recurring themes that emerge from the data, facilitating a comprehensive exploration of the research objectives and the perspectives of those involved in records management and auditing. The upcoming sections will delve into the themes that emerged from the data analysis, illuminating the research outcomes and providing a deeper understanding of the research question.

4.2 Themes.

The identified themes were intricately linked to the research questions posed in this study, aligning with the framework proposed by Braun and Clarke (2006). These themes were carefully derived from the data collected through semi-structured online interviews with staff members engaged in records management and auditing within the municipality.

By associating the themes directly with the research questions, the study aimed to encapsulate the core insights, patterns, and responses present within the dataset. The subsequent sections will delve into the individual themes that emerged from the data analysis, providing a comprehensive exploration of the perspectives, perceptions, and experiences of the participants in relation to the research objectives. This thematic analysis approach offers a nuanced understanding of the intricate interplay between blockchainbased digital records management, fraud prevention, and transparent governance within the context of the Msunduzi Local Municipality.

The themes that emerged from the data analysis encompass a comprehensive array of insights and perspectives related to the research objectives. These themes have been organized and summarized as follows:

1. **Significance of Records Management Section**: Exploring the importance and role of a dedicated records management section within the municipality's operational framework.
2. **Digital Records Management Awareness**: Examining the extent to which staff members are aware of digital records management practices and their potential benefits.
3. **Functional Records Management System**: Investigating the presence and functionality of a digital records management system to support effective operations and auditing processes.
4. **Fighting Fraud and Corruption**: Delving into the potential of blockchain technology to mitigate fraudulent and corrupt activities through enhanced transparency and security measures.
5. **Risk of Missing Supporting Documentation**: Addressing concerns about the possibility of crucial supporting documentation going missing within the records management system.
6. **Records Movement Controls and Unauthorized Access**: Exploring strategies for controlling records movement and preventing unauthorized access to sensitive information.
7. **Impact of Functional Records Management**: Assessing the broader impact of a functional records management system on organizational efficiency and accountability.
8. **Blameless Audit Results from Current Records Management**: Investigating the correlation between effective records management and achieving blameless audit outcomes.
9. **Accountability and Reliability of Records**: Examining the role of records management in ensuring accountability and the reliability of records for auditing purposes.
10. **Auditing and Records Management Units Working as One Committee**: Exploring the potential benefits of close collaboration between auditing and records management units.
11. **Role of Records Management in Auditing**: Investigating the specific contributions of records management in supporting the auditing process.
12. **Records Management as Organizational Memory Preserver and Evidential Information**: Exploring the dual role of records management in preserving organizational memory and providing evidential information.
13. **Municipal Records Authenticity**: Scrutinizing the authenticity of municipal records and exploring how blockchain technology may enhance it.
14. **Municipal Records Security**: Delving into the security measures in place to safeguard municipal records from unauthorized access or manipulation.

15. **The Concept of Blockchain Technology in Records Management**: Exploring the conceptual understanding of blockchain technology and its potential application in records management.

These themes collectively provide a rich and nuanced tapestry of insights, highlighting the multifaceted aspects and implications of integrating blockchain technology into records management within the context of fraud prevention, transparent governance, and effective auditing practices within the Msunduzi Local Municipality. The following sections will delve into each theme, offering a deeper exploration of the findings and their significance.

4.2.1 Theme 1: significance of records management section

The significance of a well-structured records management section within the municipality's framework emerged as a pivotal theme. This theme highlights the integral role of records management in storing and retrieving crucial and evidential information that underpins critical municipal decision-making processes. As underscored by Saper-Obi (2014), effective records management contributes to efficient information management, safeguards against unauthorized access and manipulation, preserves institutional memory, and fosters accountability and good governance.

Ngoepe (2012) emphasizes the detrimental consequences of inadequate record-keeping practices, often leading to financial challenges for governmental bodies. The media frequently highlights instances where improper record management causes embarrassment to governmental entities. Acknowledging the significance of sound records management in government, the South African parliament established the National Archives and Records Services (NARSSA) Act of 1996 to regulate records management functions within government entities.

Ngoepe and Ngulube (2014) emphasize a consensus among researchers regarding the pivotal role of proper records management in the auditing process. Irregular expenditure, as highlighted by Ngoepe and Ngulube (2016) amounting to billions, further accentuates the criticality of records management. Without a robust records management system, retrieving records for informed decision-making becomes a challenge. This aligns with the National Archives and Records Management Policy Manual of 2007, which asserts that effective records management is vital for promoting good governance and efficient administration.

In essence, this theme underscores the foundational importance of records management as a strategic asset, encompassing efficiency, accountability, informed decision-making, and responsible governance within the municipality. The subsequent sections will delve into additional themes, offering a comprehensive exploration of the findings and their implications.

An efficient records management system ensures that records encompass the following essential attributes:

1. **Presence**: Records are systematically captured and stored, ensuring that no crucial information is overlooked or omitted.
2. **Accessibility**: Records can be readily accessed by authorized individuals, promoting ease of retrieval for necessary tasks and decision-making.
3. **Interpretability**: Records are organized and structured in a manner that allows for clear and accurate interpretation, enabling stakeholders to understand their content and context.
4. **Trustworthiness**: Records can be relied upon as accurate and authentic representations of events, actions, or transactions, instilling confidence in their integrity.
5. **Longevity**: Records are maintained and preserved over time, safeguarding their relevance and usability for historical, legal, and administrative purposes.
6. **Systematic Disposal**: Records are disposed of in accordance with a planned and regulated process, ensuring that irrelevant or obsolete information is eliminated while adhering to legal and regulatory requirements.

These attributes collectively underscore the fundamental role of an efficient records management system in maintaining the reliability, accessibility, and integrity of records, thereby supporting informed decision-making, accountability, and effective governance within the municipal context.

The study participants consistently characterized the municipal records management system as lacking full functionality. This perception stemmed from the prevailing practices governing records within the municipality. The participants conveyed a sense of dissatisfaction with the existing records management system, revealing a fragmented approach wherein each office or unit independently manages its records. This decentralized approach was seen as detrimental to the overall efficiency of the municipality, resulting in subpar records management and a notable prevalence of missing documents. Evidently, the absence of a standardized and coordinated approach to records management hampers the municipality's ability to maintain an effective and cohesive records system. This underscores the urgency for a more structured and unified approach to records management to address the existing shortcomings and enhance overall operational efficacy.

Significance of records management section (Theme 1)

Responses from Participants:

R1: "Records management is needed and very important to protect and safeguard municipal critical information. It ensures that vital municipal data, which plays a pivotal role in decision-making and operational processes, remains secure and accessible. Proper records management not only guards against unauthorized access and potential manipulation but also establishes a robust framework for preserving the integrity and confidentiality of sensitive information. By managing records efficiently, the municipality can uphold its accountability, transparency, and governance standards, thereby contributing to the overall success and responsible management of its operations."

R2: "I would comment that ensuring municipal history's retrievability is the key role of proper records management. Therefore, by effectively managing records, the municipality safeguards its past actions, enabling a comprehensive understanding of its evolution, supporting informed decision-making, accountability, and contextualizing present endeavours. This practice preserves valuable historical knowledge, ensuring accessibility for reference and analysis."

R3: "records management is important because it plays a vital role of being an evidence of actions and decisions within the municipality."

R4: "I would say it is important as it works as a major support system during the auditing process."

R5: "It is important as it keeps safe the decisions and agreements made between the municipality and contractors."

R6: "In order to be up to date with the municipal filing."

R7: "To keep track of the municipal operations."

R8: "Everything works with evidence nowadays, so records play a fundamental role in ensuring that the municipality has its evidence of every event and activity."

R9: "It helps in keeping safe and in a retrievable manner the financial statements, especially during the auditing process."

R10: "Some people are hired without proper qualifications and experiences, so records must be properly kept so that when the municipality employs the right management who will want to follow up on people’s qualifications and experiences for the jobs they are hired to do, then information can be made available for such investigations."

R11: "It helps to keep track of all employees and their years of services within the municipality and to identify non-qualified individuals during auditing."

R12: "It is important because it keeps information safe for each and every department within the municipality."

R13: "In order to know the history of the municipality and to have future plans and agreements recorded down and kept safely for future consultation."

R14: "To track those who are corrupt, if I release and use municipality money without authority then the records can be checked so that it can show as to who withdrew or authorized municipal monies illegally."

R15: "It helps in giving everyone an equal chance during tender applications because many people or officials must sign to say yes, this is a deserving contractor, unlike if that was only one person's decision who would sign only for his/her friend to get tenders."

These responses vividly illustrate the diverse perspectives of the participants regarding the importance of records management within the municipality. The statements highlight records management's role in preserving historical information, ensuring transparency and accountability, supporting auditing processes, facilitating proper decision-making, and promoting fair and equal practices as highlighted by (Nalumansi 2019). The subsequent analysis and discussions will further delve into these viewpoints, shedding light on the intricate interplay between records management and various aspects of municipal operations and governance.

4.2.2 Theme 2: digital records management awareness

In the context of the ongoing Fourth Industrial Revolution (4IR), where technology is increasingly shaping our daily lives, this theme sought to ascertain the level of understanding among municipal staff members regarding the technological advancements in records management. The participants' responses exhibited a positive comprehension of digital records management, indicating a promising outlook for the integration of electronic record-keeping systems. Their awareness of electronic methods for managing records underscores their recognition of the technological dimension in safeguarding organizational information. This collective understanding among participants implies that knowledge of digital records management is indeed present, paving the way for potential implementation and adoption within the existing staff.

The participants' responses (R) to the concept of digital records management awareness highlight a clear understanding of the technological aspects involved:

R1: "It has to do with technological ways of managing the records."

R2: "It means electronic records management."

R3: "We live in the time of 4IR, so this means electronic ways of keeping the records."

R4: "It is the records which are kept on a certain system like SAP."

R5: "It is a systematic manner in which records are technologically stored and kept for future use."

R6: "It is electronic records keeping."

R7: "It is the same as keeping records in the cloud to ensure that records are safe and not at risk of being lost."

R8: "It is a shift from manual keeping of records to the systematic way of keeping records."

R9: "Most companies and municipalities used companies like Metrofile in Durban to keep their manual files and records; it happened that Metrofile got burnt and many important files were lost. So they decided to use digital ways of keeping records, which means records were no longer going to be kept manually." R10: "It is a shift from paper-based records management to an electronic system."

R11: "It is digitization of records of the organization, and they are kept on a machine, not on files or cabinets."

R12: "It is a method of creating and managing documents in a system in a digitized manner."

R13: "We now live in the times of 4IR; as a result, the records are technologically created and kept."

R14: "Digital means electronic, records means documents, and management means safekeeping, so I would say it is the art of safe records keeping in an electronic system."

R15: "It is an electronic manner in which files are created and kept, containing important documents of the organization."

These responses collectively reflect an awareness of digital records management as the electronic and technologically advanced method of safeguarding and managing organizational records, replacing traditional manual practices. This understanding aligns well with the contemporary context of the Fourth Industrial Revolution as highlighted by (Tsvuura 2023).

4.2.3 Theme 3: **Functional records management system**

The participants' responses shed light on the functionality of the records management system within the municipality:

The participants highlighted the distinction between having a records management system and having a fully functional records management system. Their feedback indicated that the municipality's records management system falls short of being fully functional, as it lacks certain crucial characteristics.

Participants expressed concerns about the system's functionality, pointing out that important documents tend to go missing, negatively impacting the municipality's auditing outcomes. The deficiency in maintaining comprehensive and up-to-date records, especially during the auditing process, has led to unfavorable results and even attracted the attention of the Administrator. Moreover, participants noted that the presence of unqualified staff members involved in records management contributes to subpar records management practices. This lack of expertise and qualification further hampers the municipality's ability to achieve positive outcomes in its interactions with the Auditor General.

In summary, the responses under Theme 3 underscore the participants' perception that the municipality's records management system is not fully functional, leading to challenges such as missing documents, poor auditing outcomes, and the involvement of unqualified staff members in records management tasks. These issues collectively raise concerns about the municipality's ability to effectively manage and maintain its records for accurate and reliable auditing processes.

QUESTION: **Does this municipality have a functional records management system?**

- If yes, how does it ensure proper management of records?
- If no, what change or difference do you think a functional records management system would bring in this municipality?

Participants' responses on the functionality of the municipality's records management system revealed the following insights:

R1: “The municipality does not have a functional records management system. Important records frequently go missing without any accountability. A proper system is needed to prevent such losses.”

R2: “Yes, the municipality has a records management system that encompasses both manual and electronic methods. Emphasis is placed on keeping records, whether paper-based or electronic.”

R3: “No, there is no consistent records management system across the municipality. Each department or unit manages records individually, resulting in a lack of uniformity. A unified system is needed.”

R4: “No, the municipality's records management is still more manual than electronic, and the SAP system implementation is not yet fully functional. Proper training and qualification are lacking.”

R5: “The municipality's records management is not fully functional. It appears to be a combination of manual and electronic methods. The lack of confidence in the system is evident from audit results and the need for a system that prevents missing or altered records.”

R6: “Yes, there is a functional records management system, utilizing both manual and electronic methods. Records are kept and readily available in this department.”

R7: “No, a functional records management system should ensure up-to-date records, but the current system lacks accountability for missing records.”

R8: “No, since each department manages its own records independently, there is no cohesive system for the entire municipality.”

R9: “No, the municipality requires a standardized system that applies uniformly to all offices.”

R10: “No, effective records management is lacking, with each office responsible for its records without a cohesive approach.”

R11: “No, despite mentioning the SAP system, it appears ineffective in practice, lacking functionality across various offices.”

R12: “Yes, there is a functional records management system, though not fully developed and not standardized across municipal offices.”

R13: “No, a functional records management system should provide records on demand; the presence of missing records indicates flaws in the current system.”

R14: “No, missing and manipulated records during auditing indicate that the existing records management system is not functional.”

R15: “No, the municipality lacks even a basic systematic filing system, which hampers effective records management and organizational memory preservation.”

In summary, responses from the participants regarding the functionality of the municipality's records management system can be summarized as follows:

1. **Not Functional and Missing Records:** Several participants expressed that the municipality does not have a functional records management system. They highlighted the issue of missing records, lack of accountability for missing documents, and the need for a system that can prevent records from going missing.
2. **Combination of Manual and Electronic:** One respondent mentioned that the municipality has a records management system that combines both manual and electronic methods. They emphasized the importance of keeping all records, whether in paper-based or electronic form.

