Institutional resilience strategies, administrative practices, and disaster risk management by Kwazulu-Natal municipalities

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(DBA: Finance) Date: 31 October 2025

DECLARATION

I, **Nelisiwe Mary-Anne Mchunu**, hereby declare that this thesis is my own original work and that it has not been previously submitted, in whole or in part, for any degree or examination at any other university or institution. All sources of information, data and ideas used in this thesis have been acknowledged and referenced in accordance with academic standards. I further declare that the findings, conclusions and recommendations is the result of my own independent research, conducted under the supervision of Dr Celani John Nyide. I understand that any false claim or misrepresentation in this declaration may result in disciplinary action by the university.

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ABSTRACT

This study aimed to investigate the institutional resilience strategies and administrative practices used by KwaZulu-Natal (KZN) municipalities to manage disaster risk. Although numerous studies have been conducted in South Africa on disaster risk management, few have focused on institutional resilience strategies and administrative practices to improve disaster risk management. South African municipal governments are constitutionally required to manage disaster risks; however, empirical data reveal that they fail to do so successfully. Therefore, it is imperative to examine the institutional resilience strategies and administrative practices adopted by municipalities in South Africa to mitigate disaster risk. The research objectives included: to examine institutional resilience strategies adopted by selected municipalities in KZN to manage disaster risks; to determine factors influencing the application of institutional resilience strategies utilised by municipalities in KZN to manage disaster; to identify administrative practices performed by selected KZN municipalities for adaption to disaster risks; to evaluate the adequacy of administrative practices performed by municipalities to adapt to disaster risks; and to formulate an integrated and adaptive strategic framework that strengthens institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation.

A census sampling approach was employed, involving all twenty-five (25) officials responsible for disaster risk management within the selected municipalities, including disaster management practitioners, departmental officials, and municipal coordinators. In-depth interviews were used as the primary data collection method for this project. The study indicates that while both municipalities have adopted resilience strategies, there are disparities in their application, institutional learning processes, and resource distribution. One of the selected municipalities demonstrates more structured administrative practices and resilient networking strategies, while the other one depends on external support and donor-driven initiatives, showing weaknesses in established disaster risk management. The findings indicate the importance of employing integrated, adaptive, and context-specific strategies to enhance municipal resilience and alleviate vulnerabilities to disasters. This study improves academic knowledge and practical disaster management by providing recommendations on enhancing institutional resilience, increasing administrative efficiency, and advancing effective disaster risk governance in South African municipalities.

DEDICATION

This thesis is dedicated to my family, whose unwavering support, encouragement and belief in me provided the foundation for this academic journey. I also dedicate this work to my supervisor, whose guidance, patience and insightful feedback were invaluable in shaping this research. Finally, I dedicate this study to all municipal disaster management practitioners, whose dedication to safeguarding communities served as a source of inspiration. It is my hope that this work will contribute meaningfully to knowledge, practice and the strengthening of disaster resilience in South African municipalities.

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LIST OF ABBREVIATIONS

AUC…….	African Union Commission
CAS……..	Complex Adaptive Systems
COVID-19…….	Coronavirus Disease 2019
COGTA…….	Cooperative Governance and Traditional Affairs
DMC……..	Disaster Management Centre
DMA…….	Disaster Management Act
DRR…….	Disaster Risk Reduction
DUT…….	Durban University of Technology
EM……	eThekwini Municipality
EMS…….	Emergency Management Services
GIS……	Geographic Information Systems
IAD…….	Institutional Analysis and Development Framework
IDP……	Integrated Development Plan
KZN……..	KwaZulu-Natal
M……	Msunduzi Municipality
NDMC……	National Disaster Management Centre
NDP……	National Development Plan
PBL…….	Problem-Based Learning
PMB…….	Pietermaritzburg
SDGs……	Sustainable Development Goals
SOPs…….	Standard Operating Procedures
UNDP……..	United Nations Development Programme
UNDRR…….	United Nations Office for Disaster Risk Reduction
UN-Habitat…….	United Nations Human Settlements Programme
4IR…….	Fourth Industrial Revolution

CHAPTER ONE
INTRODUCTION AND OVERVIEW OF THE STUDY

1.1 Introduction

This study aimed to investigate the institutional resilience strategies and administrative practices used by KwaZulu-Natal (KZN) municipalities to manage disaster risk. The purpose is to provide insights into the enhancement of municipal government structures that increase institutionalised resilience and adaptive capability in disaster management by considering enabling and restricting elements (Birchall et al.,2025). The first chapter of this thesis presents the research problem, aim and objectives of the study. Brief summaries of the research background, problem statement, rationale and significance of the study are outlined in this chapter. This chapter further indicates the research design used by this study and finally, how bias, rigor and trustworthiness were ensured during the data collection and analysis.

1.2 Research background

In recent years, severe natural disasters have increased, causing substantial concern for municipalities globally. South Africa has seen numerous natural disasters, including severe droughts, flooding and wildfires (Hertelendy, Salio and Ciottone, 2025). These disasters have posed a significant effect on agriculture, infrastructure and communities, creating challenges for disaster planning and response. KZN is vulnerable to these difficulties. This province has been engulfed by natural disasters which include floods, fires and droughts as affirmed by Mongale (2022). Disasters can cause overwhelming consequences, which can lead to deaths, damage to property, disruption of crucial services, and the displacement of populations. Therefore, it is necessary for municipalities to develop comprehensive disaster risk management plans that include proactive measures to reduce vulnerability and enhance preparedness.

Municipalities play pivotal role in disaster risk reduction and management, but the efficiency of their institutional resilience strategies has been called into question (Mayer, 2019). Institutional resilience refers to an organisation's ability to endure and bounce back from disruptive events while maintaining essential operations (Anderson and Tollenaere, 2020; Juncos and Joseph, 2020). It is of critical importance that KZN municipalities adopt institutional resilience strategies and administrative practices to improve their capacity to

respond to Ro and Garfin (2023) who state that that institutional resilience is the ability of organisation or institution to adapt and respond to unexpected disruptions or changes while protecting important operations and services. Obrenovic et al. (2020) add that operative institutional resilience strategies include risk assessments, contingency planning, staff training, and stakeholder involvement. Elnaschie, El-Tawab and Elsamadisy (2020) stressed that, in the context of disaster risk reduction by a municipality, institutional resilience involves planning and responding to natural disasters to minimise their impact on the municipalities and populations they serve.

Disasters may arise from both natural and human-induced hazards, including floods, droughts, storms, infrastructure failure, and environmental degradation. Natural hazards remain among the most significant drivers of disaster events globally, particularly in regions increasingly affected by climate variability and extreme weather patterns. Scholars note that the frequency and intensity of disasters have increased over recent decades, placing significant pressure on governance systems responsible for disaster preparedness and response (Wisner et al., 2014; Kelman, 2020).

According to the UNDRR (2015), a disaster is defined as "a serious disruption of the functioning of a community or society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to human, material, economic or environmental losses and impacts." Similarly, Section 1 of the Disaster Management Act 57 of 2002 defines a disaster as a progressive or sudden widespread occurrence, natural or human-induced, which causes or threatens to cause death, injury, or damage to property, infrastructure, or the environment, and exceeds the ability of the affected community to cope using its own resources. In this study, the term hazard refers to naturally occurring events such as floods, droughts and fires, while disasters occur only once such hazards are formally declared and exceed coping capacity.

Administrative practices are increasingly being recognised as important in disaster risk mitigation and management (Hadlos, Opdyke and Hadigheh, 2022). For instance, the Sendai Framework for Disaster Risk Reduction 2015-2030 highlights the importance of enhancing the administrative practices of institutions at all levels to reduce disaster risk (United Nations 2015). The United Nations Development Programme (UNDP) highlights the essential role of administrative practices in improving resilience to disasters (UNDP, 2019). Administrative practices promote organisational preparedness and response to disasters by enhancing abilities

for risk assessment, identify vulnerabilities and capacities as well as the planning and implementation of effective prevention, preparedness, response and recovery activities. Azad, Uddin, Zaman and Ashraf (2019) Mongale (2022) demonstrates that the KZN province in South Africa is susceptible to several natural disasters that pose serious threats to the safety and well-being of the population.

The increasing frequency and severity of natural disasters in the KZN underscore the need for an investigation of institutional resilience strategies and administrative practices for municipalities in KZN. A study in this research area is critical for advancing understanding of successful institutional resilience strategies, disaster risk reduction strategies and administrative practices in the face of natural disasters. The research is planned to give practical suggestions to improve the ability of communities to respond to disasters and preserve the health and well-being of the population. This will be achieved by analysing the challenges and achievements of these strategies and practices.

1.3 Problem Statement

Government agencies, at the municipal level, are the primary actors in implementing institutional resilience strategies for disaster management. In a recent study examining disaster risk governance in South African municipalities, Nobambela and Yekani (2025) argue that municipalities must strengthen their capacity to sustain livelihoods and modernise institutional systems in the face of recurring shocks such as flooding and severe storms. In the case study of the King Sabata Dalindyebo Municipality, they emphasised the important role of structured disaster risk management frameworks connected with municipal planning for overcoming reactive governance. Manyaka, Madzivhandila and Molepo (2021) observed that despite the regulation stating that municipalities should handle disasters, most of them fail to do so because they neglect to address it adequately in the IDPs.

Zhou et al. (2023) argue that ambiguity in post-disaster operational environments can trigger cycles of uncertainty that constrain administrative effectiveness. Similarly, Fowler (2021) notes that unclear policy direction in complex emergency contexts limits coherent programme formulation and coordination. This can lead to a breakdown in coordination and communication among parties, exacerbating the situation. To interrupt the cycle of uncertainty and improve administrative effectiveness, scholars have advocated for adaptable institutional strategies that value flexibility, collaborative governance and learning-based resilience (Patel

and Sharma, 2022).

Although numerous studies have been conducted in South Africa on disaster risk management, few studies have focused on institutional resilience strategies and administrative practices to improve disaster risk management. South African municipal governments are constitutionally required to manage disaster risks in terms of the Constitution of the Republic of South Africa, 1996 and the Disaster Management Act 57 of 2002 (as amended). However, empirical data reveal that they fail to do so successfully. A recent assessment of the King Sabata Dalindyebo Local Municipality identified severe limitations in institutional capacity, especially in coordination, resources and stakeholder communication, which restrict local disaster management effectiveness (Nobambela and Yekani, 2025). This might be mostly attributable to the lack of an integrated institutional resilience and administrative practices paradigm that is systematically embedded across governance levels, adequately resourced and consistently monitored to ensure alignment between policy intentions and practical implementation (Nobambela and Yekani, 2025; Ndabezitha, Mubangizi and John, 2024). Therefore, it is imperative to examine the institutional resilience strategies and administrative practices adopted by municipalities in South Africa to mitigate disaster risk.

Despite the existence of comprehensive disaster management legislation in South Africa, municipal disaster risk management systems continue to face recurring challenges related to coordination failures, resource constraints, and limited adaptive capacity. While policy frameworks are well established, less is known about how institutional resilience strategies are operationalised within municipal administrative systems, particularly in disaster-prone provinces such as KwaZulu-Natal. This study addresses that gap by examining how institutional resilience and administrative practices interact in practice, and by developing a strategic framework that can guide municipal decision-makers toward more adaptive, integrated and context-responsive disaster risk governance.

1.4 Research Aim, Objectives and Questions

This section introduces the research aim of this study, along with the research objectives and research questions.

1.4.1 Research Aim

The aim of this study is to investigate the institutional resilience strategies and administrative

practices adopted by selected KwaZulu-Natal municipalities to reduce disaster risk. The study further seeks to develop a context-responsive framework to strengthen the integration of institutional resilience principles within municipal disaster risk governance systems:

- To examine institutional resilience strategies adopted by selected municipalities in KZN to manage disaster risks.
- To determine factors influencing the application of institutional resilience strategies utilised by municipalities in KZN to manage disaster.
- To identify administrative practices performed by selected KZN municipalities for adaption to disaster risks.
- To evaluate the adequacy of administrative practices performed by municipalities to adapt to disaster risks.
- To formulate an integrated and adaptive strategic framework that strengthens institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation.

1.4.2 Research Questions

- What are institutional resilience strategies adopted by selected municipalities in KZN to manage disaster risks?
- What factors influence the application of institutional resilience strategies to manage disaster risk in KZN municipalities?
- What are administrative practices performed by selected KZN municipalities for adaption to disaster risks?
- How adequate are administrative practices performed by municipalities to adapt to disaster risks?
- How can an integrated and adaptive strategic framework be formulated to strengthen institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation?

1.5 Rationale and significance of the study

The importance of this study lies in its contribution to strengthening disaster risk management within South African municipalities in KwaZulu-Natal. This province is highly susceptible to natural hazards such as floods, droughts and wildfires, which may escalate into disasters when their impacts exceed the coping capacity of affected communities as recognised in the Disaster

Management Act 57 of 2002 (as amended). These hazard events have repeatedly exposed gaps in municipal preparedness and response systems. This research therefore evaluates the institutional resilience strategies and administrative practices of municipalities, providing a relevant examination of how local governments can adapt their governance structures to better cope with frequent and severe disruptions.

This study is significant to both policy and practice. At a policy level, it aligns with national frameworks such as the Disaster Management Act 57 of 2002 and international commitments such as the Sendai Framework for Disaster Risk Reduction 2015–2030, which emphasise proactive disaster preparedness, institutional capacity-building and risk reduction. Results from this study will therefore contribute to informing policy transformation and guiding the design of context-sensitive frameworks for municipal disaster management. Practically, the study is expected to offer municipalities evidence-based insights on how to strengthen their institutional resilience, improve coordination mechanisms, enhance stakeholder communication, and integrate disaster risk reduction into Integrated Development Plans (IDPs).