3. **Lack of Uniformity:** Some participants noted that there is no uniform approach to records management within the municipality. Different departments or units manage their records in their own ways, which can lead to inconsistencies and difficulties in retrieving information. They stressed the need for a standardized system that works uniformly for all municipal offices.

4. **Inadequate Training and Qualifications:** Others mentioned that while there are efforts to use systems like SAP, the municipality's records management system is still primarily manual and lacks full functionality. They pointed out that inadequate training and qualifications of staff contribute to the system's shortcomings.

5. **Negative Impact on Auditing:** Participants highlighted the negative impact of the current records management system on auditing outcomes. They mentioned instances where missing or manipulated records have led to unfavourable audit results and hindered the ability to hold wrongdoers accountable.

6. **Need for Formal and Unified System:** Many respondents emphasized the need for a functional and unified records management system established by the municipality. They stressed that such a system should provide up-to-date, retrievable, and accountable records for all municipal offices, ensuring consistency and reliability.

7. **Current System Not Effective:** Overall, the responses indicated a lack of confidence in the effectiveness of the current records management system. Participants expressed concerns about missing records, lack of uniformity, inadequate training, and negative consequences for auditing processes.

The participants' responses collectively paint a picture of a records management system within the municipality that is perceived as lacking functionality, uniformity, and reliability. As Penn and Pennix (2017) indicates on the need for a comprehensive and standardized records management system is highlighted as essential for preserving records, enabling proper auditing, and ensuring accountability within the municipality.

4.2.4 Theme 4: Fighting fraud and corruption.

There are a number of risks which are associated with fraud and corruption in many public sector organizations such as (i) the failure to create up to date records and that failure results to none existence of evidential information, (ii) unauthorized access to records which may results in tempering and modification of the contents of the documents, (iii) lack of tracking system for the movement of records within the municipality offices which may keep information of who access the records, and (iv) risk of unauthorized destruction of records as some records must be either transferred to archives not to be

destroyed. The question was then asked in trying to find out as to how does Msunduzi municipality works to ensure that the four mentioned risks does no threatens or expose the municipality to fraud and corruption. The participants agreed that fraud and corruption is a problem which is everywhere, but their municipality is not doing enough to fight against it using records management, they look at their records management system as poor to win such a fight. They also highlighted that a technological system can be a solution towards the municipality problem of poor records management. Participants also said that the records management is not viewed or regarded as a risk management tool in the municipality, therefore it may all begin with giving the records management the attention which it needs and if the municipality can invest in trustworthy system then the risks may be successfully decreased.

Participant responses were as follows:

R1 “I would say that the municipality have not yet reach such level of records management where it can fully fight with fraud and corruption, a technological approach is needed for the municipality to be able to fight record and document related fraud and corruption”

R2 “Corruption and fraud is everywhere but this municipality is not doing enough to fight it as it have not paid enough attention towards the development of effective filling system and proper records management”

R3 “there is high level of unauthorised access and destruction of records in this municipality, and records are missing all the time more especially during auditing, so our records management system is not yet able”

R4 “I would say that as long as the internal auditing is not yet taken serious in this municipality to prepare for the AGSA in terms of up to date records then there is no way that this municipality can achieve what you have asked”

R5 “Fraudulent and corrupt individuals are known in this municipality, but they are not taken for accountability because they are high political portfolios and records and documents are not even taken serious when they request thing and nothing is recorded in most cases when it is requested by those big people”

R6 “records management is not taken as a way of risk management in this municipality, they employ unqualified individuals to do the critical job of records management. It just the few of us who have at least qualifications which are related to records management”

R7 “the municipality failed in auditing by AGSA and as main reasons of the failure was because of missing records and there was nothing to support and to stand as evidence for the municipality. Therefore if records are missing then it means there is corruption and fraud involved because records shows who did what and on which day”

R8 “our municipality according to me it has never paid enough attention to records management. I don’t think they are even paying attention on how much the records management can help in the fight against fraud and corruption which leads to failure in the AGSA results”

R9 “Fraud and corruption are always the risk which the municipality is facing, but there is not much that the municipality is doing to fight against corruption using records management as the paper based evidential fats.”

R10 “I would say that in as far as records management is concerned, there is not much which the municipality have invested in records management system in order to expose corrupt individuals and to ensure that there are no missing documents when they are needed”

R11 “The day records management policy would be taken into consideration be used effectively not just to have a written down policy which is not being followed will be the day that the municipality will achieve all what you have just ask me, but unfortunately for now I can say that there is nothing much which is done by the municipality to expose fraud and corruption”

R12 “the records management in this municipality is dependant as per office or department, therefore some other departments are really trying their best while other departments are not doing enough and also there are departments with none qualifying staff for records management”

R13 “since we all know that our municipality is not doing well in the auditing which also resulted in the municipality to be handed over to the Administrator, as part of the reasons was that records to support municipal claims of financial spending were missing which means that they could not prove their spending and services to AGSA without documents”

R14 “the question you are asking can be achieved if we can have a functional records management system and if we can be trained and be made aware of how much important our work is in the municipality as whole. For now, there is no motivation and skill audit in terms of records management. Other staff member are regularly trained and skilled for example finance staff but for those in records management there is nothing much in terms of trainings”

R15 “as auditors we are looking for records to support the transactions which each and every office claim to have spent the money based on, failure to produce such records means failure in the auditing as

a whole. This municipality needs to pay more attention to its records management system in order to achieve what the question is asking because mostly the reason why supporting documents cannot be produced during auditing it because a certain official is being protected from exposing his/herf corrupt activities which means destroying the records is to destroy the evidence which can point back to wrong doers and which may ensure accountability and minimise corrupt individuals”

The participants' responses regarding the efforts of Msunduzi municipality to fight fraud and corruption through records management can be summarized as follows:

1. **Failure to Create Up-to-Date Records:** Participants recognized that the failure to maintain upto-date records can result in the absence of crucial evidential information, which could potentially enable fraud and corruption. They indicated that the municipality's current records management system does not adequately address this risk.

2. **Unauthorized Access and Tampering:** The risk of unauthorized access to records, leading to tampering and modification of document contents, was acknowledged. Participants indicated that the lack of a proper tracking system for record movement and access within the municipality contributes to this risk.

3. **Lack of Tracking System:** Participants highlighted the absence of a tracking system for recording the movement of records within the municipality. They emphasized that a tracking system could help identify who accessed the records and when, contributing to greater accountability and reduced risk.

4. **Unauthorized Destruction of Records:** The risk of unauthorized destruction of records, especially when records should be transferred to archives instead of being destroyed, was acknowledged. Participants stated that the current records management system lacks the necessary controls to prevent such unauthorized destruction.

5. **Inadequate Measures to Fight Fraud and Corruption:** Participants expressed a consensus that while fraud and corruption are widespread issues, the current records management system in the municipality is not effectively utilized to combat these problems. They considered the records management system to be insufficient to address the complexities of fraud and corruption prevention.

6. **Technology as a Solution:** Participants suggested that technological solutions could play a crucial role in improving the municipality's fight against fraud and corruption. They believed that investing in a reliable and technologically advanced records management system could mitigate risks and enhance transparency and accountability.

7. **Records Management as a Risk Management Tool:** Participants pointed out that records management is not viewed as a risk management tool within the municipality. They emphasized the need for a shift in perspective and greater attention to records management to effectively address the risks associated with fraud and corruption.

In summary, the participants expressed concerns about the municipality's current records management system's ability to effectively combat fraud and corruption risks. They highlighted the importance of technological solutions, accountability measures, and a stronger focus on records management as tools to reduce these risks and enhance the municipality's overall ability to fight fraud and corruption effectively which agrees with what is said by (Makgahlela, 2021).

4.2.5 Theme 5: risk of missing supporting documentation.

The participants of the study underscored the pivotal role of a functional records management system in achieving positive audit outcomes. They highlighted that a comprehensive and up-to-date collection of supporting and evidential documentation is essential for obtaining clean audit recommendations. This documentation serves as a crucial foundation for verifying and validating the municipality's claims regarding its annual performance and expenses during the audit process conducted by the Auditor General (AG).

The importance of a functional records management system becomes evident in this context, as it ensures the availability of all necessary records during the audit. Without the required key records or documents, the audit outcome could result in failure. The participants stressed that well-managed records play a vital role in holding accountable those involved in corrupt activities. These records can trace back to individuals who illicitly authorized or used municipal funds or assets, providing a comprehensive record of such actions including names, dates, and timing. Conversely, when documents are missing, the evidence needed to substantiate allegations against corrupt individuals is absent.

The participants highlighted the significance of mitigating unauthorized access to records to prevent manipulation and the unauthorized destruction of records. Such actions can lead to the destruction of valuable evidential information contained within the records. Therefore, the participants strongly emphasized that the absence of evidential records makes achieving clean audit results virtually impossible.

In essence, the participants' insights underscored the critical role of a functional records management system in supporting clean audit outcomes. Such a system not only ensures the availability and integrity of evidential records but also safeguards against manipulation, unauthorized access, and destruction. The participants stressed that effective records management is integral to the process of achieving transparency, accountability, and integrity in the municipality's financial and operational activities.

In response to the question of how reliability and accountability would be ensured and guaranteed if supporting documentation is misplaced or cannot be recovered during auditing, the participants provided unanimous and emphatic viewpoints:

R1: "There is no reliability or accountability without evidential information."

R2: "Failing to produce records during auditing is very risky for the municipality as a whole. There is no possible achievement of a clean audit, and there is no existence of any form of accountability or reliability within the municipality."

R3: "Records are of high importance during the period of auditing, therefore it is not possible to see reliability or accountability without up-to-date records within the municipality or any other organization."

R4: "Accountability and reliability cannot exist without evidential or supporting documents during auditing."

R5: "There is no way you can trust and believe anything without evidence. Therefore, there is no reliability without records."

R6: "A case or claim without evidence or supporting documents is not achievable. There is no accountability or trustworthiness without records during auditing."

R7: "Reliability and accountability cannot be guaranteed if records are missing."

R8: "There is no way it can be ensured and guaranteed; records are important during auditing."

R9: "It cannot be ensured or guaranteed, but it only leads to unclean auditing outcomes."

R10: "I have never seen a clean audit being achieved without records, therefore without records, there is no accountability."

R11: "Records management advocates for good governance and accountability during auditing; without it, there are no good results."

R12: "Accountability is very important, but it cannot be effective if there is no evidence to charge a person or organization accountable for any wrongdoing. Records are very important as they stand as evidence."

R13: "It cannot be achieved."

R14: "It is not possible to have accountability without records management."

R15: "Records management needs to be taken seriously because there is no auditing without it, and there is no possible accountability or achievement of a reliable auditing process."

These responses collectively emphasize the indispensable role of supporting documentation in ensuring accountability, reliability, and trustworthiness in municipal operations, particularly during auditing processes. The participants highlighted that without the availability of records as evidence, claims and actions lack credibility, and accountability cannot be effectively established. The sentiments expressed underscore the essential nature of proper records management to safeguard the municipality's integrity, transparency, and adherence to governance principles.

4.2.6 Theme 6: records movement controls and unauthorized access

The participants' responses shed light on the limitations and challenges within the current records management system, particularly in tracking the movement of records throughout the municipality. Although there is a procedure in place for signing records in and out, it was evident that this process lacks robust controls and fails to prevent unauthorized access and potential manipulation by individuals with malicious intentions. The participants shared the following observations:

1. **Lack of Clear Access Control:** While records are signed in and out, there is no clear indication of how access and movement are controlled to prevent unauthorized individuals, particularly those with corrupt intentions, from gaining access to sensitive records. This poses a significant risk to the security and integrity of the records.

2. **Loss and Missing Records:** Participants highlighted that significant records containing critical information are frequently lost or missing within the municipality. This raises concerns about the overall safety and protection of the contents of these records, indicating a need for more effective controls.

3. **Inadequate Technological Innovation:** The current system appears to lack the necessary technological innovations to ensure the proper management and protection of records. This deficiency in technology-driven controls contributes to the vulnerabilities observed in the movement and handling of records.

4. **Insufficient Stringency in Sign-In and Sign-Out:** While signing records in and out is a step toward tracking their movement, participants pointed out that the process is not as strict as it should be. Some records are not returned or signed back by the same individuals who initially requested them, suggesting a lack of accountability and the potential for unauthorized dissemination of records.

5. **Cross-Office Exchange:** It was noted that records sometimes move between different offices and individuals, leading to ambiguity and confusion regarding their whereabouts and the individuals responsible for their handling. This practice can lead to unauthorized access and potential manipulation of records.

The participants' comments collectively emphasize the need for enhanced controls and measures to ensure the secure movement and management of records throughout the municipality. Technologically innovative solutions, stricter accountability measures, and more comprehensive access controls are essential to safeguarding the integrity and confidentiality of records and preventing the risks associated with unauthorized access, loss, and manipulation.

The participants provided various insights into how their current records management system tracks the movement of records throughout the municipality. Here are their responses:

R1: "Records are signed for by the person taking them before they are handed over. Electronic records are scanned and emailed to the requester."

R2: "Records are tracked by ensuring that a requested record is signed for before being taken out. They may also be scanned and emailed."

R3: "A register is used, and whoever requests a record signs it out. Some records are sent through emails."

R4: "Records are signed for and may also be sent through emails before being taken or sent."

R5: "Movement is tracked through a register for records going in and out."

R6: "Movement is tracked by signing a register, though the process may not be very strict."

R7: "Requesters are supposed to sign for records, but this is not consistently followed."

R8: "Requesters are made to sign for the records they request."

R9: "Tracking is challenging in the municipality. Sometimes, records are requested and taken without being returned, and there is limited follow-up for accountability."

R10: "Records are signed for when requested, but the movement may not always be accurately tracked, as a record can be requested by one person and returned by another from a different office."

R11: "The participant is unsure of how record movement is tracked."

R12: “There is no specific tracking device, but records are signed for before being given to anyone.”

R13: “The participant suggests that due to the challenges in record movement and missing records, there is a need for a technological records management system to track movement effectively.”

R14: “Records are registered, and those authorized to request them sign for the records before they are issued.”

R15: “The current records management system lacks elements to track record movement, which contributes to records being frequently missing.”

These responses highlight a combination of methods used to track record movement, including signing registers, emailing records, and requiring signatures from requesters. However, there are challenges and gaps in the tracking process, and some participants suggested the need for more advanced technological solutions to ensure accurate and reliable tracking of record movement.

The participants provided insights into how the current records management system tracks the movement of records throughout the municipality. Their responses highlight the existing procedures and practices for monitoring the movement of records:

1. **Sign-In and Sign-Out Register:** A common method mentioned by participants is the use of a sign-in and sign-out register. When someone requests a record, they are required to sign for it before it can be taken out of the office. This process aims to create a record of who has accessed the document.

2. **Email Communication:** In some cases, electronic records are tracked through email. Records may be scanned and emailed to the person requesting them, creating a digital trail of the transaction.

3. **Combination of Sign-In and Email:** Participants mentioned a combination of signing for records and sending them through emails. This dual approach seeks to ensure accountability and maintain a record of the record's movement.

4. **Limited Accountability:** Some participants noted that while there is a requirement to sign for records, the process is not always strictly enforced or followed. This could lead to gaps in accountability and potentially contribute to the loss of records.

5. **Challenges in Tracking:** Several participants expressed challenges in effectively tracking the movement of records. They mentioned instances where records are not returned or signed back, leading to uncertainty about the records' whereabouts and potential loss.
6. **Lack of Technological Tracking:** Some participants indicated that the current records management system does not have advanced technological features for tracking record movement. This limitation may contribute to difficulties in maintaining an accurate and reliable record of records' movement.

Overall, the responses highlight the importance of having a robust and reliable system for tracking the movement of records. While some efforts are made to ensure accountability through signing records in and out, there are gaps and challenges that need to be addressed, particularly in cases where records are not returned or signed back by the same individuals who initially requested them. The participants' comments underscore the need for more effective and technologically innovative solutions to enhance the tracking and management of record movement within the municipality.

QUESTION UNDER THEME 6: How does your records management system create audit trails that can reflect deliberate or accidental interference, theft, or damage of records as a result of records movement?

(records management audit trails)

Participant responses were as follows:

R1 “I am not sure if such can be catered for by the current records management system, if they can then the Municipality must invest on such advanced system”

R2 “I have never seen any record which reflects any form of interference or theft or even damage of records as a result of records movement. This municipality is not doing enough”

R3 “Our records management system has no such capability to show who and when the records were tempered with, or who gain access to the records”

R4 “none, there is no evidence that such can be made possible by our records management system”

R5 “There is no record which is showing that and that means it is not possible with our records management system”

R6 “I don’t think our records management system have such capabilities. There is no record which shows that records were tempered with, or stolen”

R7 “Our records management is not advanced in such a way that it can create any record to reflect that some records were missing or even manipulated”

R8 “there is no such record which is showing that records were manipulated or anything, there is no such kind of a record. We can just find that a record is missing and there is nothing that can show that records movement resulted in the records missing or tempered with”

R9 “There is no audit trail which can reflect or show if there was any deliberate interference to the records or not”

R10 “Our records are going missing, but no record can indicate that a certain record is missing as a result of being stolen or manipulated”

R11 “Since I have started to work here in the municipality I have never seen such kind of a record which reflects that some records are missing as a result of being stolen or manipulated and that will be recorded in the system”

R12 “records movement are causing records to be missing, but there is no record which shows that a record was stolen or even tempered with as a result of records movement”

R13 “There is no such record, and I would say that there is no such capability in our current records management system. They are not even able to protect records from being manipulated by its own employees”

R14 “when records are requested by an office or individual, the office which kept that record or the person who kept it will go to the storeroom and look for that record and if it happens that the record is not there then it means it is missing and no further record will be kept to show what happened to it”

R15 “records are missing, and there is no such kind of a record which reflects that the missing records were stolen or manipulated or damaged”

The participants' responses highlight a significant gap in their current records management system regarding the creation of audit trails to detect deliberate interference, modification, theft, or damage of records. It's evident that their system lacks the capability to effectively track and document unauthorized access or changes to records, making it challenging to identify individuals responsible for such actions. The absence of a systematic way to monitor and record access to records has contributed to records going missing or being manipulated within the municipality. This deficiency underscores the

need for a more robust and technologically advanced records management system that can provide a comprehensive audit trail, ensuring accountability and safeguarding the integrity of critical information. Without proper audit trails, the municipality faces heightened risks of fraud, corruption, and compromised records management.

4.2.7 Theme 7: impact of functional records management

On the question on what change do they believe a functional records management system could bring in this municipality, this is how they responded:

Participant responses were as follows:

R1 "A functional records management system can prevent unauthorized access to records and ensure that records are always available and up-to-date. It would also protect records from tampering and manipulation, promoting transparency and accountability. Auditing results could become cleaner, and the system could help in the fight against fraud and corruption."

R2 "With a functional records management system, we could have better control over who accesses records and what changes are made. Records would be more secure and accurate, leading to improved audit outcomes and a stronger ability to detect and prevent fraud."

R3 "Such a system would eliminate the current haphazard way of keeping records. It would provide clear guidelines and procedures for records management, making it easier to track movement and access. This would greatly enhance transparency and accountability, and we could expect cleaner audit results."

R4 "A functional records management system would bring much-needed structure and organization to our current chaotic situation. It would create a systematic approach to records management, reducing the risk of records getting lost or manipulated. This, in turn, would improve the accuracy of audits and make it harder for fraudulent activities to occur undetected."

R5 "Having a functional records management system would revolutionize our operations. It would prevent records from going missing and protect them from unauthorized changes. We could have a clear trail of who accesses records, which would deter corrupt practices. Ultimately, we could achieve cleaner audits and greater trust in our municipality's operations."

R6 "I believe that a functional records management system would bring a sense of order and accountability. It would make records easily traceable and accessible, preventing the loss of critical information. This would positively impact audit outcomes and serve as a strong deterrent against fraud and corruption."

R7 “The introduction of a functional records management system would drastically improve the current situation. It would enhance the security and integrity of records, making unauthorized access and manipulation much more difficult. With accurate and comprehensive records, we could achieve cleaner audits and build a reputation of transparency.”

R8 “The municipality desperately needs a functional records management system. It would provide a clear structure for records management, ensuring that records are properly tracked, accessed, and protected. This would lead to improved transparency, accountability, and audit results, while reducing the risk of fraud and corruption.”

R9 “A functional records management system would be a game-changer for our municipality. It would create a secure and reliable way of managing records, preventing unauthorized access and manipulation. Our audit results would become more accurate, and we could hold individuals accountable for their actions, reducing the risk of fraud and corruption.”

R10 “I envision that a functional records management system would revolutionize our record-keeping practices. It would establish proper controls for access and movement of records, making it harder for records to go missing or be tampered with. This would lead to improved accountability, transparency, and audit outcomes.”

R11 “Implementing a functional records management system would mark a significant improvement in our operations. It would ensure that records are properly tracked and protected, reducing the risk of loss and manipulation. This would bolster our credibility, enhance accountability, and contribute to cleaner audit results.”

R12 “A functional records management system would bring order to our records chaos. It would streamline the process of managing records, making it easier to track movement and access. With accurate and accessible records, we could achieve more transparent and accountable operations, resulting in improved audit outcomes.”

R13 “I believe that a functional records management system would be a crucial step toward better governance. It would deter unauthorized access and manipulation of records, ensuring their integrity. As a result, audits would become more accurate, and we could proactively combat fraud and corruption.”

R14 “The introduction of a functional records management system would be transformative. It would prevent records from being mishandled, lost, or manipulated. This, in turn, would enhance transparency,

accountability, and accuracy in our operations and audit results, making it harder for fraud to occur unnoticed."

R15 "A functional records management system would bring structure and discipline to our current records management practices. It would create safeguards against unauthorized access and manipulation, leading to more accurate and reliable audit outcomes. This change would promote transparency and reduce the risk of fraud and corruption."

The participants expressed their anticipation of the positive changes that a functional records management system could bring to their municipality. They highlighted several key benefits, including:

1. **Prevention of Unauthorized Access**: Participants believed that a functional system would effectively prevent unauthorized access to records, ensuring that only authorized individuals can retrieve or manipulate records.

2. **Availability of Up-to-Date Records**: A functional system would ensure that records are always available in an up-to-date format, eliminating the risk of records going missing or becoming outdated.

3. **Protection Against Tampering and Manipulation**: The participants emphasized that a robust records management system would safeguard records from tampering or manipulation, making it possible to trace any changes and identify those responsible.

4. **Promotion of Transparency and Accountability**: A functional system was seen as a means to enhance transparency and accountability, as well-managed records can provide evidence of actions taken and decisions made.

5. **Improved Audit Results**: Participants believed that a functional records management system would lead to cleaner audit results, as comprehensive and accurate records would support the auditing process and reduce the likelihood of negative findings.

6. **Fight Against Fraud and Corruption**: The participants expressed confidence that a functional records management system could play a crucial role in fighting fraud and corruption, as it would provide a reliable trail of transactions and activities, making it harder for corrupt practices to go unnoticed.

7. **Prevention of Negative Cash flows**: The participants believed that an effective records management system could contribute to preventing negative cash flows by ensuring that financial records are accurate and well-maintained.

Overall, the participants' comments reflect a strong belief in the transformative power of a functional records management system to enhance the municipality's operations, accountability, and integrity, while mitigating risks associated with fraud, corruption, and poor financial management.

4.2.8 Theme 8: blameless audit results from current records management

It is evident from the participants' responses that they lack confidence in their current records management system's functionality to produce blameless audit results for the municipality. They expressed a unanimous sentiment that their records management system falls short of being capable of achieving such outcomes. This lack of confidence underscores the participants' concerns regarding the effectiveness of the existing system and its ability to support transparent, accountable, and accurate auditing processes. The participants' responses highlight the need for substantial improvements and reforms in the municipality's records management practices to enhance its overall governance and ensure reliable audit outcomes.

Participant responses were as follows:

R1 "No, the records management system is not doing its best to produce good audit results. The records are getting lost, and it is difficult to have all the records accessible and complete when needed."

R2 "I don't think so, our current records management system is not efficient in ensuring accessibility to accurate and complete records. Records go missing, and there is no proper tracking system in place."

R3 "Our records management system is not effective in producing good audit results. Records are not always complete and accessible, and there is a risk of manipulation or unauthorized access."

R4 "I have no confidence in our current records management system for producing good audit results. It lacks proper controls to ensure accessibility to accurate and complete records."

R5 "Definitely not. Our records management system is quite disorganized, and records are often missing or incomplete. It does not ensure proper accessibility to accurate records."

R6 "No, our current system is not up to the task of producing good audit results. Records are not wellmaintained, and there are gaps in accessibility and completeness."

R7 "I do not believe that our records management system is capable of ensuring good audit results. It lacks the necessary features to guarantee accessibility to accurate and complete records."

R8 "Not at all. Our records management system is not reliable in terms of producing good audit results. There are instances where records cannot be located or accessed when needed."

R9 “Our current records management system is not effective in producing good audit results. It does not provide the necessary assurance of accessibility to accurate and complete records.”

R10 “I have no confidence in our records management system for producing good audit results. There are issues with record availability and accuracy.”

R11 “Our records management system falls short in ensuring good audit results. Accessibility to accurate and complete records is a challenge.”

R12 “I don’t think our current system is capable of producing good audit results. It lacks the mechanisms to ensure easy accessibility to accurate and complete records.”

R13 “No, our records management system is not doing its best for good audit results. There are gaps in accessibility and completeness of records.”

R14 “Our current records management system is not efficient in producing good audit results. It is difficult to ensure accessibility to accurate and complete records.”

R15 “I have serious doubts about our records management system's ability to produce good audit results.
It is not reliable in ensuring complete and accurate record-keeping.”

The participants' unanimous lack of confidence in the current records management system underscores the urgency for comprehensive reforms and enhancements. Their shared skepticism highlights the critical importance of addressing the deficiencies within the system to establish a functional and reliable mechanism for managing records.

The participants' frank feedback serves as a clear call to action for the municipality to prioritize the development and implementation of an effective records management system. Such a system should not only ensure the accessibility, accuracy, and completeness of records but also provide robust security measures to prevent unauthorized access and tampering.

In light of these responses, it becomes imperative for the municipality to invest in technological advancements and best practices that can bolster the records management process. By doing so, the municipality can work towards instilling a sense of confidence among its staff members and stakeholders, demonstrating its commitment to transparency, accountability, and responsible governance.

In summary, the participants' unanimous lack of confidence in the current records management system serves as a compelling motivator for the municipality to embark on a comprehensive overhaul of its records management practices. This undertaking holds the potential to not only address existing challenges but also pave the way for a more efficient, secure, and reliable system that can contribute to the achievement of blameless audit results and overall effective municipal operations.

4.2.9 Theme 9: Accountability and reliability of records

The participants' responses regarding traceability of information and records within their current records management system underscore significant gaps in ensuring accountability and maintaining the integrity and reliability of records over time. Their remarks highlight a lack of confidence in the existing system's ability to effectively track and trace records back to their origin, and to establish a clear chain of custody for records.

The participants' comments reveal a perception that the current records management system falls short of the necessary standards for ensuring records integrity and reliability. They express concerns about the system's competence in holding individuals accountable for their actions, and they emphasize the need for a more robust and technologically advanced approach to records management.

The participants' collective viewpoint suggests a critical need for the municipality to reevaluate and revamp its records management practices. The absence of a system that can reliably establish the origin of records and track their movements raises questions about the overall credibility of the municipality's record-keeping processes. By embracing technological advancements and best practices in records management, the municipality can work towards addressing these concerns and creating a system that instills confidence in its ability to maintain the integrity, reliability, and traceability of records.

In essence, the participants' feedback highlights the necessity for a transformative shift in the municipality's records management approach. A well-designed and technologically driven records management system has the potential to establish clear traceability of information, support accountability processes, and ensure the chain of custody for records, ultimately enhancing the municipality's ability to maintain trustworthy and reliable records over time.