The rationale for conducting this study stems from relentless shortcomings in the implementation of disaster management policies by municipalities. Regardless of legal and constitutional agreements, municipalities treat disaster management as a compliance procedure rather than embedding it into operational and developmental planning. As highlighted in previous studies, challenges such as limited technical capacity, poor consequence management, fragmented mandates and inadequate monitoring frameworks undermine effective disaster response. These challenges necessitate a deeper examination of both institutional resilience strategies and administrative practices that can enable municipalities to adapt proactively rather than reactively to disaster risks. There is a significant research gap in the intersection of institutional resilience and administrative practices within South African municipalities. However, various studies have investigated disaster management widely, few have interrogated the extent to which resilience-building strategies and governance practices are systematically combined, resourced and monitored at the local government level.

It is vital to fill this gap since municipalities are the first to respond to emergencies and their institutional capacity has a major effect on how effectively they can prevent, prepare, respond and recover from disasters. This study aims to enhance academic discourse by expanding understanding of institutional resilience in resource-constrained contexts and formulating an

integrated and adaptive strategic framework that strengthens institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation. The framework established will function as a practical instrument for enhancing municipal preparedness and adaptive capacity. It aims to advance disaster management from mere policy compliance to substantial resilience-building, thus safeguarding communities, infrastructure and livelihoods.

1.6 Research Methodology

This study adopted a qualitative research design grounded in an interpretivist philosophical orientation to explore how institutional resilience strategies and administrative practices shape disaster risk management in KwaZulu-Natal municipalities. The interpretivist approach was selected because the study seeks to understand the meanings, experiences, and governance practices of municipal actors operating within complex disaster risk environments. A qualitative design enabled in-depth exploration of institutional processes, administrative dynamics, and adaptive governance mechanisms that cannot be adequately captured through quantitative measures. The methodological choices were therefore directly aligned with the research objectives, which required contextual, experience-based insights into municipal disaster risk governance.

The basis for data collection and analysis is provided in this study. This will lead the entire research process from the formulation of the question to the final data analysis (Muriithi and Wamiori, 2020). It specifies the actions required to attain the research objectives and resolve the challenges that arise during the inquiry. This study examines the strategies used by KZN municipalities to decrease disaster risk. This structure was chosen based on the purpose of the study objectives and research questions. This strategy provides a comprehensive framework for examining the subject matter (Kalman, 2019).

Therefore, the interpretivist qualitative case study design enabled the study to capture lived administrative practices, coordination routines, and institutional learning processes that cannot be measured quantitatively but require context-rich, actor-centred inquiry. This methodological approach directly enabled the study to answer the research questions concerning how institutional resilience is operationalised within municipal systems.

1.6.1 Research Paradigm

The interpretivist paradigm is appropriate for this study because disaster risk management in municipalities is shaped by human decisions, institutional cultures, and governance practices (Crotty, 1998). Understanding these processes requires engaging directly with the perspectives of municipal officials who interpret and implement disaster management policies. The paradigm supports the research aim by allowing the study to examine how institutional resilience is constructed and enacted in practice rather than measured as a purely technical outcome

1.6.2 Target Population

The target population comprised all permanent officials formally assigned to disaster risk management functions within the Disaster Management Centres of eThekwini Metropolitan Municipality and Msunduzi Local Municipality. The unit of analysis was individual disaster management officials involved in planning, coordination, risk reduction and emergency response functions.

According to official organisational structures and written confirmation obtained from the Human Resources Departments of both municipalities (09 June 2023), the eThekwini Disaster Management Centre consists of fifteen (14) officials, while the Msunduzi Disaster Management Centre consists of ten (11) officials.

Given the relatively small and accessible population (N=25), census sampling was employed, whereby all officials meeting the inclusion criteria were invited to participate in the study. Census sampling was deemed appropriate to ensure comprehensive coverage of institutional perspectives within both municipalities

1.6.3 Sampling and Sampling Method

In qualitative research study, there is no fixed rule for determining the appropriate sample size, but a smaller sample size can be used when the aim is to gain in-depth insights and understanding of a specific phenomenon (Mthuli, Ruffin and Singh 2022). The population size of this study is relatively small, which makes it easier to manage and analyse data. Therefore, census sampling where all twenty-five individuals involved in disaster risk management in the selected municipalities were part of this study.

1.6.4 Data Collection

In-depth interviews were selected as the primary data collection method because the study seeks to capture how municipal actors interpret institutional resilience and administrative practice within their operational contexts. Interviews allow participants to articulate their experiences, decision-making rationales, and governance challenges in their own terms. This aligns with the inductive logic associated with qualitative organisational research, particularly the emphasis on informant-centric data advocated by Gioia, Corley and Hamilton (2013). While the full Gioia methodology was not applied, the study draws on its principle of allowing themes to emerge from participants lived experiences, thereby strengthening analytical rigour and authenticity.

Additional data collected from the participating municipalities and their respective websites were analysed to triangulate the data collected during in-depth interviews. Materials issued between 2019 and 2023 were reviewed to assess and analyse the effectiveness of existing institutional resilience plans, examine administrative practices and improve disaster management strategies to achieve the study objectives. In-depth interviews allow researchers to collect rich and detailed information suitable for addressing study questions and achieving requirements. Thirty to forty-five minutes was allocated for each participant during interviews.

1.6.6 Data Analysis

Thematic coding, which involves categorising findings into topics, was used to analyse data obtained from municipalities. This tool is popular in qualitative research as it detects and organises patterns of meaning in data (Kiger and Varpi. 2020). Thematic coding is a technique that eliminates the potential for researcher bias while also allowing for a more systematic and transparent data analysis. Additionally, cross-case synthesis was used to analyse the data, which includes comparing findings across multiple data sets to detect commonalities and discrepancies (Campbell et al., 2021). The thematic analysis process followed established qualitative rigour principles emphasising transparency, systematic coding, and iterative refinement of categories (Gioia, 2021; Price & Smith, 2021). This approach ensured methodological coherence and enhanced the credibility of the findings.

1.6.7 Bias and Ensuring Rigour and Trustworthiness

Bergen and Labonte (2020) defined bias in research as irregularities between the genuine realities of participants and how they communicate them to researchers. Data triangulation was

used to address biases in this study. This process includes assessing research issues from many viewpoints to authenticate the findings (Amin et al., 2020). The researcher ensured a thorough study and openness to changing credence in response to new evidence by collecting data at multiple periods and from diverse sources. To ensure a rigorous and well-rounded study strategy, preliminary data was shared with relevant academics for critical input, which reduced bias. To achieve rigor, the study followed concepts such as full reporting, building trust with respondents and assessing methods for validity enhancement. Triangulation, member checking, audit trails, reflexivity, peer interview and data saturation were all used to ensure rigor and trustworthiness (Daniel, 2019; Hamilton, 2020; Aguboshim, 2021). Various sources of data and case studies were employed to enhance credibility and expand understanding of the research phenomenon (Rose and Johnson, 2020; Morgan, 2022). Triangulation not only corroborated findings but also improved the study's validity by cross-verifying sources of data and guaranteeing reliable conclusions.

1.6.8 Ethical Considerations

The research adhered to standards of ethics to protect participants and maintain research authenticity. Ethical clearance was obtained from the Research Ethics Committee of the Durban University of Technology (DUT). Participation was optional, and informed consent was collected from all participants, who could withdraw at any moment without consequences. Confidentiality and anonymity were maintained by eliminating identifiable information and keeping data in password-protected file systems. The study examined the principles of kindness and fairness to ensure that participation caused no harm or distress. The findings were disclosed transparently, indicating a dedication to professional and ethical research principles.

1.7 Structure of Dissertation

This research study is structured as follows:

CHAPTER ONE introduced readers to what has been described as the problem statement of the study. The chapter made the reader aware of the aim, objectives, research questions, research background, problem statement, rationale and significance of the study. The reader was guided as to what motivated the problem and what is recommended to solve the problem. This chapter further indicated the research design used and how bias, rigour and trustworthiness were ensured in this study.

CHAPTER TWO represents the first part of the literature review which covers objective two, to examine institutional resilience strategies adopted by selected municipalities in KZN to manage disaster risks and objective three to determine factors influencing the application of institutional resilience strategies utilised by municipalities in KZN to manage disaster. It also delves into theories linked to these objectives.

CHAPTER THREE consists of the second part of the literature review. This part of the literature review focuses on objective three and four which is to identify administrative practices performed by selected KZN municipalities for adaptation to disaster risks and to evaluate the adequacy of administrative practices performed by municipalities to adapt to disaster risks. It also discusses the theories that are linked to these objectives

CHAPTER FOUR discusses in detail the research methodology. The research paradigm, research design, the qualitative research methodology and the use of case study are explained.

CHAPTER FIVE comprises the analysis and results, presenting the qualitative analysis of the data obtained through interview schedules. It describes how data was processed into meaningful results that the reader will be able to interpret and understand.

CHAPTER SIX focuses on the interpretation of the results for this study, relative to the findings of the literature review.

CHAPTER SEVEN is the final chapter of the dissertation and contains the conclusions that were drawn from the findings in Chapters Five and Six. This chapter also addresses objective five of this study and outlines the framework proposed that can be used by municipalities to mitigate disaster risk in KZN municipalities. It also contains the various recommendations that are made for further research.

1.8 Summary of the chapter

This chapter highlighted the aim of the study which is to investigate the institutional resilience strategies and administrative practices used by KZN municipalities to manage disaster risk. This chapter presents the research background which provides insights into the need to enhance municipal government structures to increase institutionalised resilience and adaptive capability in disaster management. Furthermore, this chapter presented the research problem, aim, and objectives of the study. The chapter concludes by summarising the research methodology,

ethical considerations, and dissertation structure, which guides the readers through the subsequent chapters of the study. The subsequent chapter provides a literature study that is relevant to the disaster management of South African municipalities.

CHAPTER TWO
INSTITUTIONAL RESILIENCE STRATEGIES FOR DISASTER RISK MANAGEMENT

2.1. Introduction

Resilience in municipal disaster management has evolved from a narrowly engineered notion of system recovery to a broad systems-based framework that integrates institutional, social, and governance dimensions. Within the South African local government context, the concept now underpins policy, legislation, and research concerned with building adaptive and enduring administrative systems capable of withstanding multiple disruptions. Therefore, this chapter examines institutional resilience, the theoretical foundations that shape it, and the typologies of resilience strategies that inform local government responses to disasters.

The discussion draws on established and emerging theories, the Complex Adaptive Systems (CAS) perspective and the Disaster Risk Management (DRM) model, to explore how resilience can be conceptualised within municipalities as interconnected systems of actors, processes, and feedback loops. Core domains, strategic planning, early warning systems, coordination mechanisms, and capacity building were examined as essential strategies to enhance preparedness and adaptive capacity. The chapter also interrogates systemic enablers and barriers, such as leadership, governance, financial and policy frameworks, and community engagement, all of which influence institutional resilience in local governments. By situating the analysis within the South African legislative and developmental milieu, this chapter offers a conceptual foundation for understanding how municipalities might institutionalise resilience through coherent disaster-risk-management practices.

2.2 Conceptual Review

This section introduces essential concepts integral to this study, specifically institutional resilience and disaster risk management. The conceptual review aims to offer context and stimulate discourse on the theoretical framework underpinning this study.

2.2.1 Institutional Resilience

Institutional resilience has been widely defined as an organisation's capacity to maintain functionality and recover from disruptions. Anderson and Tollenaere (2020), as well as Juncos and Joseph (2020), view it as an organisational ability to continue operations despite shocks. Zhang et al. (2023) expand this view, contending that resilience entails not only recovery but also proactive strengthening of institutional capabilities to anticipate and mitigate future disruptions. Within local governments, this dual focus, absorptive and adaptive, forms the backbone of resilience thinking.

Bartusevičienė, Pazaver and Kitada (2021) stress that enduring and recovering from unforeseen challenges ensures the continuity of essential municipal functions, those related to service provision and disaster response. In a South African context marked by recurring floods, droughts, and infrastructural crises, maintaining such continuity is not simply a managerial imperative, but a statutory and moral obligation for citizens.

Institutional resilience encompasses organisational design, leadership culture, and resource configurations that enable a municipality to sustain its governance processes during crises. Zhang et al. (2023) argue that proactive strategies, such as institutional learning, diversification of response mechanisms, and continuous risk assessment, allow public institutions to cultivate flexibility. This approach echoes the need for local governments in South Africa to construct robust organisational frameworks capable of responding effectively to unanticipated natural and socio-economic disruptions.

Given the vulnerability of the KZN province to multiple hazards, a resilient municipal system must integrate preparedness into its planning cycles. The literature suggests that anticipatory governance, where institutions internalise adaptation as a routine administrative practice rather than an exceptional measure, gains resilience advantages (Ngcamu, 2022). The synthesis of these perspectives underscores the necessity of establishing enduring organisational structures that enhance municipalities' capacity to absorb, adapt, and transform in the face of adversity.

In addition to the above perspectives, resilience literature has been widely advanced by scholars such as Folke (2006), Tierney (2014), and Manyena (2006), who conceptualise resilience as the capacity of institutions and communities not only to recover from shocks but to transform governance systems in response to risk. This broader body of work reinforces the multi-dimensional nature of institutional resilience in public-sector environments.