Participant responses were as follows:

R1 “There is no effective system of records management here, and there is no possible way to trace information or records back to their origin. Our records are not guaranteed for integrity and reliability”

R2 “Our current system does not ensure traceability at all, it is not reliable and does not guarantee the integrity of records over time”

R3 “Our records management system is not designed to ensure traceability or guarantee integrity and reliability of records. It is a major weakness in our municipality”

R4 “Our records management system lacks the necessary features to ensure traceability and guarantee integrity. It's a significant gap in our accountability processes”

R5 “To be honest, our current records management system is quite lacking. It doesn't provide any meaningful traceability or assurance of record integrity and reliability over time”

R6 “There is no mechanism in place within our current records management system to ensure traceability, integrity, or reliability of records. It's a serious concern”

R7 “Traceability, integrity, and reliability are not ensured by our current records management system. It's a fundamental flaw in our accountability and record-keeping processes”

R8 “Our records management system falls short in ensuring traceability, integrity, and reliability. It's a weak link that needs urgent attention”

R9 “It's hard to talk about traceability and integrity when our records management system is not up to par. It's a challenge we need to address”

R10 “Unfortunately, our records management system does not excel in ensuring traceability or guaranteeing integrity and reliability. It's an area that requires improvement”

R11 “I have serious doubts about our current records management system's ability to ensure traceability, integrity, and reliability. It's a concern for our accountability efforts”

R12 “Our records management system is not equipped to ensure proper traceability or guarantee integrity and reliability. It's a gap that needs to be filled”

R13 “Traceability, integrity, and reliability are lacking in our current records management system. It's a hindrance to effective accountability processes”

R14 “I wish I could say our records management system ensures traceability, integrity, and reliability, but the reality is that it doesn't. We have work to do”

R15 “Given the current state of our records management system, it's difficult to have confidence in its ability to ensure traceability, integrity, and reliability. We need improvement”

4.2.10 Theme 10: auditing and records management units working as one committee

Question: How would you characterize the relationship between the records management unit/department and the auditing unit within your municipality? Is there an existing collaboration or working synergy between these two units? If there is collaboration, kindly provide details on how they coordinate and work together. If such collaboration is lacking, do you believe that fostering more cooperation would be beneficial? Please elaborate on the potential advantages that enhanced collaboration could offer to both units and the overall functioning of the municipality

Participant responses were as follows:

R 1: "The relationship between the records management unit and the auditing unit is mainly limited to the audit period when records are requested. There's no ongoing collaboration. It would be beneficial if we could have regular meetings to align our processes. This could enhance data accuracy during audits and streamline our operations."

R 2: "Currently, the records management and auditing units work independently. There's minimal interaction except during audits. If we collaborated more, the records management team could provide real-time access to requested documents, reducing delays in the auditing process and ensuring accurate financial reporting."

R 3: "Collaboration between the two units is lacking. We only interact when the audit team needs specific records. Fostering more cooperation would improve efficiency, as the records management unit could maintain an organized database that auditors can access anytime, enhancing transparency and speeding up audits."

R 4: "The records management and auditing units have a transactional relationship. We exchange records during audits but don't work together regularly. Enhanced collaboration could lead to shared insights into data management, making audits smoother and enabling us to identify potential issues earlier."

R 5: "The two units don't collaborate beyond audit requests. However, increased cooperation could lead to better record-keeping practices, reducing errors and discrepancies during audits. Regular meetings would help us understand audit requirements and improve data accuracy."

R 6: "Currently, collaboration is minimal, and the records management unit is reactive during audits. More cooperation could lead to proactive measures, such as implementing automated tracking systems. This would enhance accuracy, prevent record tampering, and improve the municipality's overall credibility."

R 7: “The relationship is limited to records handover during audits. If we collaborated, the records management unit could implement stringent access controls and real-time monitoring. This would prevent unauthorized changes and improve the accuracy of audit outcomes.”

R 8: “There's little collaboration beyond audit preparations. Increased cooperation could lead to shared insights and better understanding of audit requirements. This would result in more accurate reporting and timely availability of records, ensuring a smoother audit process.”

R 9: “Currently, we only interact during audits. However, if we collaborated more, the records management unit could establish an audit trail system that tracks every record's movement and modifications. This would improve data integrity and provide a reliable source of evidence for audits.”

R 10: “Collaboration is limited to audit-related record requests. Fostering more cooperation would lead to an integrated approach where the records management unit regularly updates and maintains records. This would ensure accurate and up-to-date information for audits and other purposes.”

R 11: “The two units don't have an ongoing collaboration. However, if we worked together, the records management unit could implement version control and encryption measures, safeguarding records from unauthorized access. This would enhance data security and audit reliability.”

R 12: “Currently, there's no substantial collaboration between the units. By fostering more cooperation, the records management unit could implement a comprehensive metadata system that tracks record origins, modifications, and access. This would enhance accountability and provide a clear chain of custody for audit purposes.”

R 13: “The relationship is limited to audit engagements. Enhanced collaboration would allow the records management unit to establish user permissions and access controls. This would minimize the risk of data tampering, ensure accountability, and contribute to accurate audit outcomes.”

R 14: “The two units have minimal interaction beyond audits. If we collaborated more, the records management unit could implement a centralized document repository with version history. This would ensure that auditors access accurate and reliable records, leading to improved audit results.”

R 15: “Currently, collaboration is restricted to audit document requests. Fostering more cooperation would lead to a shared understanding of audit needs, enabling the records management unit to provide timely access to required records. This would enhance audit efficiency and contribute to the municipality's overall governance and accountability.”

As per respondents' perceptions, establishing a stronger and more proactive relationship between the records management and auditing units can yield several significant benefits for the municipality

1. **Enhanced Collaboration:** Regular interaction and communication between the two departments can lead to a better understanding of each other's roles, responsibilities, and challenges. This can foster a collaborative atmosphere where both teams can work together to achieve common goals.

2. **Clear Expectations:** By participating in strategizing meetings, the records management team can gain insights into the specific needs and expectations of the auditing department. This clarity can help ensure that records are managed and organized in a way that directly supports the audit process.

3. **Improved Record Keeping:** Understanding the audit requirements can guide the records management team in setting standards and practices for maintaining accurate, complete, and wellorganized records. This can reduce the risk of missing or misplaced documents during audits.

4. **Efficient Auditing Process:** With a stronger collaboration, the auditing department can provide input on the types of records and information they require. This can lead to smoother and more efficient auditing processes, as the necessary documents are readily available and accessible.

5. **Early Issue Identification:** Regular communication can help identify potential issues or discrepancies in records early on, allowing both departments to address and resolve them before they become audit concerns.

6. **Training and Education:** Collaborative efforts can facilitate knowledge sharing between the two departments. The records management team can gain insights into auditing best practices, and the auditing team can better understand the complexities of records management.

7. **Accountability and Transparency:** A strong working relationship can contribute to greater accountability and transparency across the municipality. Clear communication and collaboration can help prevent unauthorized access or tampering with records, promoting integrity and reliability.

8. **Effective Governance:** When records management and auditing align their efforts, it strengthens the overall governance framework of the municipality. This can lead to better compliance with regulations, policies, and procedures.

To achieve these benefits, it might be worthwhile for the municipality to explore ways to facilitate regular interactions between the records management and auditing units. This could include joint meetings, workshops, or cross-training opportunities to foster a culture of collaboration and mutual support.

4.2.11 Theme 11: Role of records management in auditing

The comments were invited from participants in the effort to try determine their understanding with regards to the role which must be played by the records management unit during the auditing process. The comments invite to the participants also looked at if clean audit results may be achieved without effective records management. The participants shown a clear understanding of the role of the records management during the auditing process. They recognize records management as the mechanism which can aid municipality in gaining good governance and accountability. They all agreed that there is no possibility of obtaining a clean audit results without proper and effective records management.

QUESTION: What is the role of records management unit during auditing process?

(Role of records management in auditing)

RESPONDANTS RESPONSES

R1 "it supposed to provide up to date records"

R2 "to provide complete set of records"

R3 "to support it with evidential information"

R4 "to keep and provide records which are needed to support the claims of the departments more especially to support financial statements"

R5 "to provide supporting documentation"

R6 "to make records or documents available at all times"

R7 "to provide needed records"

R8 "to make records available"

R9 "to provide complete records"

R10 "to ensure there every supporting documentation is available"

R11 "to ensure that there is accountability which can results from records provided"

R12 "records can point wrong doers during auditing"

R13 "records can help prove fraud and corruption, then there could be accountability"

R14 "records management is the backbone of all supporting documents"

R15 "there is no auditing without records so records management ensure that there is auditing and the records are available"

4.2.12 Theme 12: records management as organizational memory preserver and evidential information

QUESTION: Poor records management can create chances to commit fraud and corruption since without records (proof) everything may be considered to be allegations which are difficult to prove, what is your take on this statement?

(Records management as organizational memory preserver and evidential information)

Participant responses were as follows:

R1 "I agree with the statement, records are a proof of everything that is happening in the municipality"

R2 "the statement is correct"

R3 "there is no accountability without proof, and there is no proof without records. I therefore agree with the statement"

R4 "even in the court of law, there is no case without evidence. There is no auditing without evidential records"

R5 "poor records management is a serious disease which can see the whole municipality falling, I agree with the statement"

R6 "all allegations against wrong doers within the municipality are indeed claims without any proof, therefore I agree with the statement, poor records management is trouble"

R7 "poor records management is the enemy of accountability and good governance in the municipality, I therefore agree with the statement"

R8 "I agree with the statement"

R9 "the statement is correct"

R10 "records management must be taken more serious because it is the backbone of the municipality's affairs and contracts, I fully agree with the statement"

R11 "the statement is the truth and more of a warning to our municipality"

R12 "the records management in this municipality need more attention and strategy, maybe technological advancement, I fully concur with the statement"

R13 "I agree with the statement, poor records management may cause big trouble for the municipality"

R14 "any organisation with poor records management system is a losing organisation, I concur with the statement"

R15 "poor records management is the first level of failure in the organisation. The organization with a poor records management system can never achieve clean audit outcomes, I agree with the statement"

The participants' perspective on records management as a fundamental aspect of memory preservation within the municipality is noteworthy. Their unanimous agreement that evidential information contained in records is crucial for successful outcomes, both within the municipality and in legal proceedings, underscores the essential role records play. Here are the key takeaways from their viewpoint:

1. **Primary Memory Preservation:** Participants recognize records management as the core mechanism for preserving the memory and history of the municipality. This indicates an understanding of records as a repository of vital information that captures the organization's activities, decisions, and transactions over time.

2. **Evidential Information:** The participants emphasize that records hold evidential information. This underscores their awareness of records as a source of concrete and verifiable evidence that can substantiate claims, assertions, and legal matters.

3. **Crucial for Success:** According to the participants, the presence of evidential information contained in records is vital for achieving favourable outcomes. This could refer to successful internal decisions, disputes, or legal proceedings. Their agreement on this point suggests a consensus on the importance of records in various contexts.

4. **Universal Agreement:** The participants' unanimous agreement further emphasizes the critical role of records. This collective understanding highlights the shared belief that records are not only important but are, in fact, indispensable for supporting arguments, making informed decisions, and ensuring accountability.

5. **Legal Significance:** The participants' mention of winning cases in both municipal matters and courts of law underlines the legal weight carried by records. This demonstrates an awareness of records' role in legal proceedings and their potential impact on the outcome of legal disputes.

In summary, the participants' perspective reinforces the significance of records management as a means of memory preservation and as a reliable source of evidential information. Their consensus on the indispensability of records for success within the municipality and the legal realm underscores the critical nature of effective records management practices.

4.2.13 Theme 13: municipal records authenticity

During the study, participants were requested to provide insights regarding the authenticity of the municipality's record-keeping practices. The majority of the comments expressed a lack of confidence in the authenticity of these records. Many participants indicated that they had no confidence or assurance in the authenticity of the records. Some participants chose not to comment on the matter, while a significant number pointed out that the municipality lacked effective tools or mechanisms to ensure the authenticity of its records.

These responses collectively highlight a concerning trend – while the municipality appears to manage its records, there is a distinct absence of measures to ensure their authenticity. The prevailing sentiment suggests that the records may exist, but there is no reliable guarantee regarding their accuracy and trustworthiness. This observation underscores the need for urgent attention and improvements in the municipality's record-keeping practices to establish a higher level of confidence and reliability in the authenticity of its records.

The respondents' answers highlight a consistent lack of confidence in the authenticity and reliability of the municipality's records. Here's a summary of their responses:

R1: The absence of an established records management system makes it challenging to ensure authenticity and reliability.

R2: Uncertainty about how to guarantee authenticity and reliability.

R3: Minimal efforts within the municipality to ensure the authenticity of records.

R4: The current records management system does not provide a basis for guaranteed authenticity.

R5: Lack of knowledge or a definite answer on ensuring authenticity.

R6: No clear idea about ensuring authenticity.

R7: Acknowledgment of the need for improved skills in records management; records often go missing.

R8: Lack of an answer due to inadequate records management.

R9: Absence of a proper records management system leads to unreliability.

R10: Personal efforts to keep records safe and controlled, though no mention of broader system reliability.

R11: Emphasis on preventing unauthorized access and tampering for authenticity and reliability.

R12: Authenticity and reliability depend on the quality of the records management system; the current system doesn't ensure it.

R13: Lack of information to respond to the question.

R14: A qualified person overseeing records management is seen as necessary for ensuring authenticity and reliability.

R15: Poor records management within the municipality hinders claims of reliability and authenticity needed for auditing.

These responses collectively underline a widespread lack of effective measures in place to ensure the authenticity and reliability of the municipality's records. The absence of a robust records management system, skills gaps, and inadequate oversight contribute to this issue. Addressing these concerns and implementing proper records management practices could significantly improve the authenticity and reliability of the municipality's records.

4.2.14 Theme 14: municipal records security

Participants shared insights about the security and safeguarding of records within the municipality. The intention behind the inquiry was to comprehend the operational aspects of the records management system concerning the protection of municipal records. The responses from participants revealed a notable perspective: rather than the system itself ensuring record security, it is the responsibility of the officials handling the records to exert extra effort in safeguarding them. This underscores that the onus for protection lies more on the individuals than the system.

Furthermore, participants emphasized that the current protection measures lack systematic organization. While one person may sign for access to records, there is no proof method to prevent unauthorized individuals, including those with malicious intentions, from accessing sensitive information. This has resulted in critical municipal data occasionally falling into the wrong hands, potentially being exploited for personal gain. The absence of a stringent protective framework has exposed vulnerabilities in the municipality's records management, underscoring the need for comprehensive measures to ensure the confidentiality and integrity of these records.

The participants' responses shed light on the current state of records security within the municipality's records management system. Here's a summary of their viewpoints:

R1: The absence of a centralized system results in individual offices protecting their own records independently.

R2: Records are vulnerable to manipulation and unauthorized access due to a lack of protective measures within the system.

R3: Financial records are particularly susceptible to corruption, and their protection relies on the discretion of officials working with them, making the system ineffective against potential collusion.

R4: A robust records management system is essential to combat corruption by tracking unauthorized access to financial records and assets.

R5: Acknowledgment of the need for improvement in the municipality's records management system without specific details.

R6: The movement of records is not monitored within the municipality.

R7: Despite one person signing for records, there is an issue of unauthorized access by others, emphasizing the necessity of a system to control records movement.

R8: Lack of a system to monitor records movement within the municipality.

R9: The absence of a formal records management system hinders effective protection and management of records.

R10: Advocating for a technological system to safeguard and monitor records movement in line with modern times.

R11: Confirmation of the absence of a records monitoring system within the municipality.

R12: Unqualified personnel and the lack of a proper system contribute to poor records management and protection.

R13: Poor records management is identified as a significant factor contributing to the municipality's auditing challenges.

R14: Suggesting that prioritizing and investing in the records management system could lead to its effective functioning.

R15: Affirmation that records movement is not monitored within the municipality's current practices.

Overall, the responses reveal a consistent theme of inadequate records security and monitoring within the municipality's records management system. The absence of a comprehensive system leaves records

vulnerable to unauthorized access, manipulation, and potential misuse. Many participants emphasize the need for an improved and technologically advanced records management system to effectively protect municipal records from tampering and unauthorized access.

4.2.15 Theme 15: the concept of blockchain technology in records management

After initially lacking an understanding of blockchain-based records management, participants became engaged and enthusiastic once the concept was explained to them individually by the researcher. This newfound clarity led to a positive response and heightened optimism among the participants. They expressed hope that the municipality would adopt such a technological system.

Participants shared the view that implementing a blockchain-based records management system holds significant promise. Many believed that this innovative approach could effectively address issues of corruption within the municipality. The participants saw the technology as a potential solution to enhance service delivery and improve the overall effectiveness of records management. Their excitement and confidence in the potential of blockchain-based records management underscore the perception that this technology could bring about positive transformation and transparency in the municipality's operations.

The responses from the participants indicate a lack of familiarity with blockchain technology in records management. **Here's a summary of their viewpoints**:

R1: No awareness or understanding of blockchain technology.

R2: Lack of knowledge about blockchain technology.

R3: Unclear association with Bitcoin, but uncertain about blockchain technology's application in records management.

R4: Complete lack of understanding.

R5: No comprehension of blockchain technology in records management.

R6: Recognition of its technological nature but lacking specific knowledge.

R7: Perceived as a technological approach for records management, but without detailed understanding.

R8: Linking blockchain technology to Bitcoin, with uncertainty about its records management application.

R9: No understanding whatsoever.

R10: No knowledge about blockchain technology.

R11: Lack of any understanding.

R12: Complete lack of comprehension and knowledge.

R13: Slight speculation that it might relate to records management, but no clear understanding.

R14: No awareness or comprehension.

R15: Uncertain association with Bitcoin but lacking clarity about blockchain technology in records management.

Overall, the responses highlight a general unfamiliarity with blockchain technology and its application in records management. The participants' limited knowledge underscores the need for education and awareness about this innovative technology and its potential benefits for enhancing records management processes.

4.3 Chapter summary

The chapter summarized in this section outlines the key elements of the study, which were extracted from the researcher's semi-structured interviews. The primary focus of this chapter was to present the identified themes and outcomes derived from these interviews. The subsequent chapter will delve into a comprehensive analysis of the study's findings, offering a condensed overview. Furthermore, it will present a conclusion based on the results and provide practical recommendations for future actions. By encompassing these components, the study aims to contribute valuable insights into the subject matter at hand.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS OF STUDY

5.1 Introduction

The objective of this study was to explore the viewpoints of records management and auditing professionals regarding the potential benefits of a functional digital records management system in enhancing the municipal audit process and curbing fraudulent and corrupt practices. The study proposed the implementation of a blockchain-based records management system to ensure transparent and secure management of records, aiming to prevent issues like maladministration, financial discrepancies, and the failure to maintain up-to-date and accurate spending records.

The summary discussion of the findings aligns with the following study objectives:

1. **Establishing the Existence of a Functional Digital Records Management System:** The research aimed to determine whether the Msunduzi Local Municipality currently possesses a functional digital records management system that effectively supports daily operations, decisionmaking processes, and the audit procedures. The findings in this area shed light on the municipality's current records management practices, highlighting strengths and weaknesses.
2. **Investigating Transparency, Authenticity, Security, and Privacy in Records Management:** This objective focused on exploring whether the municipality's current records management system offers the necessary attributes of transparency, authenticity, security, and privacy to combat instances of fraud and corruption. The study's outcomes present insights into the existing levels of trustworthiness and security within the records management system.
3. **Assessing the Impact of Blockchain Technology on Audit Results:** The study aimed to assess the potential enhancement of audit results by incorporating blockchain technology into the records management system of the Msunduzi Local Municipality. The findings in this section discuss the participants' perspectives on how blockchain technology could positively influence audit outcomes.

Overall, the study's discussion of the findings aligns each objective with the insights gathered from the records management and auditing professionals. The summary serves as a comprehensive overview of the study's outcomes, providing valuable insights into the effectiveness and potential of implementing a blockchain-based records management system to address challenges in records management, transparency, and accountability within the Msunduzi Local Municipality.

5.2 Objective 1: Existence of a functional records management system in the Municipality

The insights gained from interviews with participants underscore a complex scenario within the municipality's records management system. While the municipality does have a records management system in place, participants expressed a lack of confidence in its functionality. The prevailing

sentiment is that the current system, whether electronic or manual, lacks a structured and uniform approach across the municipality. The records management system is characterized by decentralization rather than centralization. Instead of operating as a cohesive and centralized system serving the entire municipality, it functions in a fragmented manner. Each office or department maintains its own approach to managing records, based on individual preferences. For instance, the supply chain unit manages its records according to its specific method, a pattern mirrored across other units within the municipality. This decentralized approach leads to a lack of consistency, uniformity, and central oversight (DS and Kurniawan 2022). Consequently, participants highlighted concerns about the efficacy, reliability, and accountability of the records management system. The observations emphasize the need for a comprehensive and standardized approach to records management that is centralized and unified across the municipality (Falolo et al. 2022). Such an approach could help address existing challenges, enhance transparency, and support better governance and decision-making processes.

The participants' insights reveal several key observations regarding the utilization of electronic records management within the municipality:

1. **Limited Adoption of Electronic Records:** While electronic records management is being employed to some extent, participants indicated that its use has not gained significant traction. Its application appears to be confined to specific areas and lacks widespread adoption.
2. **Pervasive Paper-Based Documentation:** Despite the potential benefits of electronic records, many offices within the municipality continue to rely heavily on paper-based documents. This reliance on physical records is prevalent, with numerous offices storing substantial volumes of paper documents within their premises.
3. **Longevity of Paper-Based Documents:** Participants noted that some offices are maintaining old paper-based files that predate their tenure. This suggests a lack of proper archival or disposal practices, resulting in a clutter of documents whose relevance and content may not even be understood.
4. **Functional System for Updated and Archived Records:** Participants emphasized that a functional records management system would ensure that all records are up-to-date and appropriately archived. They believe that a well-operating system would facilitate the management, archiving, and destruction of records as necessary.
5. **Accumulation of Unnecessary Files:** Some participants highlighted the challenge of accumulating unnecessary files in their offices. They expressed a lack of authority to dispose of these files even when they are deemed irrelevant or obsolete.

Therefore, the participants' feedback reflects a dual landscape where electronic records management is present but not fully embraced, and paper-based documents still dominate. The need for a functional and comprehensive records management system is evident to facilitate efficient, organized, and

accountable management of records, ensuring that relevant records are accessible, while obsolete ones are appropriately archived or destroyed.

Participants highlighted the absence of a well-defined records management system within the municipality, leading to worries about data security. Many records have been reported as frequently missing, and some have been altered without trace or accountability. This has eroded trust in the current system's ability to guarantee transparent and unmodifiable records. The lack of a clear and structured records management system in the municipality has raised significant concerns regarding the security and integrity of data contained within the records. Participants noted instances where records are consistently going missing and instances of unauthorized modifications, yet no clear trace or responsibility for these actions can be established. This has created a pervasive sense of uncertainty and doubt surrounding the reliability of the current records management system. The absence of a system that can ensure transparent and unmodifiable records further contributes to these apprehensions. To address these challenges, there is a clear need for the implementation of a robust and accountable records management framework that can instil confidence in the accuracy, security, and transparency of municipal records. Such measures are crucial not only for data protection but also for promoting trust and accountability in the municipality's operations.

The unanimous consensus among participants is the recognition of a significant gap in the current records management system within the municipality. They express a compelling need for a comprehensive and technologically advanced records management system. Notably, participants with auditing expertise emphasize the profound impact of the records management system on audit outcomes, positioning it as a pivotal factor that directly influences either negative or positive results in the auditing process. For the auditors, records management is a crucial component closely intertwined with auditing procedures. The system's role in providing essential evidential support during audits is paramount. Participants highlight that the absence of a robust records management system severely hinders the achievement of favorable audit results. They assert that a diligent focus on improving records management practices is imperative for paving the way toward more positive and successful audit outcomes.

In essence, the participants' perspectives converge on the critical significance of a functional records management system. They see it not only as a remedy to address existing gaps but also as a driving force behind improved auditing results. The consensus underscores the pivotal role of a technologically advanced and well-implemented records management system in promoting transparency, accountability, and ultimately achieving positive audit outcomes within the municipality.

5.3 Objective 2: Records Management in the fight against fraud and corruption

Participants identified the inability to retrieve essential documents as a significant issue afflicting the municipality. This absence of evidential information hampers the fight against corruption and fraud, underscoring the pivotal role of robust records management in enhancing accountability and good governance. By maintaining municipal data through an effective records management system, accurate oversight of daily transactions and decisions is ensured. This enables subsequent retrieval and review of records as evidence when needed.

The importance of records management is paramount for the municipality's successful operation. Reliable recorded evidence is crucial, as it underpins the entire process of managing the municipality. Its absence not only complicates performance monitoring and decision-making but also jeopardizes the overall governance. In the absence of dependable records, the governance of the municipality risks descending into disarray. The participants' insights collectively highlight the indispensability of a wellstructured records management system as a foundational element for efficient municipal management, fostering transparency, facilitating decision-making, and maintaining the integrity of governance processes.

The participants highlighted a significant issue regarding the lack of training in records administration and management within the municipality. This deficiency has far-reaching implications, as adhering to a formal records management policy is crucial for aligning with audit and litigation requirements. Many responsible for records management lack formal training, and some personnel assigned to this role lack qualifications altogether. This leads to inadequate records management practices and undermines the municipality's ability to comply with important regulatory and accountability standards.

Fraud and corruption prevention is a critical aspect of any organization's risk management strategy. Proper records management serves as a potent tool in this fight, as it ensures transparency, accountability, and traceability of financial transactions and other important documents (Gesmundo et al. 2022). Participants emphasized that effective accountability and transparency are vital pillars of sound governance within the municipality. To achieve these goals, proper records management is essential for documenting actions and decisions. This documentation becomes especially relevant when assigning responsibility for actions, such as instances of theft or misuse of municipal funds. The participants' insights collectively stress the necessity of investing in training and capacity building in records management to fortify governance, accountability, and transparency within the municipality.

Auditing staff members emphasized the critical role of records as evidence, particularly in cases of recovering lost or stolen funds and during legal proceedings. This underscores the paramount significance of efficient records management within the municipality, particularly concerning financial records. The participants stressed that reliable and easily accessible records play a vital role in providing comprehensive information about administrative actions, including the receipt and

expenditure of resources. They further highlighted that records should be treated with the same level of attention and priority as other municipal resources, such as finances and personnel. Effective records management, they noted, is not just an administrative task but a fundamental element that directly contributes to the achievement of municipal objectives. It serves as a cornerstone for transparency, accountability, and informed decision-making. The participants' insights underscore the central role of records management in enabling the municipality to function cohesively, maintain financial integrity, and effectively pursue its goals.

The interviews further unveiled that the municipality's reliance solely on memory for tracking transactions is inadequate for effective operation. Records management stands as the crucial means by which verifiable evidence of fraudulent activities can be provided, guiding investigators to the origins of corruption. Notably, the municipality's records serve as the bedrock for efficient administration and strategic planning. They function as the mechanism through which both the Auditor General and the public can hold the municipality accountable. Proper records management is imperative to sustain the municipality's daily operations. Participants emphasized that records play a pivotal role as the organizational memory, providing evidence of past occurrences and forming the basis for future decisions within the municipality. The core objective of records management is to establish a structured framework, ensuring that municipal records are generated, utilized, stored, and retired in a systematic and controlled manner.

Therefore, the insights from the interviews underscore the indispensable role of records management in supporting the municipality's operations, transparency, accountability, and effective decision-making. Properly managed records serve as a safeguard against fraudulent activities, enable efficient administration, and provide the foundation for informed planning and governance.

The municipality possesses records and information of considerable value and sensitivity, necessitating stringent privacy and confidentiality measures. These valuable records can significantly impact financial outcomes and may even constitute tangible assets. Equally important are sensitive records, which demand careful handling to prevent indiscriminate disclosure, whether within or outside the municipality. A central tenet of records management is the preservation of secrecy and confidentiality. This principle is of paramount importance given the sensitive and confidential nature of municipal records, including personnel records. It is imperative that records containing personal information are subject to vigilant monitoring and control within the municipality.

Records management staff bear a crucial responsibility, charged with the duty to uphold the strictest confidentiality. They must be acutely aware that their role entails safeguarding personnel records from any form of disclosure. A deep understanding of the ethical obligations tied to working with and accessing these records is vital for ensuring their proper management. Therefore, the municipality's commitment to maintaining the privacy and confidentiality of its records, particularly sensitive and

personal information, underscores the ethical and professional responsibilities that guide records management practices.