2.2.2 Disaster Risk Management

It is important to distinguish between Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM). DRR refers primarily to preventive and mitigation-oriented strategies aimed at reducing exposure and vulnerability before disasters occur (UNDRR, 2015). DRM, in contrast, encompasses the broader institutional, administrative, and governance mechanisms through which disaster risks are identified, assessed, managed, and monitored across all phases of the disaster cycle (Republic of South Africa, 2005; UNDRR, 2015). While the two concepts are interrelated, DRM provides the operational governance architecture within which DRR strategies are implemented.

Disaster risk management (DRM) extends beyond emergency response to embody a structured and deliberate process for identifying, analysing, and reducing risks. Amaratunga et al. (2023) describe DRM as a comprehensive concept that enhances disaster management by embedding risk-reduction principles into institutional systems. According to Al-Wathinani et al. (2023), DRM emphasises the proactive identification of hazards, mitigation of vulnerabilities, and development of efficient strategies for response and recovery.

Central to DRM is a set of interrelated pillars which includes risk identification, mitigation, preparedness, response, and recovery (Amaratunga et al., 2023). This constitutes a cyclical continuum of governance. Amaratunga et al. (2023) argue that this systematic approach fosters a culture of anticipation rather than reaction. Gray et al. (2021) support this view, emphasising that early detection of hazards is essential for effective mitigation. Early warning systems, risk mapping, and community awareness campaigns thus form integral components of DRM in both developed and developing contexts.

Mitigation strategies play a crucial role on this continuum. Amaratunga et al. (2023) advocate for integrated policy development and implementation aimed to reduce hazard exposure, while Gray et al. (2021) highlight that mitigation requires combining structural measures such as infrastructure standards and land-use planning with non-structural approaches like education and institutional coordination.

Recovery, the final phase in the DRM cycle, was described by Amaratunga et al. (2023) as the deliberate process of restoring normalcy through well-coordinated planning and resource mobilisation. Albris, Lauta and Raju (2020) emphasise that effective recovery depends on the strategic management of the post-disaster environment, integrating lessons learned to enhance

future preparedness. The literature collectively underscores that DRM represents a holistic framework anchored in coordination, foresight, and continuous learning, attributes that are central to municipal resilience.

2.2.3 The relationship between institutional resilience and disaster risk management

The cooperative connection between institutional resilience and DRM illustrates an ongoing partnership that significantly enhances the potential of organisations and municipalities to deal with the challenges posed by disasters**.** As Maurisi et al. (2020) aptly argue, the proactive nature of disaster risk management, characterised by risk identification and management, lays a sturdy foundation for effective disaster preparedness, as echoed by Dewa et al. (2021). Moreover, institutional resilience emerges as a vital counterpart, ensuring that businesses and localities possess the resilience to endure, adapt to and swiftly recover from disruptive events, as elucidated by Islam and Chadee (2023).The DRM's proactive stance is exemplified by its emphasis on early hazard detection and the implementation of mitigation measures (Zuccaro, Leone and Martucci 2020). Evaluating potential risks and vulnerabilities, disaster risk management allows the development of proactive measures that mitigate the impacts of disasters before they occur (Fekete et al., 2020). This constructive collaboration aligns seamlessly with the role of institutional resilience, which establishes the organisational framework necessary for the effective execution of these strategies (Sun et al., 2023).

Institutional resilience serves as the cornerstone that enables companies and municipalities to absorb shocks, adapt to changing conditions and recover swiftly. It encompasses not only the physical and organisational aspects but also cultural and operational dimensions. A resilient organisation is characterised by its ability to assimilate lessons from past experiences, anticipate future challenges and implement flexible strategies, fostering an environment conducive to sustained operational efficiency Kantabutra and Ketprapakorn (2021). The interconnected relation between institutional resilience and disaster risk management is necessary in disaster management initiatives whereas disaster risk management provides a foundation for proactively reducing risks. Institutional resilience guarantees that these actions are not only accurately implemented but also supported over time. This interconnectedness among various components enhances the overall efficacy of disaster management initiatives, fostering a comprehensive and integrated approach.

Considering the unique challenges faced by municipalities in KZN, Rathnayaka et al. (2022) advocate for a strategic approach that emphasises not only the proactive identification and

mitigation of hazards but also the cultivation and fortification of institutional resilience. As highlighted by Liu and Song (2020), it is imperative for municipalities to allocate resources towards the development of resilient infrastructure capable of withstanding disturbances, adapting to changing circumstances and swiftly recovering from adversities. This effort may include incorporating institutional resilience measures into all stages of disaster risk management to ensure sure that a complete and flexible approach exists into effect to address the challenges present in the area.

2.3 Municipalities' Approach to Disaster Management

Recent disasters, such as the COVID-19 pandemic and major flooding events, have highlighted ongoing difficulties in disaster management, revealing significant concerns regarding healthcare capacity, intergovernmental coordination and communication systems (Borowski et al., 2021). The pandemic exposed vulnerabilities in health system preparedness and crisis coordination, while flood disasters have similarly revealed weaknesses in municipal emergency response capacity, infrastructure resilience and community-level preparedness. These challenges, compounded by limited financial and administrative resources in smaller municipalities, emphasise the urgent need for sustained institutional support to strengthen preparedness, coordination and response capabilities (Borowski et al., 2021).

Furthermore, managing equitable disaster responses and addressing diverse hazards within society remains a complex and evolving challenge that requires continuous adaptation of disaster risk management strategies (Wu et al., 2023). Integrating lessons learned from both pandemic management and flood response into future disaster preparedness strategies is therefore essential for strengthening institutional resilience and improving the ability of governance systems to withstand and recover from disruptive events (Smith et al., 2020).

Alnusairat et al. (2021) assert that floods, highlight the interdependence of both social and environmental vulnerabilities. Wardekker (2021) highlights how important disaster management plans are for solving the complex interactions between climate change, urbanisation, and community resilience. Fostering effective communication and coordination between local and international entities is critical in mitigating the impact of floods, in areas prone to such disasters (Fathollahzadeh et al., 2024).

Disparities in social, economic and health conditions can exacerbate the impacts of disasters

on marginalised groups (Smith, 2022). To address these inequalities, it is imperative to adopt inclusive and community-led strategies that prioritise the involvement of the most vulnerable groups in disaster preparedness and response initiatives (Patrick-Agulonye, 2021).

While this study focuses on municipalities in KwaZulu-Natal, institutional resilience challenges are not unique to this province. Studies conducted in provinces such as the Western Cape and Gauteng highlight similar structural constraints related to intergovernmental coordination, funding mechanisms, and adaptive governance capacity. These comparative insights situate the present study within a broader national discourse on strengthening municipal disaster risk management systems.

2.3.1 Components of Disaster Management in Municipalities

The comprehensive aspects of disaster management, which encompass preparedness and continuous adaptations, offer a robust framework for municipalities in South Africa. Given the diverse challenges posed by their geographic and socio-economic contexts, it is crucial for these municipalities to adopt strategies that enhance institutional resilience (Irani and Rahnamayieekavat 2021). The components of disaster management in municipalities are best understood within the framework of the Disaster Management Cycle. This cycle comprises four interrelated phases: mitigation, preparedness, response and recovery. These phases are not linear but continuous and mutually reinforcing, forming an integrated governance approach to disaster risk management.

- **Mitigation**

Mitigation, as defined by Sapountsaki (2022) and endorsed by the United Nations Office for Disaster Risk Reduction (UNDRR, 2015) signifies a proactive strategy in disaster management. This involves a range of methods and measures targeted at reducing the vulnerable status of communities, o various hazards and to mitigate the adverse effects of disasters. Mitigation ultimately comprises identifying and addressing the root causes that influence the frequency and intensity of disasters. This may involve the implementation of structural measures, such as construction rules and land-use planning, to mitigate exposure to risks such as floods, earthquakes and storms.

Moreover, informal interventions, including early warning systems, community education and

capacity-building efforts, are essential for strengthening resilience as well as preparedness across all societal levels. Investing in mitigation strategies has significant benefits for human security and economic stability. By reducing the risk of disasters, governments and communities can avoid the loss of life, minimise damage to critical infrastructure and safeguard natural resources. The long-term cost-effectiveness of mitigation measures surpasses the costs associated with emergency response and post-disaster recovery efforts. Mitigation efforts enhance sustainable development by promoting resilience and adaptive capacity in response to changing environmental and social challenges. Incorporating mitigation into comprehensive development agendas guarantees that both infrastructure and urbanization investments adhere to risk reduction and resilience-building principles.

- **Preparedness**

In disaster management, preparedness involves proactive measures including risk assessment, development of emergency response plans, creation of effective communication networks, accumulation of essential supplies and in-depth training of personnel. Federal Emergency Management Agency (FEMA) (2018) highlighted that these initiatives seek to guarantee a prompt and effective response during disasters. The overarching objective of preparedness endeavours is to bolster the capacity of systems and individuals to mitigate the loss of life, property damage and disruption of vital services triggered by disasters, as underscored by the World Health Organisation (WHO, 2019).

Preparedness emerges as a pivotal element in disaster risk reduction, facilitating the cultivation of resilience and adaptability among communities amidst evolving hazards and environmental conditions (Lunga et al., 2021). Through strategic investments in preparedness measures, governments and organisations can effectively diminish vulnerabilities, bolster response capabilities and mitigate the social, economic and environmental ramifications of disasters (Alem et al., 2021).

- **Response**

In the domain of disaster management, Sawalha (2020) elucidates that response entails the immediate actions undertaken by individuals, organisations and governmental bodies to address the repercussions of a disaster or emergency scenario. According to FEMA (2018), response actions usually involve search and rescue operations, healthcare and transportation for the injured, firefighting, distribution of rescue facilities and supplies as well as coordination

of key services. The main objective during the reaction phase is to stabilise the situation, mitigate suffering and avert more harm to impacted communities, as emphasised by the World Health Organisation (WHO, 2019).

Fleming et al.(2020) note that response activities are regulated by established emergency procedures and plans that specify the roles and duties of various stakeholders, including emergency responders, medical personnel, government institutions and community groups. Effective coordination and communication among these entities are paramount for ensuring a timely and synchronised response to disaster events, as emphasised by Nespeca et al. (2020). This involves making challenging decisions under pressure, prioritising actions based on the severity of the situation and dynamically adapting strategies in real-time to effectively address evolving circumstances.

- **Recovery**

Zhou et al. (2022) observe that recovery denotes the intricate process of restoring, rebuilding and revitalising communities, infrastructure and economies in the aftermath of a hazardous event. According to FEMA (2018), recovery initiatives usually involve the replacement or repair of damaged infrastructure, aiding for affected individuals and businesses, rebuilding of essential services including power and water as well as support for the return to normalcy. The main goal of the recovery phase is to build resilience, mitigate vulnerabilities, and enhance the general well-being of affected populations, as highlighted by the World Health Organisation (WHO, 2019).

Recovery is a complex process which requires collaboration and coordination among multiple stakeholders. This includes government departments, nonprofit organisations, private sector partners and community members (Dewi, 2023). This includes addressing physical and social vulnerabilities, fostering community cohesion, and promoting equitable growth principles (Dewi, 2023). Senyonga (2021) indicates that the recovery phase is marked by its length and the requirement for constant dedication and resources to support long-term recovery initiatives. Challenges such as lack of funding, bureaucratic obstacles and competing priorities must be addressed for ensuring a comprehensive and inclusive recovery.

2.4 Theoretical Perspectives on Disaster Risk Management and Institutional Resilience

Comprehending municipal resilience measures requires a theoretical framework that incorporates the intricacies of municipal systems and methodical approaches to crisis management. This study utilises CAS theory together with DRM model to provide a dual framework for analysing how South African municipalities develop and maintain institutional resilience amid changing disaster threats. The next subsections examine each theory and demonstrate its importance in guiding resilience planning, coordination and adaptive capability in municipal crisis management.

2.4.1 Complex Adaptive Systems (CAS)

The CAS perspective provides a critical theoretical framework for understanding how local governments function as dynamic, interdependent entities capable of continuous adaptation in response to evolving internal and external challenges. From this perspective, resilience is not merely an outcome of static stability but an emergent property that develops through interaction, feedback, and learning among multiple agents within a system. Biggs et al. (2021) and Cilliers (2022) describe CAS as networks of diverse actors, such as departments, agencies, communities and external partners, whose behaviours and interactions shape collective results. This theoretical view posits that local governments are open systems in which resilience is generated through collaboration and mutual adaptation rather than through top-down regulation.

In the context of disaster risk management, the CAS framework is relevant, because disasters are inherently complex phenomena that trigger multidimensional responses across various governance scales. Musango and Brent (2023) assert that during crises, municipalities function as open systems that rely on nonlinear interactions between stakeholders, departments, and communities to develop appropriate solutions. These interactions are unpredictable, yet they generate self-organising mechanisms that can enhance institutional responsiveness. For example, rather than relying solely on pre-established procedures, CAS allows local governments to modify and innovate in real-time through adaptive learning processes.

Resilience within the CAS framework emerges from the capacity to learn, reorganise, and adjust behaviours in response to disruptions. Walker et al. (2022) explain that resilience is not created through rigid control systems but through decentralised decision-making and feedback

loops that enable continuous improvement. These feedback processes, including after-action reviews, collaborative reflection sessions, and cross-sectoral dialogues, reinforce organisational learning and lead to adaptive governance. According to Ebrahim and Van Niekerk (2023), such feedback loops allow municipalities to refine their disaster preparedness strategies, institutional coordination mechanisms, and recovery plans based on lessons derived from experience.

Self-organisation is a defining characteristic of CAS. This refers to the ability of system components to restructure and reallocate resources autonomously without hierarchical instruction when facing emerging threats (Ahmad, Barynannis and Hill, 2024). Harrison and Todes (2021) demonstrate that the ability of municipal departments to reorganise their internal structures following crises represents this self-organising capacity. Within the South African local-government context, where service delivery responsibilities intersect with political, environmental, and socio-economic pressures, self-organisation enables municipalities to respond flexibly to unanticipated events while maintaining operational continuity.

Cilliers (2022) and Dube and Mtapuri (2024) noted that the CAS framework encourages local governments to move away from command-and-control models toward adaptive governance systems that emphasise flexibility, interdependence, and contextual responsiveness. This shift is significant in environments characterised by inequality, resource constraints, and climatic volatility (Sithole and Eita, 2025). The CAS approach also emphasises the importance of diversity within systems. The diversity of perspectives, capacities, and institutions ensures that no single point of failure undermines a system's overall ability to function during shocks (Scharte, 2025.

Additionally, the CAS framework highlights the importance of learning and evolution as ongoing processes. Musango and Brent (2023) suggest that municipalities that foster continuous learning cultures become more capable of identifying weaknesses and strengthening their disaster governance frameworks. Iterative policy experimentation combined with open communication across sectors contributes to developing an institutional memory that supports future preparedness (Parviainen et. al., 2025). Consequently, CAS does not prescribe a single formula for resilience but instead presents a way of thinking that recognises uncertainty and values adaptive capacity as an evolving competency within public administration (Scharte, 2025).

By viewing municipalities through the lens of the CAS, resilience becomes an emergent, multi-

scalar process grounded in the interaction between institutional structures, human agency, and environmental uncertainty. This theoretical stance provides a conceptual foundation for local governments in South Africa to cultivate resilience through adaptive learning, participatory governance, and collaborative decision-making. In essence, the CAS framework redefines municipal resilience as the ability to evolve through disruption rather than merely withstanding it, making it indispensable for understanding adaptive disaster risk governance in complex local systems.

2.4.2 Disaster Risk Management (DRM) Model

The Disaster Risk Management (DRM) model provides a complementary theoretical framework to the CAS perspective by offering a structured and sequential approach to the identification, assessment, and reduction of disaster risks. While CAS focuses on emergent learning and adaptive interactions, DRM theory provides the procedural foundation necessary for coordinated institutional action. UNDRR (2022) and Van Niekerk (2021) explained that the DRM model operates as a cyclical and continuous process encompassing six main stages: risk identification, risk assessment, mitigation, preparedness, response, and recovery. These phases collectively ensure that institutions adopt an integrated and proactive approach to disaster management that extends beyond the reactionary measures (Gray et al., 2021).

Within the South African local-government environment, the Disaster Management Act 57 of 2002 institutionalises the DRM model as a policy framework for municipalities to systematically manage disaster risks. This legislation requires local authorities to identify potential hazards, establish risk profiles, and design response plans aligned with national and provincial disaster-management frameworks. Malan, Fourie and van der Waldt (2025) argue that such legislative guidance provides structure, accountability and coordination across different spheres of government, which are essential for effective governance in complex administrative systems.

The DRM model emphasises the importance of multi-sectoral coordination and the inclusion of diverse stakeholders in disaster governance. It recognises that resilience cannot be achieved solely through technical solutions but requires the integration of social, institutional and community dimensions (Muhame et al., 2024). Municipalities must collaborate with civil society, private enterprises and academic institutions to create comprehensive disaster-preparedness plans that reflect local realities. This participatory approach enhances the legitimacy and sustainability of disaster-risk-reduction initiatives, in communities facing socio-

economic inequality and environmental degradation.

Despite its procedural strengths, the DRM model has limitations when applied to highly complex and evolving environments. Dube and Mtapuri (2024) caution that its structured linearity may not fully accommodate the dynamic and non-linear nature of modern disasters, which overlap and evolve across multiple systems. Integrating adaptive theoretical perspectives such as the Complex Adaptive Systems theory (CAS) helps to address this gap. Thus, the combination of the DRM model and CAS creates a dual-layered theoretical framework that balances order and adaptability, ensuring institutional resilience remains systematic yet flexible.

Building on this synthesis, Ebrahim and Van Niekerk (2023) propose that municipalities can transform static disaster plans into living systems that evolve through continuous learning. The DRM framework provides the procedural backbone for risk identification, coordination and resource allocation, whereas CAS offers mechanisms for adaptability and innovation. The World Bank (2023) supports this view, noting that successful resilience strategies combine standardised governance frameworks with localised adaptability. For South African municipalities, where climate-induced flooding, droughts and infrastructure vulnerabilities are frequent, the integration of the DRM model and CAS enables dynamic decision-making that is both evidence-based and contextually grounded.

The convergence of the DRM model and CAS underscores that institutional resilience in disaster-risk management requires both structural discipline and adaptive elasticity. Lefutso (2025) affirms that risk-governance systems perform best when they balance procedural rigour with the flexibility to adjust to emerging conditions. Within the local government context, this equilibrium is achieved by integrating formal disaster policies with informal learning networks that reinforce responsiveness

2.5 Institutional Resilience Strategies

Institutional resilience strategies represent the mechanisms through which local governments operationalise the theoretical principles of adaptation and risk management. These strategies are derived from the interplay between CAS and DRM frameworks, merging structured planning with adaptive flexibility. Biggs et al. (2021) and Dube and Mtapuri (2024) describe these strategies as both proactive and adaptive methodologies that enable local governments to manage all phases of disasters. Within South African municipalities, institutional resilience can

be categorised into four interrelated strategic domains: strategic planning, early warning systems, coordination mechanisms, and capacity-building (Malan, Fourie, and van der Waldt, 2025; Agbehadji et al., 2023). These domains collectively function to strengthen preparedness, improve institutional learning, and ensure adaptive governance.

2.5.1 Strategic Planning

Strategic planning serves as the cornerstone of institutional resilience, linking long-term development priorities with risk reduction objectives. Letebele (2024) and Harrison and Todes (2021) emphasise that integrating disaster risk considerations into urban and developmental planning enhances the foresight and coherence of governance. By embedding hazard assessments and climate risk projections into Integrated Development Plans (IDPs), municipalities ensure that disaster preparedness informs all major infrastructural and budgetary decisions.

Strategic planning is also a mechanism for aligning resilient thinking across departments. Cilliers (2022) noted that through strategic planning, municipalities combine environmental management, infrastructure investment, and financial planning under a unified resilience framework. This integration prevents the compartmentalisation of risk management functions and allows cross-sectoral collaboration. Simpson et al. (2023) argue that scenario-based planning, where municipalities simulate multiple hazard scenarios, enables decision-makers to understand system interdependencies and develop flexible resource-allocation models.

Harrison and Todes (2024) assert that strategic planning operationalises resilience by embedding adaptive management principles within municipal processes. This means that resilience is not treated as a discrete activity but becomes part of everyday governance. In practice, strategic planning provides a foundation for institutional foresight, allowing local governments to anticipate vulnerabilities, prioritise mitigation investments, and strengthen long-term sustainability.

The adoption of strategic planning frameworks that integrate resilience principles helps ensure that municipalities do not respond to disasters in isolation, but within a continuum of policy and development processes. Harrison and Todes (2021) highlight that this approach aligns with developmental local government mandates in South Africa, which emphasise sustainable and inclusive planning. Strategic planning, therefore, transforms resilience from a reactive stance into a forward-looking strategy that fosters learning, coordination, and institutional maturity.

2.5.2 Early Warning Systems (EWS)

Early Warning Systems (EWS) represent a critical element of institutional resilience and disaster risk management. They allow local governments to anticipate and respond to potential hazards before escalating into crises. UNDRR (2022) and Pescaroli, Dryhurst and Karagiannis (2025) regard EWS as one of the most cost-effective and life-saving tools within disaster management frameworks. The above-mentioned authors described these systems as multi-component processes that integrate risk knowledge, monitoring, communication, and response capabilities. Within municipalities, the purpose of EWS is not limited to technological surveillance but extends to building institutional and community capacity to interpret and act upon warnings effectively.

The EWS operates as an adaptive process within a broader CAS framework. Their effectiveness relies on feedback loops among technological systems, institutional actors, and communities. This interplay ensures that warning mechanisms evolve based on experiences and contextual realities. Musango and Brent (2023) highlighted that adaptive learning enhances the precision of early warnings and timeliness of responses. For local governments in South Africa, where communities face recurrent hazards, such as floods, droughts, and fires, establishing a reliable flow of information between authorities and residents is critical to resilience.

The success of an EWS depends heavily on institutional coordination and inclusivity. Sithole and Ndlovu (2025) emphasise that combining advanced technologies, such as sensors, data analytics, and meteorological tools, with social mechanisms, such as community awareness campaigns and trained volunteers, ensures effective implementation. The integration of technology and social capital enables municipalities to translate technical data into actionable local knowledge. (UNESCO 2024) further note that the inclusivity of EWS enhances their legitimacy when warnings are accessible in multiple languages and formats appropriate for different socio-economic groups.

Despite their advantages, sustainability challenges persist. The World Bank (2023) observes that maintaining EWS requires consistent funding, inter-agency collaboration, and technical support. Financially constrained municipalities struggle to maintain system functionality or data-sharing arrangements with national meteorological agencies. In this context, partnerships with private sector actors, research institutions, and community-based organisations can provide supplementary resources and expertise.

Within the CAS and DRM integration frameworks, EWS represent both preventive and adaptive functions. They demonstrated how structured risk management processes can evolve through feedback, experimentation, and participatory engagement. For South African municipalities, EWS embody a vital governance innovation that transforms disaster response from reactive intervention to anticipatory action, strengthening public trust, and enhancing institutional credibility.

2.5.3 Coordination Mechanisms

Coordination mechanisms are essential for building coherent and efficient disaster-management systems. They provide organisational glue that connects multiple actors across institutional, sectoral, and territorial boundaries. Govender and Botha Lefutso (2025) and DCoGTA (2024) stress that effective coordination reduces the duplication of efforts, accelerates decision-making, and optimises the use of limited resources. Coordination, therefore, is both a structural and behavioural feature of institutional resilience, requiring formalised networks, shared protocols, and collaborative culture. The literature shows that coordination is not merely about hierarchy but also about synergy. Musango and Brent (2023) asserted that in CAS, effective coordination emerges from the dynamic interactions between diverse agents rather than the central command. Local governments, as decentralised administrative entities, rely on the interplay of departments, provincial agencies, non-governmental organisations, and community groups. Coordination in this context involves both vertical alignment (between local, provincial, and national levels) and horizontal collaboration (across sectors such as health, infrastructure, and emergency services).

Ebrahim and Van Niekerk (2023) argue that shared learning through joint simulation exercises, interdepartmental meetings, and integrated disaster plans strengthens institutional coherence. These activities foster a collective understanding of roles and responsibilities, and reduce fragmentation during crises. Coordination also enables collective sense-making, a process through which actors align their perceptions of unfolding events and adapt their responses accordingly.

In the South African local-government setting, where capacity and resource disparities exist among municipalities, coordination plays a crucial role in bridging the institutional gaps (Nciweni, 2024). By pooling expertise and resources, municipalities can leverage provincial and national support, while maintaining local accountability. Vigorous coordination mechanisms also facilitate the mobilisation of humanitarian assistance, post-disaster

reconstruction, and community-based initiatives (Negi, 2022). Therefore, coordination thus exemplifies the CAS principle of emergence, where innovative solutions arise through collaboration among system components. Over time, this collective interaction fosters institutional maturity and trust, thus enhancing resilience as a long-term governance capability.

2.5.4 Capacity Building

Capacity building forms the foundation of sustainable institutional resilience by enhancing the human, technical, and organisational competencies required to effectively manage disasters. Ndabezitha, Makoka and Ayo-Yusuf (2024) and Cuadra (2025), define capacity building as a continuous process of improving knowledge, skills, systems, and organisational structures to increase institutional effectiveness. In the municipal context, this involves training personnel, strengthening management systems, and promoting organisational learning to ensure preparedness, coordination, and recovery. Capacity building extends beyond technical proficiency. It also encompasses the cultivation of a culture of adaptability and continuous improvement. Dube and Mtapuri (2024) argue that institutional learning and staff development promote adaptive governance by enabling employees to make informed, flexible decisions during crises. This aligns with Ebrahim and Van Niekerk (2023), who noted that resilience requires institutions not only to train staff but also to build institutional memory by documenting lessons from past disasters and integrating them into future planning.

In local governments, capacity-building initiatives include simulation exercises, short courses on risk assessment, and workshops on emergency response. These programs foster cross-sectoral collaboration and promote awareness of how departments contribute to resilience. According to DCoGTA (2024) such initiatives encourage leadership development, improve coordination, and empower staff to operate effectively in uncertain environments. Ndabezitha, Makoka and Ayo-Yusuf (2024 emphasise that successful capacity building requires alignment between human resource strategies and broader institutional goals. Without such an alignment, training remains ad hoc and fails to translate into long-term improvement. Capacity building also depends on adequate financing and partnerships with higher education institutions, non-governmental organisations, and national agencies that provide technical expertise.

Ebrahim and Van Niekerk (2023) highlight that capacity-building efforts improve not only technical skills, but also decision-making quality, leadership accountability, and community engagement. Institutional resilience emerges from the combination of individual and collective capabilities. Continuous capacity development enhances organisational learning loops, reduces

dependency on external support, and builds confidence in local governance structures.