Participants highlighted the legal safeguards that proper records management provides to the municipality, particularly in the context of litigation. By maintaining well-organized records, the municipality can establish a robust evidential foundation on which it can confidently rely. This becomes crucial in legal proceedings, offering a means of legal protection. Additionally, participants emphasized that effective records management serves as a powerful tool in detecting theft, fraud, and corruption within the municipality. Comprehensive recording of valuable information, especially in financial records, can facilitate the identification of irregularities and malpractices.

The absence of clear and authoritative retention guidelines was identified as a potential pitfall. Without such guidance, there is a risk that records with relevance to litigation, government investigations, or legal matters may be inadvertently destroyed by employees. This situation could expose the municipality to accusations of evidence destruction with the intent to obstruct justice. The insights provided by participants underscore the multifaceted role of records management. It not only provides legal protection and a basis for evidence but also serves as a proactive means of preventing and detecting unethical practices within the municipality. Clarity in retention guidelines is paramount to avoiding inadvertent destruction of critical records, thereby ensuring the organization's accountability and compliance with legal requirements.

The participants emphasized the pivotal role of proper and accurate information in decision-making. Without such information, decision-makers lack certainty about the outcomes of their choices. Records management emerges as a critical enabler of accountability, business continuity, compliance, and overall operational efficiency. According to the participants, the necessity of record-keeping is beyond dispute, constituting an ordinary yet indispensable aspect of virtually all business activities. Records serve as a documentation of an organization's decisions, actions, transactions, and various other activities. The concept and methods of records management offer systematic and well-developed approaches to handling record-keeping operations. These methods replace individual departments' autonomous efforts, which might otherwise lack proper direction, knowledge, skills, and effectiveness.

The participants posit that the rationale for implementing systematic records management is rooted in its instrumental value for effective record-keeping. By providing a structured framework, records management optimizes the management of records, ensuring their accuracy, accessibility, and reliability. This, in turn, equips decision-makers with the necessary information to make informed choices, bolsters the organization's ability to uphold accountability, and contributes to its overall operational success.

5.3.1 Risk of negative audit outcome

The participants underscored the critical role of well-maintained evidential records, particularly during legal actions or auditing processes. In situations where an individual employee or the municipality as a whole is facing legal challenges or undergoing audits, these records become indispensable. Inadequate record-keeping practices or delays in retrieving necessary records can result in legal penalties, as there are laws in place that penalize municipalities for not providing required information promptly.

The participants pointed to a significant consequence of insufficient records management: the emergence of qualified and adverse audit opinions for the municipality. These negative audit outcomes played a role in the appointment of an administrator for the municipality. Often, the root cause of these unfavourable opinions was traced back to a lack of clear and comprehensive supporting documentation. Auditors faced difficulties in their tasks due to delays or the unavailability of records from the municipality during the auditing period. This led to the issuance of disclaimer opinions, which cast doubts on the accuracy and reliability of the municipality's financial information. In effect, the importance of proper records management in ensuring timely access to accurate and complete documentation is underscored by the participants' insights. Such practices are integral not only for avoiding legal penalties but also for facilitating successful audits, promoting accountability, and maintaining the municipality's reputation. The participants stressed that effective records management goes beyond mere documentation, playing a crucial role in enhancing transparency and accountability. It serves as a means to provide assurance to all stakeholders, including citizens, that funds are allocated and utilized in alignment with predetermined municipal goals and objectives. Furthermore, participants highlighted the integration of the records management unit into the auditing process as pivotal for ensuring accountability and achieving favourable audit outcomes. They emphasized that the implementation of a robust records management system is not only beneficial but essential for meeting the requirements of auditors during the auditing process.

In essence, participants strongly advocated for proper records management as a foundational strategy to establish accountability, achieve positive audit results, and instil confidence among stakeholders. By ensuring accurate and accessible records, the municipality can demonstrate its commitment to transparent financial practices and responsible resource allocation, thereby enhancing its credibility and fulfilling its obligations to both auditors and the public.

Auditors place a significant emphasis on ensuring accountability and good governance. To meet these goals, the municipality must establish effective measures that safeguard the confidentiality and integrity of its financial records and activities. The preservation of confidentiality is of paramount importance in this context. As long as auditing remains a crucial process, the need for relevant and reliable records as

evidence of municipality decisions and actions will persist. Records management assumes a pivotal role in supporting the entire accounting function, with the creation of records marking the commencement of the accounting cycle. The attainment of a clean audit outcome is closely tied to records management practices. When auditors are provided with an audit file that contains financial statements accompanied by relevant supporting records in a cohesive manner, the foundation for a successful audit is laid. In contrast, the failure to retrieve vital records during an audit assignment elevates the risk associated with the audit process.

The absence of records as evidence can lead to the stalling of an audit, preventing its progress. This situation has been a recurring challenge for the municipality over the years. The insights from participants underscore the pivotal role of records management not only in ensuring accountability and good governance but also in facilitating successful and efficient auditing processes. Properly managed records serve as a backbone for reliable financial reporting and decision-making, bolstering the municipality's overall credibility and transparency.

5.4 Objective 3: Blockchain Technology as a panacea

Blockchain stands as a cutting-edge technological advancement that draws inspiration from the transformative paradigms of the Internet of Things (IoT) and artificial intelligence (AI) revolutions (Ali et al. 2021). This innovation has the potential to revolutionize various industries, offering the prospect of enhancing business processes and instilling trust in data sharing and records management across all sectors. The anticipated impact of blockchain is far-reaching, with its influence extending to numerous industries. It presents a unique opportunity to bolster business operations while fostering confidence in data exchange and records management across diverse domains. Notably, the applicability of Blockchain is extensive, with the technology poised to play a pivotal role in various sectors, including records management and data sharing.

The observations of Ali et al. (2021) underscore the transformative potential of blockchain technology. By integrating features of IoT and AI revolutions, blockchain emerges as a formidable tool that can reshape industries, promote transparency, and redefine the way records are managed and shared. Its capacity to engender trust, enhance security, and optimize processes positions blockchain as a catalyst for innovation across sectors.

In the modern context, municipalities operate in a data-driven environment, accumulating and processing data at unprecedented levels. This wealth of data contains high-profile, sensitive, and confidential information, rendering it exceptionally valuable and attractive to both hackers and corrupt individuals. These malicious actors exploit vulnerabilities within records and information management systems, leading to potential breaches and security compromises.

Blockchain technology (BCT) has emerged as a powerful solution to address information security concerns. Its efficacy is demonstrated in various aspects, including safeguarding private data, ensuring confidentiality in data exchange, managing access rights, maintaining data consistency, and establishing digital uniqueness. Scholars like Faber et al. (2019) have highlighted the role of blockchain technology in protecting private data. Additionally, studies such as Yang et al. (2019) emphasize its application in preserving confidentiality during data exchanges, managing access rights, maintaining data consistency, and ensuring digital uniqueness.

The adoption of blockchain technology presents a promising avenue for municipalities to enhance the security and integrity of their records and information management systems. By leveraging the cryptographic principles and distributed ledger features of blockchain, municipalities can fortify their defences against cyber threats, mitigate the risks of data breaches, and ensure the confidentiality and authenticity of their valuable data assets.

Blockchain technology is a revolutionary method of record-keeping that enhances security by making it extremely challenging for hackers to breach the system or manipulate data stored within it. This heightened security arises from the unique properties of blockchain, which ensures the safeguarding and immutability of data. Blockchain operates as a type of distributed ledger technology (DLT), which serves as a digital system for recording transactions and associated data simultaneously across multiple locations. This distribution prevents a single point of failure, as each computer within the blockchain network maintains a copy of the ledger. These copies are constantly updated and validated in real-time. The data within a blockchain is organized into blocks that are digitally linked together, forming a chronological and unchangeable chain. A fundamental characteristic of blockchain is its decentralization; rather than being managed by a central computer, the system relies on a peer-to-peer network of computers. This decentralized structure enhances security, transparency, and resilience, making it exceptionally challenging for unauthorized access, data manipulation, or tampering. Therefore, blockchain technology is a secure and immutable form of record-keeping that utilizes distributed ledger technology to prevent hacking, ensure data integrity, and create a decentralized and resilient system. Its innovative features have the potential to transform various industries, including record management, by offering enhanced security and reliability.

Blockchain is an innovative technology that empowers users to validate, preserve, and synchronize the contents of a transaction ledger across multiple participants. Essentially, it functions as a decentralized platform for managing transactions and data, eliminating the need for third-party control and fostering trust among participants (Abou and Saade 2019). This decentralization is achieved through an internal system where transactions are recorded in a time-stamped ledger. As a result, the data becomes unalterable and immutable without the consensus and update of the ledger. This intrinsic feature of

blockchain technology guarantees both security and trust throughout the process of conducting transactions (Abou and Saade 2019).

Therefore, blockchain's architecture ensures that transactions are transparent, tamper-resistant, and independently verified, thereby establishing a foundation of security and confidence for participants. This technology is poised to revolutionize various sectors by redefining how data is managed, shared, and trusted in a distributed and secure manner.

Mohite and Acharya (2018) highlight several key characteristics of Blockchain technology, including its decentralized nature, transparency, consistency and security of information, prevention of distortion and corruption, low cost, and speed. Notably, Blockchain offers significant potential in reducing corruption, primarily through two factors: the decentralization of information, which enhances the visibility of public information, and the transparency of information flows (Ghode et al. 2020).

Furthermore, Ghode et al. (2020) emphasize the substantial impact of Blockchain across various sectors and industries, such as government and healthcare. The technology achieves this impact through multiple avenues:

- By eliminating the need for third-party intermediaries, Blockchain enhances efficiency and speed in processes.
- It modernizes existing processes by significantly reducing the costs and time associated with reimbursements and modifications.
- Blockchain fosters the development of new business models by increasing revenue and generating savings.

The convergence of these features and benefits positions Blockchain as a transformative force with the potential to reshape industries, improve governance, streamline operations, and promote transparency and trust in various domains.

Kshetri and Voas (2018) highlight that Blockchain technology establishes a digital transaction ledger that serves as evidence against corrupt manipulations. This ledger is openly shared, thus ensuring transparency. The application of cryptography ensures secure access for adding to the ledger. Notably, attempting to modify or erase data recorded in a distributed ledger is exceedingly difficult, if not impossible. Moura, Brauner and Janissek-Muniz (2020) emphasize that within the context of public administration, the emergence of e-Government and the Open Government Partnership has driven initiatives to enhance government-citizen interactions. These initiatives aim to enhance transparency and public engagement through the availability of government information and the expansion of electronic services.

Several essential elements contribute to the efficient implementation of Blockchain technology: - Immutability: Once data is stored in a Blockchain, it becomes unchangeable, offering protection against

manipulation and unauthorized alterations. This immutability ensures the reliability and accessibility of data, making Blockchain a promising candidate for enhancing transparency in public records (Akhmetbek and Špaček, 2021).

- Inclusiveness: Public Blockchains are open-source and accessible to all, democratizing data storage and encouraging widespread participation.
- Disintermediation: Blockchain-based systems eliminate the need for intermediaries to verify transactions. This reduction in transaction costs and vulnerability to corruption is a pivotal advantage of the technology (Moura, Brauner and Janissek-Muniz 2020).

Collectively, these features of Blockchain technology contribute to its potential to transform various sectors, including public administration, by bolstering transparency, minimizing corruption risks, and fostering citizen engagement. Moura, Brauner, and Janissek-Muniz (2020) emphasize that blockchain's capacity to provide secure data storage and management presents a compelling rationale for its adoption in the public sector. Universally recognized as a distributed ledger technology, blockchain serves as a distributed information system that records and manages data in an exceptionally resistant manner, making it nearly impervious to modification or hacking (Ølnes and Jansen 2017).

Operating as a sequential and distributed data storage mechanism, blockchain ensures the reliability and integrity of the records management system. The nature of blockchain's design, characterized by the organization of information into chronological blocks, grants it remarkable resilience against data corruption. This resilience is particularly crucial as data tends to degrade over time due to the inherent process of entropy in various storage ecosystems (Yang et al. 2019). By harnessing the inherent attributes of blockchain technology, such as its immutability and distributed architecture, the public sector stands to benefit from enhanced data security, minimized corruption risks, and the establishment of a trustworthy records management framework. The unique characteristics of blockchain position it as a viable solution for safeguarding and preserving critical information within the public sector.

Blockchain functions as a distributed ledger that is shared among all registered peers within a public network, a feature that contributes to its exceptional trustworthiness and reliability. This technology operates by recording data in newly generated blocks, each accompanied by a summary information known as a hash from all previously created blocks. Upon data recording, the block is promptly sealed, becoming an immutable and permanent addition to the chain. This chain of blocks can potentially extend indefinitely as new blocks are continuously recorded, each containing a hash of all preceding blocks in the sequence (Ølnes and Jansen 2017).

Therefore, collaborative and decentralized nature of blockchain's ledger distribution, coupled with the cryptographic integrity of each block, ensures that once information is recorded and confirmed, it becomes virtually impossible to alter or manipulate. This inherent design feature contributes to the technology's reputation for reliability, transparency, and security. As a result, blockchain is well-suited

for applications where data integrity, accountability, and protection against tampering are paramount, such as records management and maintaining an unalterable transaction history.

5.5 Conclusion

The description of blockchain technology's features and capabilities is accurate. Blockchain, as a decentralized and distributed ledger technology, is indeed designed to store and share information across multiple nodes in a network. The core principles of blockchain, such as consensus mechanisms and immutability, ensure the integrity and transparency of data within the system. Blockchain's ability to create a distributed ledger mitigates the reliance on a central authority or controller. This decentralization minimizes the risks associated with manipulation, system failures, and single points of failure. It also provides a historical record of transactions that is secure and cannot be altered once recorded. The application of blockchain in scenarios involving changing ownership, as well as the storage of critical information and documents like certificates, licenses, government decisions, and legislation, is indeed valuable. Blockchain's features make it a suitable solution for enhancing security, trust, and transparency in various domains, including e-government.

The study's findings underscore the critical need for the municipality to address its records management challenges. The absence of a transparent, reliable, and secure records management system has created several constraints, including issues related to transparency, authenticity, privacy, and accountability in municipal records. The lack of a system capable of recording and preserving data in an unmodifiable manner has left the municipality vulnerable to attempted manipulation and tampering with critical information. Moreover, the absence of a comprehensive records management system has impeded the municipality's ability to maintain up-to-date and authentic records readily accessible to auditing authorities such as the AGSA. This deficiency has contributed to problems like maladministration, negative cash flows, and the inability to produce current records of daily expenditures and activities.