2.6 Systematic Enablers and Barriers to Implementing Institutional Resilience

The successful implementation of institutional resilience strategies depends on the complex interplay of facilitators and barriers operating at systemic, organisational and societal levels. The literature identifies leadership, governance, human resources, financial management, policy frameworks and community engagement as central factors influencing resilience (The Ethics Institute, 2024; Lefutso, 2025). These factors shape the capacity of local governments to implement effective disaster management processes and strengthen their ability to prepare for, respond to and recover from disasters within the constraints of South Africa's decentralised governance system.

2.6.1 Leadership and Governance Structures

Leadership and governance are universally recognised as primary enablers of resilience. They shape institutional culture, provide strategic direction, and ensure coordination across departments. UNDRR (2023) and The Ethics Institute (2024)observe that municipalities with visionary, accountable, and participatory leadership demonstrate stronger integration of disaster-risk reduction into development planning. Effective leaders foster collaboration, strategically allocate resources, and promote transparency and accountability.

By contrast, weak leadership results in fragmented implementation, reactive crisis management, and inadequate oversight. Mudefi (2023) warns that poor leadership contributes to a lack of coordination between municipal departments and external stakeholders. Resilience initiatives become inconsistent and short-lived when governance lacks commitment and follow-up (Birchall, Bonnett and Kehler, 2023). Leadership thus functions as both a catalyst and a constraint. When inclusive and strategic, it mobilises diverse actors toward a common vision of resilience; when passive or politically divided, it reinforces institutional vulnerability. Therefore, building a culture of accountable governance is a prerequisite to achieving sustainable municipal resilience.

2.6.2 Institutional Capacity and Human Resources

Institutional capacity and human resources underpin the operationalisation of resilience strategies (Duchek, 2020). Municipalities with skilled personnel, technological proficiency, and structured organisational systems are more capable of conducting risk assessments,

maintaining early warning systems, and coordinating cross-sectoral interventions. Ndabezitha, Makoka and Ayo-Yusuf (2024) and Van Niekerk and Muzenda (2023) emphasise that insufficient human capital leads to delays, inefficiencies, and poor response coordination.

In South Africa, municipalities face staff shortages and inadequate technical training, which undermines their ability to effectively manage disaster risks (Nobambela and Yekani, 2025).Faulkner Jr (2025)) argue that continuous training, information sharing, and professional development are essential for building institutional memory and sustaining adaptive learning. Institutional capacity is thus not static but evolves through investment in people and processes. Therefore, developing internal expertise ensures that resilience measures are context specific, evidence based, and sustainable. Institutional capacity serves as both a driver and outcome of resilience implementation, reinforcing feedback loops essential for adaptive governance.

2.6.3 Financial Resources and Budgeting

Financial resources form the backbone of resilience initiatives. The UNDRR (2023) confirm that municipalities with dedicated disaster management budgets demonstrate better preparedness, quicker response times, and stronger recovery capacity. Financial autonomy allows local governments to invest in hazard mapping, infrastructure maintenance, and community engagement programmes (Ojiako and Raphael, 2025). However, limited budgets remain one of the most significant barriers to resilience implementation. Mahlangu and Sibanda (2022) observe that smaller municipalities rely heavily on provincial transfers, which constrains flexibility and delays project execution. The OECD (2023) adds that competing service-delivery priorities, such as housing and sanitation, divert funds away from disaster management (Coetzee et al., 2023). Innovative financial instruments, such as risk pooling, insurance mechanisms, and public–private partnerships, can mitigate resource constraints (Wambwa, Mundike and Chirambo, 2024). Improving financial governance and transparency ensures that the allocated funds are effectively utilised. Ultimately, financial resilience translates strategic intentions into tangible outcomes and determines whether municipalities can sustain long-term risk-reduction efforts.

2.6.4 Policy and Regulatory Frameworks

Strong policy and regulatory frameworks provide institutional scaffolding to implement resilience strategies. The Disaster Management Act 57 of 2002 (as amended by the Disaster Management Amendment Act 16 of 2015) and the Municipal Systems Act 32 of 2000 outline clear mandates for coordination, accountability, and planning within South African

municipalities. Van Niekerk (2023) and the National Disaster Management Centre (NDMC, 2024) note that these legal instruments establish the institutional responsibilities necessary for effective disaster risk governance. However, inconsistencies in policy enforcement and overlapping mandates among government tiers impede their implementation. Mahlangu and Sibanda(2022) , Lefutso and Sibanda (2024) argued that many municipalities develop disaster-management policies that remain unexecuted due to administrative bottlenecks, limited capacity, and inadequate monitoring mechanisms. World Bank (2023) further highlight that periodic policy review and intergovernmental coordination are crucial for ensuring coherence and adaptability. Aligning policy with practice ensures that resilience strategies are embedded within broader development objectives, rather than being treated as isolated initiatives. Regulatory coherence enhances institutional accountability, supports compliance, and fosters a governance environment conducive to adaptive learning.

2.6.5 Community Engagement and Social Networks

Community engagement and social capital are recognised as critical enablers of resilience. Putnam (2021) and Ndabezitha et al. (2024) noted that strong social networks foster trust, cooperation, and information exchange, which enhances local preparedness and recovery. Community-based disaster committees and volunteer networks can improve the distribution of early warnings, evacuation coordination, and post-disaster recovery (Ganoe, Roslida and Sihotang, 2023). When communities are excluded from decision-making, resilience initiatives lose legitimacy and fail to address local vulnerabilities. UNDRR (2024) emphasise that participatory planning and inclusive governance embed resilience within local culture. Empowered communities become active co-producers of safety rather than passive recipients of aid. Institutionalising community participation in municipal planning processes ensures the continuity of engagement beyond individual projects. This approach also enhances social cohesion by reinforcing resilience as both a collective value and developmental goal (Ganoe et al., 2023).

2.7 Gaps in literature

Although an expanding body of research has examined institutional resilience and disaster-risk management globally, critical gaps persist in the contextual, theoretical, and empirical understanding of how these concepts manifest in local government systems, in South Africa (Coetzee et al., 2023; Wambwa et al., 2024;Van Niekerk and Muzenda, 2023). The literature provides rich conceptual frameworks (Fekete et al., 2020; Berke et al., 2018) but remains

limited in addressing how institutional resilience strategies are operationalised and sustained within the complex administrative realities of municipalities.

First, there is a paucity of empirical studies evaluating the long-term outcomes of resilience-building initiatives at the municipal level. Much of the existing literature focuses on immediate disaster-response mechanisms or short-term recovery processes, leaving systemic and institutional dimensions underexplored. As Berke et al. (2018) and Fekete et al. (2020) observed, studies describe resilience frameworks but rarely measure their effectiveness or sustainability over time. In the South African context, where local governments face chronic fiscal, infrastructural, and human capital constraints, the absence of longitudinal and comparative analyses limits the development of evidence-based models for institutional resilience (Cloete, 2023; Mnguni, 2025).

Second, there is notable theoretical fragmentation in how resilience and disaster risk management are conceptualised within public sector institutions (Islam and Chadee, 2023). While frameworks such as CAS and the DRM model are increasingly referenced, few studies integrate these perspectives to holistically explain institutional dynamics. Research tends to isolate the technical dimensions of risk management from the organisational and behavioural aspects of resilience, resulting in partial understanding (Rathnayaka et al., 2022; Borowski et al., 2021). Theoretical integration that captures both structured processes (from DRM) and adaptive learning (from CAS) is essential to advancing scholarly discourse on how local governments build and sustain resilience in dynamic, resource-constrained environments.

Third, existing research seldom interrogates institutional interplay and power dynamics among multiple actors in disaster governance. Studies typically describe intergovernmental coordination or community participation in isolation, overlooking how relationships between municipal departments, provincial structures, non-governmental organisations, and communities shape resilience outcomes (Van der Waldt et al., 2023; Ganoe et al., 2023). The literature lacks nuanced analysis of how institutional culture, leadership style, bureaucratic norms, and accountability mechanisms influence the implementation of resilience strategies. This gap is acute in decentralised systems, such as South Africa, where overlapping mandates and uneven capacities produce differentiated outcomes across municipalities (Ndabezitha et al., 2024; Van Niekerk, 2023).

Fourth, the literature has demonstrated a persistent urban bias. Most resilience and disaster

management studies have concentrated on metropolitan areas, leaving smaller and rural municipalities underrepresented. These localities face distinct socio-economic vulnerabilities, limited resources, and weaker institutional infrastructure, yet their adaptive practices remain poorly documented. As Fekete et al. (2020) noted, context-sensitive research that reflects the lived realities of rural and secondary municipalities is crucial for formulating inclusive and equitable resilience frameworks.

Fifth, the integration of digital technology and innovation into institutional resilience remains conceptually acknowledged but is empirically shallow. While UNDRR (2023) highlights the transformative potential of information and communication technologies (ICT), remote sensing, and big data for early warning systems and decision-support mechanisms, few studies have assessed their actual uptake and institutionalisation within municipal structures. In South Africa, digital innovations are introduced through donor-funded pilot projects without long-term policy anchoring, which results in fragmented and unsustainable outcomes. There is a need for research that critically examines how technology adoption intersects governance structures, capacity development, and financial sustainability. Finally, there is limited conceptual clarity on how institutional resilience contributes to developmental outcomes such as social equity, environmental sustainability, and economic stability. Much of the existing discourse focuses on reactive adaptation to disasters rather than proactive institutional transformation. These narrow framing obscures resilience's potential as a developmental paradigm that aligns with the principles of the National Development Plan (NDP) and Sustainable Development Goals (SDGs). Bridging this conceptual gap requires repositioning institutional resilience not merely as an emergency management function, but as a foundational component of good governance and sustainable development in the public sector.

Collectively, these gaps underscore the need for a study that systematically integrates institutional resilience strategies and administrative practices in the municipal context of KZN. By combining the theoretical lenses of CAS and DRM, this study seeks to advance a multidimensional understanding of resilience as both the structural and adaptive capabilities of local governments. This study contributes to scholarly and practical debates by formulating an integrated and adaptive strategic framework that strengthens institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation.

To clarify how the identified literature gaps informed the research design and empirical strategy, Table 2.1 presents a structured mapping between theoretical gaps, their practical

implications, the research questions formulated in this study, and the type of evidence required to address them.

Table 2.1: Mapping of Theoretical Gaps to Research Design

Identified Theoretical Gap	Consequence in Practice	Related Research Question	Evidence Required
Limited empirical research on how institutional resilience strategies are operationalised at municipal level in South Africa	Municipal disaster governance remains policy-driven but weakly institutionalised in practice	How are institutional resilience strategies adopted and implemented by selected KZN municipalities?	In-depth accounts from municipal disaster management officials
Insufficient integration of administrative practice within disaster risk governance theory	Administrative routines and coordination mechanisms are under-examined as resilience drivers	What administrative practices are performed to adapt to disaster risks?	Detailed qualitative insights into governance processes and coordination systems
Limited focus on monitoring, learning, and adaptive governance within municipal DRM frameworks	Weak feedback loops and limited institutional learning in disaster-prone areas	How adequate are existing administrative practices in strengthening institutional resilience?	Evidence of monitoring systems, policy revisions, and adaptive mechanisms
Minimal comparative insights between metropolitan and local municipalities in African contexts	Uneven capacity development and resource alignment across municipal types	How do institutional conditions influence the application of resilience strategies?	Comparative thematic analysis across municipal settings

2.8 Summary of the chapter

This chapter explored the theoretical and conceptual foundations of institutional resilience and disaster risk management in municipal contexts. It outlined the relationship between institutional resilience and disaster risk management, underscoring how both concepts complement each other in enhancing adaptability and recovery. The chapter introduced the CAS theory and the disaster risk management model as guiding frameworks, explaining how their integration promotes structured yet flexible disaster governance. It also discussed municipal resilience strategies, including strategic planning, early warning systems, coordination mechanisms, and capacity building, as key pillars for improving preparedness and adaptive capacity. Furthermore, systemic enablers and barriers such as leadership, governance, human and financial resources, policy frameworks, and community engagement were

examined for their influence on resilience implementation. The chapter concluded by identifying research gaps and setting the stage for the next chapter, which explores how these resilience strategies are operationalised through administrative practices in South African. The next chapter discusses the administrative practices designed to enhance adaptability to disaster risks.

CHAPTER THREE
ADMINISTRATIVE PRACTICES FOR ADAPTATION TO DISASTER RISKS

3.1 Introduction

The increasing frequency and intensity of natural disasters and environmental disruptions have transformed the discourse on governance and administration in the twenty-first century. Globally, governments are confronted with the need to strengthen adaptive capacities that enable institutions to withstand and transform following crises. In South Africa, where local governments serve as frontline institutions responsible for disaster risk management, administrative practices form the backbone of resilience governance. As the effects of climate variability, infrastructural vulnerabilities, and socio-economic inequalities converge, strengthening municipal capacities for risk anticipation and adaptation is essential to minimize loss of life and critical infrastructure during disasters.

This chapter discusses the administrative practices that underpin adaptation to disaster risks in South African local governments. It analyses the theoretical underpinnings of these practices and explores how administrative mechanisms such as coordination, leadership, financial management, communication, and capacity building are operationalised in practice. These practices do not exist in isolation; they form an interconnected system that translates policy frameworks into tangible actions that shape institutional resilience. Guided by Social Capital Theory and the Institutional Analysis and Development (IAD) framework, this chapter highlights how relational and structural dimensions interact to determine the municipal capacity for disaster adaptation. By engaging with the existing literature, this chapter aims to deepen the understanding of the administrative systems that enhance or constrain resilience within the complex governance environment of South Africa's municipalities.

3.2 Theoretical Lenses for Analysing Administrative Practices

Understanding administrative practices for disaster risk adaptation requires theoretical frameworks that can elucidate both the social dynamics and institutional arrangements that shape governance processes. This study adopts two complementary frameworks, Social Capital Theory and the Institutional Analysis and Development (IAD) framework, to analyse the mechanisms through which local governments build resilience. When combined, these

frameworks offer a multidimensional view of adaptation that incorporates relational trust, institutional rules, and collective actions.

Social Capital Theory foregrounds relational and community-based aspects of resilience (Maulana and Wardah, 2023). This explains how networks, trust, and norms of reciprocity strengthen collaboration and enable coordinated responses to disasters. Through the mobilisation of social relationships, municipalities can enhance information sharing, foster participatory governance, and build social trust, all of which are essential for effective disaster preparedness and recovery (Putnam, 2021).

In contrast, the IAD Framework, developed by Ostrom (2021), provides a structural lens, focusing on how institutional rules, organisational arrangements, and incentive mechanisms shape decision-making and collective outcomes. It offers a systematic method to examine how governance structures, leadership practices, and resource allocation processes influence disaster risk management. Together, these frameworks recognise that adaptive governance is both relational (driven by networks and trust) and institutional (anchored in formal structures and policies).

3.2.1 Social Capital Theory

Social Capital Theory provides a relational perspective on governance by emphasising the values embedded in social networks and trust-based relationships (Alshurafat et al., 2021). According to Putnam (2021), social capital arises from interactions and connections between individuals and groups that facilitate coordination and cooperation for mutual benefit. Social capital plays a critical role in shaping the responsiveness and adaptability of local governance systems in the context of disaster risk management.

In municipalities across South Africa, the strength of social networks influences the success of disaster preparedness and responses (Ejem et al., 2025). When community trust in local institutions is high, public participation in early warning systems and disaster education initiatives tends to be more effective. Conversely, where mistrust, political conflict, or weak community engagement prevail, coordination becomes fragmented, and communication channels break down (Ndabezitha et al., 2024; Cuadra, 2025). The literature suggests that social capital enhances disaster governance through several mechanisms: it accelerates information exchange, encourages voluntary cooperation, and reduces the transaction costs of collective actions.

Social Capital Theory closely aligns with the principles of the CAS approach discussed in the preceding chapter. Both emphasise interdependence, feedback, and learning within complex systems. High levels of bonding and bridging social capital foster adaptive capacity by enabling multiple actors, from local officials to community groups, to collaborate and co-produce resilience outcomes. This theory also reinforces the participatory ethos of the Sustainable Development Goals (SDGs 11 and 13), which advocate inclusive governance and resilient urban systems (United Nations, 2024). Municipalities that invest in strengthening relationships between officials, citizens, and civil society organisations not only improve trust, but also create social foundations for sustainable adaptation.

3.2.2 Institutional Analysis and Development (IAD) Framework

The Institutional Analysis and Development (IAD) framework offers a complementary lens to examine how institutional arrangements shape administrative practices. Ostrom (2021) conceptualised the IAD Framework as a tool to understand the rules, norms, and strategies that guide collective decision-making within institutions. In municipal governance, this framework enables a systematic analysis of how formal and informal institutional arrangements influence disaster risk management outcomes. The IAD Framework conceptualises municipalities as nested systems governed by "action arenas," where actors interact according to rules-in-use, incentives, and available resources (Ostrom and Cox, 2022). Within the disaster management context, these action arenas include planning committees, disaster coordination centres, and interdepartmental task teams. The effectiveness of administrative practices such as budgeting, coordination, and policy implementation depends on how clearly these institutional rules are defined and how well they align with broader governance frameworks (Matlala, 2025; Zweni, Yan and Uys, 2022).

In South African municipalities, the application of the IAD Framework reveals stark contrast in institutional coherence. Municipalities with well-defined rules and decentralised decision-making structures tend to exhibit greater adaptability and responsiveness to disaster risk (Coetzee, Van Niekerk and Denoon-Stevens, 2023; Ndabezitha, Makoka and Ayo-Yusuf, 2024). Conversely, where overlapping mandates, bureaucratic inertia, and unclear accountability prevail, administrative fragmentation undermines coordination and slows recovery efforts (Tshabalala, 2024).

The IAD Framework complements Social Capital Theory by shifting attention from relational dynamics to formal structures that govern behaviour. It highlights that resilience is not only a function of cooperation and trust, but also of institutional design and regulatory frameworks. When these dimensions intersect, that is, when institutional rules support participatory engagement and trust reinforces compliance, the conditions for adaptive governance emerge (Meiring and Du Plessis, 2023).

Both frameworks converge in illustrating that resilience in municipal disaster risk management arises from the interaction between the structure and agency. Social Capital Theory highlights the "soft infrastructure" of trust and relationships, while the IAD Framework provides insights into the "hard infrastructure" of rules, authority, and institutional mandates. This integrated perspective allows for a more nuanced understanding of administrative adaptation as a socio-institutional process, where formal and informal mechanisms jointly shape outcomes.

3.3 Administrative Practices for Adaptation to Disaster Risks

Administrative practices constitute operational dimensions of resilience governance. They translate strategic intentions and policy objectives into coordinated actions that reduce vulnerabilities and strengthen institutional capacity to withstand disasters (Sarker, 2023; Kabir, Hossain, and Haque, 2024). In the context of South African local government, administrative practices are pivotal in bridging the gap between policy design and practical implementation. Guided by Social Capital Theory and the IAD Framework, this section explores five key administrative practices that underpin adaptive governance: coordination and integration, leadership and governance, financial management and resource allocation, communication and community engagement, capacity building, and institutional learning (Vivier and Sanchez-Betancourt, 2023; Van Assche, Valentinov, and Verschraegen, 2022). Each of these practices contributes to building resilience by fostering coherence, accountability, and inclusivity within the municipal systems.

3.3.1 Coordination and Integration

Coordination is central to effective disaster governance. It ensures that efforts across departments, spheres of government, and community organisations are harmonised and mutually reinforcing (Gooding et al., 2022). In the South African municipal context, coordination involves the integration of disaster risk management into development planning, spatial frameworks, and service delivery mechanisms. According to the IAD perspective,

coordination depends on clear institutional rules, well-defined mandates, and enforcement mechanisms that prevent the duplication of responsibilities (Ostrom, 2021). However, the literature reveals that coordination challenges persist for many local governments. Overlapping functions among environmental management, infrastructure, and emergency services result in inefficient and delayed responses (Mthembu and Ndlovu, 2024).

From the perspective of Social Capital Theory, such fragmentation also reflects weak relational trust and limited interdepartmental collaboration. Strong coordination requires institutional and relational cohesion. Informal relationships, shared values, and interpersonal trust among administrators can significantly enhance interdepartmental communication and cooperation, even when formal mechanisms are underdeveloped (Govender and Pillay, 2023). Municipalities that successfully institutionalise coordination mechanisms, such as integrated disaster operations centres and cross-sectoral planning committees, demonstrate improved preparedness and response (Van der Waldt and Malan, 2024). These systems facilitate real-time information sharing, optimise resource allocation, and strengthen vertical integration between local and provincial authorities (Mofokeng, Ramolobe, and Bogopa, 2025). Thus, coordination functions as the cornerstone of adaptive governance, enabling institutions to act cohesively in the face of complex and unpredictable disaster scenarios.

3.3.2 Leadership and Governance

Leadership is defined as the strategic orientation of disaster governance (Tazegul and Şahinöz, 2022). Effective leadership fosters accountability, mobilises resources, and sustains momentum for resilience-building initiatives (Crosweller, 2022). Within South African local governments, leadership is both a technical and moral function; it requires administrative competence as well as the ability to inspire trust and collaboration among diverse stakeholders (Ngubane, 2022).

Social Capital Theory underscores the relational dimension of leadership, suggesting that trust-based relationships enhance legitimacy and compliance (Putnam 2021). Leaders who engage communities transparently and inclusively strengthen their social cohesion and collective responsibility for risk management (Aravidou, Triantari and Zervas, 2025). On the other hand, the IAD Framework situates leadership within institutional structures, emphasising the importance of clearly defined authority, incentive systems, and governance norms that enable effective decision making (Ostrom and Cox, 2022).

Empirical studies suggest that municipalities exhibiting strong, visionary leadership, where mayors and senior officials champion disaster preparedness as a cross-cutting priority, achieve more integrated and proactive risk management outcomes (Ruslanjari et al., 2024; Agyemang, 2025). Conversely, inconsistent or politically unstable leadership results in reactive responses, weak communication, and policy discontinuity (Mthethwa and Sibanda, 2024). Therefore, leadership and governance should not be viewed as managerial functions but as enablers of institutional adaptability and learning.

3.3.3 Financial Management and Resource Allocation

Financial management is widely acknowledged to be a critical enabler of disaster resilience (Rezvani et al., 2023). The capacity to allocate, utilise, and account for resources determines whether municipalities can implement adaptive measures proactively rather than reactively (dos Santos and Pessoa, 2025). The literature identifies fiscal decentralisation, risk-informed budgeting, and contingency financing as principal aspects of resilient financial governance.

The IAD Framework interprets budgeting as a rule-governed process shaped by institutional incentives and constraints (Ostrom and Cox, 2022). Where governance structures function effectively, fiscal autonomy empowers local authorities to prioritise and channel resources toward proactive disaster risk reduction measures. However, studies reveal that several municipalities face fiscal dependency on national transfers, limiting their discretion in prioritising disaster risk management (Mahlangu and Sibanda, 2022; Van Niekerk and Coetzee, 2023). This dependence can result in a reactive cycle in which resources are mobilised only after disasters occur, contrary to the proactive ethos of resilience-building.

Social Capital Theory expands this discussion by emphasising the relational and trust-based dimensions of financial governance. Partnerships with private entities, non-governmental organisations, and community-based structures can enhance resource mobilisation and transparency (Govender and Pillay, 2023). Local governments' credibility in managing funds, as perceived by their stakeholders, directly influences their ability to attract external support (Qaba and Dlamini, 2025). Thus, financial resilience relies not only on institutional rules, but also on the social legitimacy of those who administer resources.

Therefore, the literature calls for comprehensive fiscal reforms to ensure predictable funding, decentralised budget authority and accountability mechanisms for disaster-risk expenditure

(Hlongwane and Ncube, 2025). Risk-informed financial planning, underpinned by transparency and collaboration, forms the cornerstone of adaptive municipal governance.

3.3.4 Communication and Community Engagement

Communication and engagement are recognised in the literature as integral administrative practices that bridge the divide between institutional policy and community action (Kangana et al., 2024). Disaster adaptation relies on clear, inclusive, and trusted information flows (Kristian and Ikhsan, 2024). Theoretical models of participatory governance emphasise that when citizens are actively engaged in disaster preparedness, their awareness, compliance, and resilience increase substantially (Putnam, 2021). From an institutional perspective, the IAD Framework identifies information-sharing rules as central to effective coordination. When communication protocols are formalised through policies and administrative systems, institutions can disseminate warnings, collect feedback, and coordinate multi-stakeholder responses more efficiently (Meiring and Du Plessis, 2023).). However, fragmented communication systems and inadequate technological infrastructure limit the information flow in developing contexts (Mahmud, 2023).

Social Capital Theory adds a critical social dimension to the discussion. Trust determines whether communities act on the information that they receive. Where government communication lacks credibility or sensitivity to local realities, misinformation and apathy can undermine preparedness (Govender and Botha, 2023). Conversely, participatory communication, through public meetings, ward committees, and traditional leadership forums, strengthens reciprocity and shared responsibility.

Globally and locally, scholars advocate for the institutionalisation of participatory communication systems that prioritise inclusivity, cultural diversity, and accessibility (Adiga, 2024). Such systems transform communication into a dialogic process rather than one-way dissemination of instructions. They also reflect the spirit of cooperative governance embedded in the South African Constitution and the Disaster Management Act, reinforcing public accountability and resilience (Agyemang, 2025).

3.3.5 Capacity-Building and Institutional Learning

The literature positions capacity-building as a prerequisite for effective disaster risk adaptation (Cvetković et al., 2021). Municipalities require skilled personnel, functional systems, and

organisational learning mechanisms to anticipate and manage risks (Mahlangu and Sibanda, 2022). Capacity building encompasses training, professional development, institutional memory, and adaptive learning processes that allow municipalities to evolve in response to changing hazards (Cvetković et al., 2021).

Within the IAD Framework, capacity building represents a feedback mechanism that strengthens institutional rules through experience (Meiring and Du Plessis, 2023). This ensures that knowledge is retained and applied across policy cycles, reducing the tendency toward reactive governance. By contrast, inadequate institutionalisation of learning leads to a loss of institutional memory and repetitive policy failures (Govender and Botha, 2023).).

Social Capital Theory enriches this conceptualisation by highlighting learning as a collective social process. Collaborative networks, among municipalities, research institutions, and community organisations, facilitate peer learning and the diffusion of innovation (Aldrich and Meyer, 2022). High levels of bonding and bridging social capital enhance adaptive learning, because they enable actors to share experiences and co-develop solutions.

In the South African context, the literature underscores that building institutional capacity also involves investing in technological competencies and data-driven decision making (Dlamini et al., 2023). Digital tools, such as GIS and early warning systems, require continuous technical training and maintenance. Moreover, effective learning depends on organisational cultures that value reflection, evaluation, and feedback (Govender and Pillay, 2023)). Municipalities that embed learning within performance management and accountability frameworks are better positioned to sustain their resilience.