The study suggests that blockchain technology could offer a potential solution to these challenges by providing a secure, transparent, and tamper-proof system for managing municipal records. Blockchain's ability to facilitate information exchange and transactions while ensuring authentication and trust could address many of the municipality's pressing issues in records management. Therefore, the findings highlight the importance of investing in and implementing an effective records management system, potentially leveraging blockchain technology, to enhance transparency, accountability, and the overall efficiency of the municipality's operations. This would not only address current challenges but also contribute to better governance and financial management in the future.

5.6 Recommendations

1. Existing research primarily focuses on addressing the technological hurdles related to using Blockchain Technology (BCT) for peer-to-peer (P2P) processes, while it places minimal emphasis on BCT's potential to address societal needs. Furthermore, there is a notable absence of systematic exploration regarding the applications of BCT for government development, as outlined by (Ølnes 2016).

2. Implementing Blockchain-based records management systems at the municipal level offers the capability to monitor the movement of records within the municipality effectively. These systems establish audit trails that can capture any deliberate or unintentional unauthorized actions involving records, such as interference, theft, or damage. Reliable and authentic records establish a clear link between an authorization, a designated individual, and a specific date. They can serve as compelling evidence for identifying instances of abuse, misuse, and violations of financial regulations and other legal mandates. Consequently, records management serves as a proactive and credible deterrent against corruption and fraud (Mosweu and Ngoepe 2019).

3. Records frequently provide evidence of various forms of fraud, including misclassification, misdescription, and undervaluation of goods and services. Records management systems offer intrinsic value by functioning as a control mechanism that complements other control systems like internal and external audits. By monitoring the movement and ensuring the physical security of financial records, the potential for tampering with or removing them is significantly reduced. When applied effectively, these control systems collectively act as a deterrent to fraudulent activities. Moreover, the records themselves can serve as instruments for detecting fraud and recovering losses. While the recovered sums may be relatively modest, an efficient recovery mechanism can, in itself, function as a deterrent.

In summary, the study recommends a shift in research focus towards exploring how Blockchain Technology can address societal needs in addition to its technical challenges. It underscores the significance of Blockchain-based records management systems in tracking and safeguarding records within municipalities, highlighting their role in fraud prevention and detection, and advocating for the implementation of effective control systems.

5.6.1 Recommended blockchain based ecosystem for municipality

When a new financial or procurement record (referred to as a "block") is generated, encompassing details of an agreement or contract for payment by the municipality and the associated work to be performed by a contractor, a fresh block (record) is initiated Ali et al. (2020). This new block is then disseminated across the network of authorized departmental peers, which includes computers in procurement, finance, and auditing departments, as well as a community representative (councillor)

from the relevant ward where the service is planned. This widespread distribution ensures transparency and authenticity by notifying all peers in the network of any ongoing transactions and concurrently maintaining an unmodifiable record of these transactions. Once a significant majority of authorized peers (requiring approval from at least 51% of peers across diverse municipal departments) have validated the new block by confirming the accuracy of the recorded information, the system proceeds to incorporate the approved block into the existing chain.

This approach enables municipality records management officials and auditors to establish an accurate and trustworthy history of municipal transactional records in an efficient, verifiable, and permanent manner, devoid of any potential for tampering or modification. This setup facilitates the effective tracking and accountability of wrongdoers. In instances where a consensus cannot be reached among the network peers, often due to incorrect or incomplete information that prevents the creation of a comprehensive record, a fork occurs in the chain. The rejected block becomes an orphan and is not incorporated into the main chain. Once a block is approved and integrated into the chain, the data within it becomes immutable. Any attempt to alter the information necessitates modifying all subsequent blocks, requiring consensus among all network peers through a consensus protocol. This design ensures that any effort to modify the data can be readily detected.

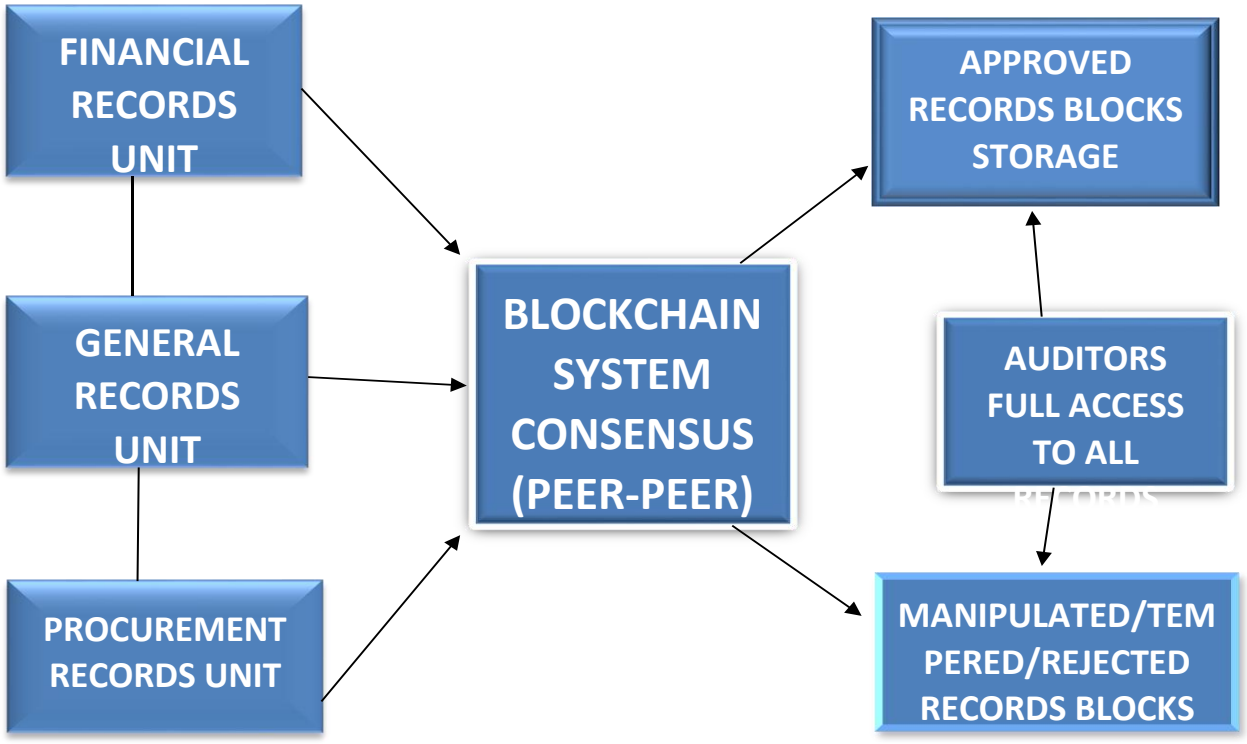

Figure 5.1: Blockchain based ecosystem for municipality

Source: Author's own

The above recommended figure illustrates a blockchain ecosystem to be implemented within the Msunduzi Local Municipality, showcasing its application across various units for effective records management and data security. In this ecosystem, there are three exemplary core units: the Financial Records Unit, General Records Unit, and Procurement Records Unit. Each of these units is responsible for managing and maintaining specific categories of records related to their respective functions.

To ensure the security and integrity of these records, all three units submit their records to a unified blockchain system. This blockchain system operates on a network of nodes, which are essentially individual computers or servers within the municipality. The records submitted by these units are subjected to a consensus procedure, where all nodes in the network participate through a peer-to-peer protocol.

This consensus procedure serves a critical role in the process. It involves the collective approval and confirmation of the submitted records. If a record is deemed correct, it is added to the blockchain and securely stored for future reference and consultation. These records are considered tamper-proof and reliable due to the blockchain's inherent security features.

However, the consensus procedure also plays a crucial role in detecting and handling records that have been tampered with or manipulated. If any record is rejected due to inconsistencies or signs of tampering, it is set aside and marked as compromised. This action serves as a warning to all nodes within the network, informing them of the existence of manipulated records. This immediate detection and segregation of tampered records are vital for maintaining the integrity and security of the records.

The implementation of this blockchain ecosystem offers several advantages, particularly during auditing processes. It enhances accountability and transparency, as all records are securely stored and easily accessible. Any attempt to manipulate records is quickly identified, thus minimizing the risk of fraud and corruption. Overall, this blockchain-based records management system ensures the municipality's ability to maintain reliable and tamper-proof records, promoting transparency, accountability, and efficiency in its operations.

5.6.2 The benefits of the proposed ecosystem to the municipality

This blockchain ecosystem provides numerous benefits to the Msunduzi Local Municipality and can significantly improve its records management and auditing processes. Here are some key advantages and implications of this system:

- **Enhanced Data Security**: The blockchain technology ensures a high level of data security. Records stored on the blockchain are encrypted and distributed across the network, making them resistant to unauthorized access and tampering.

- **Transparency and Trust**: The transparent nature of blockchain allows for increased trust and accountability. All records and their histories are accessible to authorized parties, fostering trust among stakeholders and citizens.
- **Efficient Auditing**: Auditing becomes more efficient and less prone to errors. Auditors can access a complete, tamper-proof history of records, simplifying the auditing process and reducing the likelihood of discrepancies.
- **Quick Detection of Tampering**: Any attempt to manipulate records is promptly detected and flagged. This early detection is crucial for preventing fraud, corruption, and the submission of false information.
- **Immutable Records**: Once records are added to the blockchain, they become immutable. This feature ensures that historical data remains unchanged, providing a reliable source of information for future reference and audits.
- **Streamlined Record Keeping**: Blockchain technology streamlines record-keeping processes. It eliminates the need for manual data entry, reducing administrative burdens and potential errors.
- **Cross-Unit Collaboration**: Units within the municipality can easily collaborate on projects or audits by accessing and sharing records securely within the blockchain ecosystem.
- **Long-Term Archiving**: The blockchain is an ideal solution for long-term archiving of critical government records and historical data, ensuring their preservation and accessibility.
- **Reduced Administrative Costs**: By automating many record-keeping processes and reducing the need for intermediaries, the municipality can achieve cost savings and allocate resources more effectively.
- **Public Access and Engagement**: Blockchain allows for secure public access to records and services, enhancing citizen engagement and making government services more accessible.
- **Data Privacy**: The blockchain ecosystem can be designed to include privacy features, ensuring that sensitive citizen data is protected while maintaining transparency.
- **Disaster Recovery**: Data distributed across the blockchain network provides an added layer of disaster recovery, reducing the risk of data loss due to server failures or unforeseen events.

By implementing this blockchain ecosystem, the Msunduzi Local Municipality can realize a transformation in its records management and auditing practices. It ensures the integrity, security, and

accessibility of records while promoting transparency and accountability. The municipality is better equipped to provide efficient services and protect its resources from fraud and corruption, ultimately serving its citizens more effectively.

5.7 Chapter summary

This chapter presented the summary, conclusion, and recommendations of this study regarding Blockchain-based records management for the Msunduzi municipality, aimed at improving auditing results and enhancing accountability within the municipality. In summary, the implementation of blockchain technology has the potential to revolutionize records management in the public sector. By providing a secure, transparent, and efficient means of managing records, it promotes trust, accountability, and data integrity. This study has shown that such an approach is not only feasible but also highly beneficial, particularly for a municipality like Msunduzi.

The adoption of blockchain technology can address many of the challenges faced by the municipality, particularly in the realm of records management and auditing. It offers a robust solution for maintaining the integrity of records and enhancing transparency. This, in turn, can contribute to improved audit outcomes and increased public trust. Recommendations stemming from this research include the exploration of blockchain implementation in collaboration with relevant authorities and stakeholders. This should involve a comprehensive assessment of the specific needs and requirements of the municipality. Furthermore, it is advised that the municipality invest in training and capacity building for its staff to ensure a smooth transition to blockchain-based records management.

In conclusion, this study underscores the importance of embracing innovative technologies like blockchain to address long-standing issues in the public sector. The Msunduzi municipality, like many others, stands to benefit significantly from such advancements in records management and auditing practices, ultimately leading to a more accountable and efficient government.

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ANNEXURE A: INTERVIEW SCHEDULE

INTERVIEW QUESTIONS

PART 1

Objective one: *Functional records management system*

1. Why is it important to have records management section/unit in this municipality?
2. What do you understand about the concept of digital records management?
3. Does this municipality have a functional records management system? And is it manual or digital system?
   - If yes, how does it ensure proper management of records?
   - If no, what change or difference do you think a functional records management system would bring in this municipality?
4. There are four risks associated with fraud and corruptions:
   - Failure to create records (non-existence of evidence)
   - Improper/unauthorized access to documents (this can lead to unauthorized changes or modifications to records)
   - Lack of control over traceability of records; and Unauthorized destruction of records.

   How does this municipality ensure that the above risks are not threatening or exposing the municipality to fraud and corruption?

5. If supporting documentation is misplaced or cannot be recovered or produced during auditing, how would reliability and accountability be ensured and guaranteed?
6. How does your current records management system tracks the movement of records throughout the municipality?
7. How does your system create audit trails that can also reflect any deliberate or accidental unauthorized movements carried out on records (e.g. interfering, theft or damage)?
8. What change do you think a functional records management system could bring in this municipality?

PART 2

Objectives two: *Records transparency, records authenticity, records security and records privacy,*

AND

Objectives three: *improved audit results through blockchain technology.*

9. Do you believe that your current records management system is doing its best to produce good results?
    - If yes, how does it ensure accessibility to accurate and complete records?
10. How does your current records management system ensure traceability of information or records back to its origin in accountability processes and ensuring a chain of custody for records (all in the aim of guaranteeing their integrity and reliability over time?
11. If there is a relationship between the records management unit and auditing unit, how is the state of the relationship?
12. Does records management staff form part of the auditing committee since auditing relies more on records to successfully carry out their functions?
13. What is the role of records management unit during auditing process?
14. Can the positive clean audit outcome be achieved without proper managed documents/records?
    - If no, do you think this municipality has a functional records management system looking at it current state of the auditing results?
15. Poor records management can create chances to commit fraud and corruption since without records (proof) everything may be considered to be allegations which are difficult to prove, what is your take on this statement?
16. How do you ensure that your records are authentic and reliable at all times?
17. The opportunity to temper with or remove financial records can be greatly reduced by controlling their movement and physical security through blockchain technology, how does your records management system work to protect records since it is the system to control movement of municipal records?
18. What is your understanding about blockchain technology on records management?
19. Do you think that blockchain-based records management can help to improve the municipal audit results?
    - If yes, can you elaborate how?

If you have any question, comment or anything to add you can take the opportunity now.

ANNEXURE B: LETTER OF INFORMATION

LETTER OF INFORMATION

Title of the Research Study : Digital records management for the auditing process: case study of Msunduzi Local Municipality.

Principal Investigator/s/researcher: Mr. Khulekani P. Zuma, Honours Bachelor of Information Science

Co-Investigator/s/supervisor/s: Dr. M. Rajkoomar, PhD Library and Information Science

Dear Sir/Madam

I am a Masters degree student at DUT doing research for the qualification in Master of Management Sciences in Library and Information Science. I would like to invite you to participate in the research assignment (Research is a systematic search or enquiry for generalized new knowledge). You are allowed to ask as many questions as you wish because it is important that you fully understand the study. Should you wish to discuss the study with your family and friends then you are under no obligation to commit at this stage. For this purpose, a copy of the Letter of Information document is given to you to take home.

Brief introduction and purpose of the study:

Corruption, fraud and maladministrationis a disease that is attacking government sector and is taking away their budget at all levels of government and results in poor service delivery. Whenever Auditor General of South Africa (AGSA) conduct an audit assignment, the constraint it faces with government sector is that supporting documentation (records) cannot be provided by organisations being audited. `Poor records management creates chances to commit fraud and corruption as without complete records, everything (cases of corruption,

fraud and maladministration) might be considered to be accusations which are hard to prove. Therefore, sound records management is a prerequisite to root out corruptions, fraud and malpractices in order to advocate for clean audit results culture. This qualitative study aims to explore the feasibility of digital records management in Msunduzi Local Municipality during auditing process to aid in producing clean municipal audits, with the specific objectives which are to establish whether Msunduzi Local Municipality have a functional digital records management system for auditing purpose, investigate the significance of digital records management in the auditing process at Msunduzi Local Municipality and find out if records management can ensure accountability and track malpractices to achieve clean audit results for the Msunduzi Local Municipality. This study will be guided by Records Continuum Model (RCM) as a theory developed by Australian recordkeeping scholar Frank Upward and it will be established in a form of a case study based on Msunduzi Local Municipality. Semistructured interviews will be conducted in the municipal offices from the total population of 29 participants made up of records management and auditing staff members as well as the municipal manager of Msunduzi Local Municipality. Data will be analyzed thematically using themes from the objectives of the study.

There are no possible risks associated with this study since it will be conducted in an interview method. This research may be terminated early in particular circumstances viz. Non-compliance, illness, adverse reactions, etc. you are entitled to withdraw from the study at any time should you wish to do so for your own personal reasons. This research will benefit the municipality with the methodology towards clean audit and also with the proposal of digital records management system. There will be no any monetary or other types of remuneration for participating in this study. You are not expected to pay nor cover any costs towards this study. All the information that you provide as per interview will be treated with high level of confidentiality and privacy. This will be ensured as you will not to fill out your name after giving the answers but you will remain anonymous, and there is no limits to confidentiality and no one will have access to the data except for me as a researcher. The results of this study will be made available to the municipality, DUT, and it can also be accessed online. Since this is a type of research where you will be expected to participate only in an interview method, there is therefore no research-related injuries expected. The data records will be destroyed after they have been analyzed and generalized to the results of the study.

Persons to contact in the Event of Any Problems or Queries: Please contact the researcher (tel no. 0725254719), my supervisor (tel no. **031 373 6776/5446**) or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support Dr L Linganiso on 031 373 2577 or researchdirector@dut.ac.za.

ANNEXURE C: INFORMED CONSENT

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Mr K~~P. Zuma about the~~ nature, conduct, benefits and risks of this study - Research Ethics Clearance

  Number: _____ _,

- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant	**Date**	**Time**	**Signature / Right**	

Thumbprint

I Mr KP Zuma. herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Khulekani P Zuma	19 March 2021	
Full Name of Researcher	**Date**	**Signature**
Full Name of Witness (If applicable)	**Date**	**Signature**
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

ANNEXURE D: PERMISSION TO CONDUCT RESEARCH AND ETHICS CLEARANCE

To: The Municipal Manager

Private Bag X321,

Pietermaritzburg,

3200

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT YOUR PREMISES

Dear Municipal Manager

My name is Mr Khulekani Zuma, a postgraduate student at Durban University of Technology. My student number is 20935347. My thesis is entitled: 'Digital records management for the auditing process: a case study of Msunduzi Local Municipality'.

I am hereby seeking your consent to undertake part of this research with your staff as willing participants. I have provided you with a copy of my research proposal which includes the data collection tools and consent forms to be utilized in the research process. I also provide a copy of the approval letter which I received from Faculty of Accounting and Informatics Research Committee (FREC).

I will be visiting your Municipality premises located Corner Church & Chief Albert Luthuli Streets, in Pietermaritzburg in the month of May 2021 where I will engage with auditing and records management employees. I will explain my research, invite questions, and ask them to participate. All participation is on a voluntary basis with all responses being kept confidential and their identities anonymous. After obtaining their written consent, I will conduct my interviews. This process should take about 20 minutes.

If you require any further information, please contact me via cell phone 0725254719 or email my email lugajukp@gmail.com. My supervisors may be contacted via email at mogier@dut.ac.za office-phone number 031 373 6776/5446

Thank you for your time and consideration in this matter. Kindly sign below to acknowledge consent for me to conduct the requested research.

Yours sincerely

Mr Khulekani P Zuma

DUT Masters student

Approved by:

_____ _____

FREC Chair Date

Faculty of Accounting and Informatics Research Ethics Committee

The Msunduzi Municipality
OFFICE OF THE MUNICIPAL MANAGER

Private Bag X 321
Pietermaritzburg
3200
(033) 392 2882

City Hall, Chief Albert Luthuli Street
Pietermaritzburg
3201
www.msunduzi.gov.za

CITY OF CHOICE
PIETERMARITZBURG
MSUNDUZI

Enq: M C Jackson **Tel. 033 392 2882** **E-mail: madeleine.jackson@msunduzi.gov.za**

26 August 2021

Mr Khulekani Zuma (20935347)

Per Email: zumak2@ukzn.ac.za

RESEARCH CONSENT LETTER – BLOCKCHAIN-BASED DIGITAL RECORDS MANAGEMENT FOR THE AUDITING PROCESS: A CASE STUDY OF MSUNDUZI LOCAL MUNICIPALITY

Your correspondence, received on the 26 August 2021, regarding the above has reference.

Please be advised that you hereby granted permission to conduct your research within Msunduzi Municipality, subject to the following conditions:

(i) You obtain ethical clearance and submit a copy to the Office of the Municipal Manager, c/o Ms. Madeleine Jackson as per the above contact details

(ii) Ensure that the Office of the City Manager is informed when you commence your research in the municipality.

(iii) You will forward a copy of the completed research report to the Office of the Municipal Manager, c/o Ms. Madeleine Jackson as per the above contact details.

(iv) None of the information and/or findings obtained during the research project will be used to construe the Municipality in a negative light and/or against the Municipality in any court of law.

(v) The Municipality will not be responsible and expected to provide resources for your study such as transport, research assistants, etc.

(vi) Permission must be obtained from the municipality prior to any publication or paper that will be published or presented containing municipal information.

(vii) The Municipality will not be held liable for any injury and/ or losses that may occur as a result of the study.

(viii) All COVID-19 protocols, as regulated by Government, are adhered to at all times for the duration of the research.

I trust the above is in order.

Sincerely,

MADELEINE JACKSON
SENIOR MANAGER: OFFICE OF CITY MANAGER

DUT
DURBAN UNIVERSITY OF TECHNOLOGY
INYUVESI YASETHEKWINI YEZOBUCHWEPHESHE

FACULTY OF ACCOUNTING & INFORMATICS

Faculty Research Office
Durban University of Technology
12 July 2021

Student: Khulekani Zuma
Student Number: 20935347
Degree: Master of Management Sciences in Library and Information Science
Email: 20935347@dut4life.ac.za
Supervisor: Dr M. Rajkoomar
Supervisor email: mogier@dut.ac.za

Dear Mr Zuma

ETHICAL APPROVAL: LEVEL 2

I am pleased to inform you that the Faculty Research Ethics Committee (FREC) following feedback from two reviewers, has granted preliminary permission for you to conduct your research 'Digital records management for the auditing process: case study of Msunduzi Local Municipality'.

When ethics approval is granted:
You are required to present the letter at your research site(s) for permission to gather data. Please also note that your research instruments must be accompanied by the letter of information and the letter of consent for each participant, as per your research proposal.

This ethics clearance is valid from the date of provisional approval on this letter for one year. A student must apply for recertification 3 months before the date of this expiry.

Recertification is required every year until after corrections are made, after examination, and the thesis is submitted to the Faculty Registrar.

A summary of your key research findings must be submitted to the FRC on completion of your studies.

Yours sincerely

Dr Trisha Ramsuraj

FREC Deputy Chair
Faculty of Accounting and Informatics
Durban University of Technology
Ritson Campus
Durban, South Africa, 4001

ANNEXURE E: RESPONDENTS PROFILE

No	Age	Gender	Department	Qualification	Experience (years)
1	25	M	Registry/Records	Diploma	1
2	31	F	Auditing	B-Tech	3
3	44	F	Registry /Records	Grade 12	4
4	54	M	Registry/Records	Grade 12	6
5	23	M	Registry/Records	Grade 12	1
6	34	M	Registry/Records	Certificate	1
7	35	F	Auditing	Honours	5
8	29	F	Registry/Records	Grade 12	3
9	27	F	Registry/Records	Diploma	2
10	25	F	Auditing	Diploma	1
11	33	F	Auditing	B-Tech	2
12	27	M	Auditing	Degree	1
13	32	M	Registry/Records	Certificate	5
14	41	F	Registry/Records	Grade 12	8
15	57	M	Auditing	Masters	9

ANNEXURE F: SAMPLE OF INTERVIEW REPONSES

QUESTION	RESPONDENT	RESPONSE

1	1	*"Records management is needed and very important to protect and safeguard municipal critical information. It ensures that vital municipal data, which plays a pivotal role in decision-making and operational processes, remains secure and accessible. Proper records management not only guards against unauthorized access and potential manipulation but also establishes a robust framework for preserving the integrity and confidentiality of sensitive information. By managing records efficiently, the municipality can uphold its accountability, transparency, and governance standards, thereby contributing to the overall success and responsible management of its operations."*
2	14	*"Digital means electronic, records means documents, and management means safekeeping, so I would say it is the art of safe records keeping in an electronic system."*
3	3	*"No, there is no consistent records management system across the municipality. Each department or unit manages records individually, resulting in a lack of uniformity. A unified system is needed."*
4	8	*"our municipality according to me it has never paid*

		enough attention to records management. I don't think they are even paying attention on how much the records management can help in the fight against fraud and corruption which leads to failure in the AGSA results"
5	12	*"Accountability is very important, but it cannot be effective if there is no evidence to charge a person or organization accountable for any wrongdoing. Records are very important as they stand as evidence."*
6	11	*"Since I have started to work here in the municipality I have never seen such kind of a record which reflects that some records are missing as a result of being stolen or manipulated and that will be recorded in the system"*
7	5	*"Having a functional records management system would revolutionize our operations. It would prevent records from going missing and protect them from unauthorized changes. We could have a clear trail of who accesses records, which would deter corrupt practices. Ultimately, we could achieve cleaner audits and greater trust in our municipality's operations."*
8	4	*"I have no confidence in our current records management system for producing good audit results. It lacks proper controls to ensure accessibility to accurate and complete records."*

9	10	*"Unfortunately, our records management system does not excel in ensuring*
		traceability or guaranteeing integrity and reliability. It's an area that requires improvement"
10	14	*"The two units have minimal interaction beyond audits. If we collaborated more, the records management unit could implement a centralized document repository with version history. This would ensure that auditors access accurate and reliable records, leading to improved audit results."*
11	1	
12	5	*"poor records management is a serious disease which can see the whole municipality falling, I agree with the statement"*
13	15	*"Poor records management within the municipality hinders claims of reliability and authenticity needed for auditing."*
14	13	*"Poor records management is identified as a significant factor contributing to the municipality's auditing challenges."*
15	1	*"No awareness or understanding of blockchain technology."*
16	12	*"Despite one person signing for records, there is an issue of unauthorized access by others, emphasizing the necessity of a system to control records movement."*

17	11	*"Uncertain association with Bitcoin but lacking clarity about blockchain technology in records management."*
18	4	*"Complete lack of understanding."*
19	8	*" yes, A robust records management system is essential to combat*
		corruption by tracking unauthorized access to financial records and assets."

ANNEXURE G: CODING SCHEME

Question #	Codes and Attributes	Subgroup or Category
1	Importance, Records Management, Municipality	Objective One: Functional Records Management System
2	Digital Records Management, Understanding	Objective One: Functional Records Management System
3	Functional System, Manual/Digital, Proper Management	Objective One: Functional Records Management System
4	Risks, Fraud, Corruption, Risk Mitigation	Objective One: Functional Records Management System
5	Reliability, Accountability, Misplaced Documentation	Objective One: Functional Records Management System
6	Movement Tracking, Records Management System	Objective One: Functional Records Management System
7	Audit Trails, Unauthorized Movements, System	Objective One: Functional Records Management System
8	Change, Functional System, Municipality	Objective One: Functional Records Management System
9	Current System, Good Results, Accessibility	Objectives Two and Three
10	Traceability, Chain of Custody, Information Origin	Objectives Two and Three
11	Relationship, Records Management, Auditing Unit	Objectives Two and Three
12	Records Management Staff, Auditing Committee	Objectives Two and Three
13	Role, Records Management Unit, Auditing Process	Objectives Two and Three
14	Clean Audit Outcome, Proper Management, Records	Objectives Two and Three

15	Poor Records Management, Fraud, Corruption	Objectives Two and Three
16	Authenticity, Reliability, Records	Objectives Two and Three
17	Opportunity Reduction, Physical Security, Blockchain	Objectives Two and Three
18	Understanding, Blockchain Technology, Records Management	Objectives Two and Three
19	Improvement, Blockchain-Based Management, Audit Results	Objectives Two and Three