Therefore, scholars advocate for a dual approach to capacity-building: institutional (creating formal structures for knowledge retention and evaluation) and relational (nurturing networks that promote peer learning and trust). Both are indispensable for adaptive governance and disaster-risk reduction in local government systems.

3.4 Administrative Practices in Disaster Risk Management

Administrative practices represent the functional mechanisms through which local governments operationalise disaster risk management and adaptation. The literature establishes that the efficiency and sustainability of these practices depend on institutional coherence, leadership quality, information systems, and participatory governance structures (Govender,

2023; Masyk et al., 2023). These practices translate policy intentions into coordinated administrative actions, which enhance institutional resilience and public safety.

The IAD Framework views such practices as occurring within institutional "action arenas" governed by formal and informal rules that influence how decisions are made, who participates, and what resources are mobilised (Ostrom, 2021). Meanwhile, the Social Capital Theory underscores that adaptive disaster administration depends equally on the quality of social relations, trust, and collaborative networks within and beyond government structures (Putnam, 2021). This dual theoretical perspective provides a balanced understanding of administrative adaptation as both an institutional and relational phenomenon.

Within this framework, seven key administrative domains are consistently identified in the literature: strategic planning and integration; coordination and interdepartmental collaboration; data management and information systems; monitoring, evaluation, and learning systems; stakeholder engagement and communication; financial administration and resource allocation; and capacity and learning adequacy (Gee, Nahm, and Cannella, 2023; Bertin, 2024; Yakob et al., 2022). These are discussed below as the interdependent components of adaptive municipal governance.

3.4.1 Strategic Planning and Integration

The literature on disaster risk governance consistently identifies strategic planning as the foundation of institutional resilience and proactive adaptation. Effective strategic planning ensures that risk management principles are embedded in municipal development agendas and local government performance frameworks (Gee et al., 2023). This integration transforms disaster management from an emergency-oriented activity into a developmental priority that supports long-term sustainability. From an IAD perspective, strategic planning represents a rule-bound process that structures how actors coordinate and allocate resources to achieve collective goals (Ostrom and Cox, 2022). Within this process, the alignment of disaster management plans, IDPs, and Spatial Development Frameworks (SDFs) is viewed as an indicator of institutional coherence (Wamsler and Johannessen, 2020). Strategic integration prevents policy fragmentation and ensures that land-use, infrastructure, and environmental decisions reflect risk considerations.

The Social Capital Theory complements this view by highlighting that successful strategic planning relies on trust-based collaboration among institutions and communities. Research

demonstrates that inclusive planning, involving civic organisations, traditional leaders, and the private sector, enhances the legitimacy and implementation of disaster risk plans (Govender and Botha, 2023; Aldrich and Meyer, 2022). Participatory planning encourages ownership and accountability, thereby increasing compliance and shared responsibility.

In the South African context, scholars emphasise that the Disaster Management Act (No. 57 of 2002) requires municipalities to integrate disaster risk reduction into their IDPs and service delivery frameworks (Manyaka, Madzivhandila, and Molepo, 2021). However, limited technical capacity and fragmented coordination impede effective mainstreaming (Hlongwane and Ncube, 2025). Therefore, the literature argues for a more systemic approach that combines structured planning processes (as per IAD principles) with collaborative and network-based governance (as suggested by the Social Capital Theory). Strategic planning and integration thus emerge as a conceptual bridge between resilience policies and implementation (Bertin, 2024). They create coherence across institutions, foster partnerships, and ensure that risk adaptation is treated as a developmental commitment rather than episodic intervention.

3.4.2 Coordination and Interdepartmental Collaboration

Coordination and interdepartmental collaboration are critical determinants of administrative efficiency (Yang and Wang, 2023) and institutional resilience during disaster management (San, 2021). The literature defines coordination as institutions' capacity to align policies, processes, and actions across functional units and governance levels (Domorenok, Graziano, and Polverari, 2021). Disaster governance includes collaboration among municipal departments, provincial entities, and community-based structures that jointly manage risk reduction, response, and recovery.

The IAD Framework conceptualises coordination as a process of institutional alignment where rules, incentives, and shared norms enable collective action (Ostrom, 2021). When coordination mechanisms are clear and enforced, administrative actors operate within a coherent system that reduces duplication, accelerates decision-making, and ensures resource efficiency. Studies show that horizontal coordination between departments, such as planning, environment, health, and infrastructure, enhances synergy and promotes integrated disaster management (Hlongwane and Ncube, 2025; Govender and Botha, 2023).

Social Capital Theory adds a relational layer to this analysis by recognising that formal structures alone are insufficient for coordination. Informal networks, trust, and reciprocity

among actors enhance cooperation, in resource-constrained environments (Aldrich and Meyer, 2022; Govender and Pillay, 2023) Coordination thrives when interpersonal trust substitutes bureaucratic rigidity, fostering fluid communication and adaptive decision-making (Aldrich and Meyer, 2022).

In South Africa, cooperative governance is constitutionally mandated, and disaster management legislation emphasises joint responsibility among the three spheres of government (Makoti and Odeku, 2021) However, the literature notes persistent coordination gaps due to siloed bureaucracies, unclear reporting lines, and inconsistent communication channels (Scott and Gong, 2021). These weaknesses can be mitigated through institutional reforms that promote decentralisation, shared accountability, and interagency networks, all of which align with both the IAD and Social Capital perspectives (Scott and Gong, 2021; Gee et al., 2023; Yakob et al., 2022).

Hence, coordination and interdepartmental collaboration are not simply administrative processes but dynamic systems of interaction. They require formal mechanisms to ensure alignment, and informal networks to sustain trust and flexibility. Their effectiveness ultimately determines whether local governments can adapt to disaster risks, both collectively and efficiently.

3.4.3 Data Management and Information Systems

The management of data and information is increasingly recognised as central to disaster risk governance in contemporary literature (Kanbara and Shaw, 2021). Advances in digital technologies, under the Fourth Industrial Revolution (4IR), have expanded the capacity of local governments to collect, analyse, and disseminate risk-related information (Dlamini et al., 2023). Information systems such as Geographic Information Systems (GIS), early warning platforms, and digital dashboards have been identified as critical enablers of adaptive decision-making (World Bank, 2023). According to the IAD Framework, information is a resource governed by specific institutional rules that determine who can access, share, and act upon it (Ostrom and Cox, 2022).Therefore, the effectiveness of data systems depends on policies that regulate ownership, interoperability, and confidentiality. In local government contexts, fragmented data management frameworks hinder information sharing across departments and government levels (Shibambu and Marutha, 2022). This institutional fragmentation reduces situational awareness and slows response time during emergencies.

The Social Capital Theory underscores the relational dimension of data management (Jahan et al., 2024). The literature suggests that technology alone cannot ensure information flow; it must be complemented by social trust and collaborative norms among agencies and communities (Jahan et al., 2024; Govender and Botha, 2023). Trust enhances data credibility and facilitates knowledge exchange across institutional boundaries. When communities trust official information sources, they are more likely to respond promptly to early warnings (Aldrich and Meyer, 2022). Scholars argue for the institutionalisation of data governance systems that integrate technological infrastructure with participatory information-sharing frameworks (Awada, Philips, and Bogdan, 2022). In the South African municipal context, capacity-building initiatives to enhance data literacy and technical proficiency are crucial (Ncamphalala and Vyas-Doorgapersad, 2025; Dlamini et al., 2023). The alignment of information systems with risk mapping, spatial planning, and performance monitoring ensures that data management supports decision-making at both strategic and operational levels.

Consequently, the literature positions data management as both a technical and social practice. While institutional design (as per IAD) structures how data are handled, social capital determines the extent to which information is trusted, shared, and acted upon. Together, these dimensions transform data management into a driver of adaptive capacity in local governments.

3.4.4 Monitoring, Evaluation and Learning (MEL) Systems

Monitoring, evaluation, and learning (MEL) systems are the key mechanisms for institutional reflexivity and adaptive governance (Goodwin and Olazabal, 2025). The literature recognises that without systematic evaluation and learning, disaster management remains reactive and unsustainable (Goodwin et al., 2024). MEL systems allow governments to assess policy effectiveness, identify gaps, and institutionalise lessons from past experiences.

From the IAD perspective, MEL represents an internal feedback process that links outcomes to rule modifications (Ostrom and Cox, 2022). Institutions that incorporate monitoring and evaluation into their decision cycles exhibit greater adaptability and accountability (Mohamed and Kulmie, 2023). These systems enable reassessment of performance indicators, resource allocation, and implementation efficiency, ensuring continual improvement in disaster risk governance (Holloway and Chanza, 2023).

The Social Capital Theory complements this structural interpretation by highlighting the social learning dimensions of MEL systems. Learning is embedded in relationships among

individuals, departments, and communities (Jahan et al., 2024). Through dialogue, reflection, and peer exchange, knowledge circulates and evolves into an institutional memory. In contexts where trust and collaboration are strong, learning becomes collective and transformative rather than procedural (Aldrich and Meyer, 2022).

However, the literature notes that many municipalities face challenges in establishing robust MEL systems because of inadequate data, limited expertise, and fragmented accountability mechanisms (Holloway and Chanza, 2023). These constraints have hindered the development of adaptive policies. Scholar's advocate integrating MEL frameworks into performance management systems and linking them with participatory evaluation methods that include communities and stakeholders (Goodwin and Olazabal, 2025; Mohamed and Kulmie, 2023).

In South Africa, policy frameworks such as the National Disaster Management Framework and Municipal Systems Act No. 32 of 2000 (2005) provide a legal basis for monitoring and reporting. However, institutional follow-through remains inconsistent (Govender, 2023). Therefore, the literature recommends embedding MEL not merely as a compliance activity, but as a continuous learning process that shapes policy innovation and resilience-building (Goodwin and Olazabal, 2025).

3.4.5 Stakeholder Engagement and Communication

The literature identifies stakeholder engagement and communication as core administrative practices that determine the legitimacy, inclusivity, and effectiveness of disaster-risk governance (Iandolo et al., 2025; Knox, Marin-Cadavid, and Oziri, 2025). Effective communication is not merely the dissemination of information, but also a participatory process that fosters trust, collaboration, and joint problem solving (Knox and Meyer, 2024; Chanza and Holloway, 2023). In the context of local governments, stakeholder engagement ensures that community perspectives, indigenous knowledge, and local experiences are integrated into disaster-risk strategies, thereby enhancing social resilience and institutional accountability (Iandolo et al., 2025; Knox and Meyer, 2024).

From the IAD Framework perspective, engagement is structured by rules that define participation rights, communication channels, and decision-making authority (Ostrom, 2021). Institutions with inclusive participation rules tend to foster deliberation and cooperation, ensuring that policy decisions reflect diverse stakeholder input. The design of these

participation arenas affect not only how information flows but also how power and resources are distributed across administrative levels (Ostrom and Cox, 2022).

Social Capital Theory complements this structural view by highlighting that the success of engagement depends on relational trust and social cohesion among stakeholders (Aldrich and Meyer, 2022; Jahan et al., 2024). High levels of bonding and bridging social capital promote information exchange, collective responsibility, and compliance with disaster preparedness measures (Aldrich and Meyer, 2022). Conversely, low trust between communities and government officials undermines participation, perpetuates apathy, and resists risk reduction initiatives (Mudefi and Tadesse, 2022).

In the South African context, the principle of cooperative governance enshrined in the Constitution of the Republic of South Africa of 1996 and Disaster Management Act 57 of 2002 mandates multi-stakeholder participation in municipal planning and implementation (Mubangizi, 2024; Holloway and Chanza, 2023). Community-based disaster management committees, ward forums, and traditional leadership structures play integral roles in fostering communication between municipalities and citizens (Mubangizi, 2025). However, studies indicate that participation is tokenistic, with communities consulted after key decisions have been made (Govender 2023; Fathollahzadeh et al., 2024). This undermines ownership and limits the integration of local knowledge into resilience planning.

The literature calls for a paradigm shift from hierarchical to dialogical communication models that enable the co-production of knowledge and shared accountability (Mubangizi, 2025; Wamsler and Johannessen, 2020). Participatory communication approaches such as community-based risk mapping, participatory scenario planning, and social media engagement are recognised as effective tools for strengthening relational trust and collective agency. Ultimately, stakeholder engagement and communication embody the relational dimension of adaptive governance. While institutional frameworks provide rules for participation, social capital provides the trust that sustains participation. The combination of both determines whether disaster risk management is an imposed policy or collectively owned social process.

3.4.6 Financial Administration and Resource Allocation

The literature on disaster governance identifies financial administration and resource allocation as fundamental pillars of adaptive capacity (Cilliers, 2022). Sound financial systems enable municipalities to proactively plan, implement risk-reduction initiatives, and respond effectively

to emergencies (Rezvani et al., 2023; Rahman et al., 2024). Fiscal resilience depends not only on the number of available resources but also on how they are managed, prioritised, and accounted for within institutional structures (Rezvani et al., 2023; Rahman et al., 2024).

Within the IAD Framework, financial administration represents a rule-bound process that structures incentives for collective action (Ostrom, 2021). Budgeting and expenditure decisions are influenced by formal institutions' fiscal regulations, procurement procedures, and intergovernmental funding mechanisms. When these rules are transparent and flexible, they promote both efficiency and adaptability. However, the literature shows that many municipalities in developing contexts, including South Africa, experience fiscal dependency on national transfers, limiting their autonomy to prioritise disaster risk management (McKenzie and Marx, 2025). This dependency results in reactive spending patterns, in which funds are allocated post-disaster rather than investing in risk prevention (Hlongwane and Ncube, 2025).

Scholars such as Ndhlovu (2024) and Govender (2023) note that inadequate fiscal planning and weak internal controls can exacerbate vulnerability by delaying the implementation of risk-mitigation projects. The absence of ring-fenced budgets for disaster management undermines long-term preparedness (Rezvani et al., 2023). Therefore, the literature advocates for risk-informed budgeting, an approach that integrates hazard assessment and vulnerability data into fiscal planning (Rezvani et al., 2023). Such budgeting practices align closely with IAD principles by institutionalising risk management into regular decision-making cycles.

The Social Capital Theory extends this discussion by linking financial management to social legitimacy and stakeholder trust. The efficient and transparent use of public funds enhances citizens' confidence in local institutions, fostering voluntary compliance and cooperative action during disasters (Jahan et al., 2024). Partnerships with private entities, non-governmental organisations, and community-based groups can mobilise additional resources and reduce fiscal strain (Mudefi and Tadesse, 2022). Collaborative financing mechanisms, such as public–private partnerships and community insurance schemes, are cited as innovative instruments for building fiscal resilience.

Within the South African local government framework, financial administration is regulated by the Municipal Finance Management Act (MFMA, No. 56 of 2003), which emphasises transparency, accountability, and efficiency in financial governance. However, the literature

highlights that the effective application of these principles to disaster risk management remains inconsistent, and is hindered by capacity constraints and weak oversight (Coetzee et al., 2023).

3.4.7 Capacity and Learning Adequacy

Capacity and learning adequacy are cognitive and human dimensions of institutional resilience. The literature on disaster risk management consistently underscores that technical skills, institutional knowledge, and adaptive learning are indispensable for effective local governance (Dlamini et al. 2023;Holloway and Chanza, 2023). Capacity building extends beyond training; it encompasses organisational learning systems, knowledge retention, and the ability to integrate new insights into policy and practice (Hlongwane and Ncube, 2025; Khumalo and Nxumalo, 2024).

According to the IAD Framework, institutional capacity is a dynamic product of rules, resources, and actors' competencies (Ostrom and Cox, 2022). Institutions that facilitate learning through feedback loops and evaluations are better equipped to evolve in response to emerging risk. Learning mechanisms enable modification of existing rules, leading to continuous improvements in disaster governance (Hamilton, 2020). By contrast, inadequate institutionalisation of learning leads to repeated policy failures and reactive responses.

The Social Capital Theory complements this understanding by framing capacity as a social process that emerges through interaction and cooperation. Learning is distributed across networks of individuals and organisations, rather than confined within bureaucratic hierarchies (Aldrich and Meyer, 2022; Jahan et al., 2024). Strong networks facilitate knowledge exchange, peer mentorship, and innovation diffusion (Holloway and Chanza, 2023). Communities of practice and inter-municipal learning platforms, thus, play a vital role in enhancing local capacity and institutional memory.

In the context of South African local government, capacity deficits are well documented. Municipalities struggle with limited technical expertise, inadequate staff training, and high turnover rates (Hlongwane and Ncube, 2025; Khumalo and Nxumalo, 2024). These constraints undermine the institutionalisation of learning and the ability to sustain resilience programmes. Scholars advocate embedding learning frameworks within municipal performance management systems, enabling structured reflection, documentation, and skill transfer (Hlongwane and Ncube, 2025).

Moreover, the integration of digital literacy and technological training is increasingly viewed as essential. Data-driven disaster management requires administrative personnel capable of using digital tools, interpreting analytics, and managing information systems (Dlamini et al., 2023). Adaptive learning also necessitates an organisational culture that values critical reflection and openness to change (Holloway and Chanza, 2023).

Therefore, the literature conceptualises capacity and learning adequacy as the lifeblood of institutional resilience. The interplay between structured learning (IAD) and social learning (Social Capital) determines whether local governments have evolved as adaptive systems or remain static. Continuous capacity enhancement ensures that disaster risk management transcends compliance, and becomes an embedded practice of innovation and improvement.

3.5 Administrative Practices for Adaptation to Disaster Risks

The policy and legal framework form the cornerstone of institutional resilience and administrative coordination in disaster risk management. Scholarly literature highlights that the success of disaster governance in South Africa depends on coherent policy instruments, legal mandates, and effective implementation mechanisms (Van Niekerk, 2023; Coetzee et al., 2023). Over the past two decades, South Africa's legislative landscape has shifted from reactive disaster response to proactive risk reduction and resilience building, aligning with global policy frameworks, such as the Sendai Framework for Disaster Risk Reduction 2015–2030 and the Paris Agreement on Climate Change (Hallegatte, Rentschler, and Rozenberg, 2020; Eiser, 2023).

The Institutional Analysis and Development (IAD) framework situates legal and policy instruments within systems of rules that structure decision-making, coordination, and accountability (Ostrom and Cox, 2022). In this framework, legislation and policy define the authority and collective action processes at multiple governance levels. Social Capital Theory complements this view by positing that institutional frameworks succeed only when they are supported by social trust, cooperation, and shared ownership (Aldrich and Meyer, 2022; Jahan et al., 2024) . The interaction between formal policy rules and informal social networks determines the effectiveness of local governments' governance arrangements.

3.5.1 National Policy and Legislative Frameworks

At the national level, the Disaster Management Act (No. 57 of 2002) serves as the principal legislative instrument governing disaster risk management in South Africa (Van Niekerk, 2023). The Act establishes an institutional structure for coordinated disaster governance and mandates all spheres of government to develop and implement disaster management frameworks and plans (Van Niekerk and Coetzee, 2022). It reinforces the constitutional principle of cooperative governance, promoting shared responsibility between the national, provincial, and municipal spheres (Hlongwane and Ncube, 2025).

The National Disaster Management Framework (2005) provides further operational guidance for implementing the Act's provisions, emphasising risk reduction, integration with developmental planning, and community participation (Coetzee et al., 2023; Van Niekerk, 2023). It aligns disaster management with the Municipal Systems Act (No. 32 of 2000) and Municipal Finance Management Act (No. 56 of 2003), ensuring that risk governance is incorporated into IDPs and local budgetary frameworks (Coetzee et al., 2023). These legislative instruments collectively promote transparency, accountability, and participatory governance in municipal decision-making.

However, several studies revealed persistent implementation challenges. Govender (2023) observed that despite clear legislative mandates, municipalities experience fragmentation, inadequate coordination, and overlapping responsibilities. Similarly, Coetzee et al. (2023) note that intergovernmental coordination remains inconsistent because of capacity deficits, insufficient oversight, and unclear accountability channels. Van Niekerk (2023) emphasises that while South Africa's disaster management legislation is progressive, it suffers from gaps in institutional capacity and operational coherence.

From an IAD perspective, these challenges can be interpreted as misalignments between constitutional-level rules and operational-level practices. The Social Capital Theory provides an additional layer of understanding by illustrating that trust, mutual respect, and collaboration among institutions are critical for transforming policy into practice. Where these social foundations are weak, formal frameworks tend to become procedural rather than transformative (Putnam, 2021).

3.5.2 Provincial and Local Policy Frameworks

At the subnational level, the provincial disaster management framework guides local adaptation and policy implementation. For instance, in KZN, the provincial framework provides directives for risk assessment, capacity building, and multilevel coordination, consistent with the national policy vision (Van Niekerk and Coetzee, 2022). This framework reinforces the requirement for municipalities to align disaster risk management strategies with IDPs and SDFs to ensure policy coherence.

According to Hlongwane and Ncube (2025), policy localisation is constrained by institutional fragmentation, resource shortages, and limited technical expertise. Municipalities vary significantly in their ability to operationalise legislative mandates, with many treating disaster managements as a compliance exercise rather than a developmental priority (Matikinca, Nyamakura and Shackleton, 2024). This divergence reflects what the IAD Framework terms the gap between "rules-in-form" and "rules-in-use", where formal structures exist but are inconsistently applied in practice (Ostrom, 2021).

Scholars, such as Coetzee et al. (2023) and Govender (2023), argue that municipal performance depends heavily on administrative culture, leadership commitment, and the strength of social networks across institutions. The absence of strong relational capital leads to a fragmented implementation and weak accountability (Hu, 2024). Social Capital Theory underscores that local participation, shared learning, and trust-based collaboration can compensate for structural deficiencies, enabling adaptive governance, even within constrained environments.

3.5.3 Regional and International Policy Influences

The international policy context has played an influential role in shaping South Africa's disaster governance approach. The Sendai Framework for Disaster Risk Reduction 2015–2030, Paris Agreement, and Sustainable Development Goals (particularly Goals 11 and 13) have established global norms for resilience, adaptation, and sustainability (Hallegatte et al., 2020; Wanner, 2021). These frameworks advocate evidence-based decision-making, community participation, and the integration between climate change adaptation and disaster risk management.

At the regional level, the African Union's Programme of Action for the Implementation of the Sendai Framework and the Southern African Development Community (SADC) Disaster Risk

Reduction Strategy 2020–2030 encourage harmonised legislative frameworks and joint capacity-building initiatives (Rumbach, 2023; Coetzee and Van Niekerk, 2023). These regional policies aim to strengthen collaboration across member states, enhance early warning systems, and facilitate knowledge-sharing. However, Coetzee et al., (2023) highlight that translating these international commitments into local practices remains a major challenge due to resource limitations and policy fragmentation at the municipal level.

The IAD Framework proposes a useful lens to understand how global policy norms are filtered through national and subnational institutional structures. Meanwhile, Social Capital Theory emphasises that the success of such frameworks depends on inter-organisational trust, policy coherence, and the ability of actors to cooperate across boundaries. This suggests that international alignment alone is insufficient without strong social and institutional foundations at the local level.

3.5.4 Policy Coherence and Institutional Integration

Policy coherence and institutional integration are central to sustainable governance. The literature consistently shows that fragmented and sectoral policies weaken disaster risk management outcomes (Coetzee et al., 2023; Hlongwane and Ncube, 2025). The integration of disaster risk considerations across the environmental, infrastructural, and social development sectors ensures that resilience becomes a systemic objective rather than an isolated function.

The IAD Framework conceptualises policy coherence as the alignment between constitutional, collective choice, and operational rules. When these levels are synchronised, decision-making becomes more efficient, transparent, and adaptive (Ostrom and Cox, 2022). However, (Rumbach, 2023) caution that overlapping mandates and bureaucratic silos persist in South Africa, reducing policy synergy and hindering effective coordination.

The Social Capital Theory extends this argument by asserting that institutional integration requires a foundation of trust and cooperation. Collaborative relationships among officials, departments, and stakeholders facilitate smoother policy implementation. Without these relational networks, institutional integration remains superficial (Putnam, 2021).

3.5.5 Challenges in Policy Implementation

Despite the existence of a comprehensive policy framework, South Africa faces persistent challenges in operationalising its disaster governance agenda. Key barriers include limited financial and human resources, weak interdepartmental coordination, and inadequate monitoring systems (Coetzee et al., 2023). Bureaucratic rigidity and political interference also undermine responsiveness and innovation at the municipal level (Govender, 2023).

These challenges are symptomatic of what Ostrom (2021) describes as an institutional mismatch where formal rules are not effectively translated into practice. The result is a gap between the policy design and real-world outcomes. Social Capital Theory explains that weak social trust between the government and communities exacerbates this implementation deficit, as citizens disengage from participatory processes and perceive governance structures as ineffective (Putnam, 2021).

Addressing these barriers requires adaptive governance approaches that integrate flexibility, continuous learning, and participatory feedback mechanisms (Hallegatte et al. 2020). Scholars advocate iterative policy review and the institutionalisation of collaborative platforms that enable evidence-based decision-making and social inclusion (Hlongwane and Ncube, 2025).

South Africa's policy and legal framework provide a strong foundation for disaster risk adaptation, yet its impact depends on institutional coherence, relational trust, and administrative capacity. The IAD Framework illuminates how formal structures shape collective action, while the Social Capital Theory explains how social relationships sustain it. Together, they provide a holistic understanding of why effective governance requires not only well-crafted legislation but also the social and institutional will to work.

3.6 Theoretical Integration of Institutional Resilience and Adaptive Governance

The integration of Social Capital Theory and the IAD framework provides a multidimensional perspective on how administrative systems and social relationships underpin institutional resilience in local governments. These frameworks jointly explain why some municipalities are more adaptive, participatory, and responsive to disaster risks than others are. The IAD Framework conceptualises institutions as systems of rules that structure interactions and outcomes (Ostrom and Cox, 2022). It identifies three analytical levels: constitutional rules,

which define the authority structure; collective-choice rules, which determine policy and coordination mechanisms; and operational rules, which govern daily decisions. When aligned, these levels produce coherent governance and effective disaster adaptations. However, in South African municipalities, misalignment between legislative intent and operational practice limits resilience (Coetzee et al., 2023). The Social Capital Theory complements this institutional analysis by highlighting the relational dimensions of governance. Trust, reciprocity, and networks facilitate collective action, while their absence leads to fragmentation and inefficiency (Putnam, 2021). In the context of disaster risk management, social capital supports coordination, communication, and mutual accountability, enabling adaptive responses even when formal systems are weak (Hlongwane and Ncube, 2025).

Integrating these frameworks revealed that resilience governance is both structural and relational. Institutional frameworks provide a regulatory foundation for collaboration, while social capital provides the cultural and behavioural mechanisms that sustain it. This duality aligns with adaptive governance principles, which emphasise learning, flexibility, and stakeholder participation as conditions for sustainability (Hallegatte et al., 2020). From a theoretical standpoint, institutional resilience emerges through feedback loops between the formal and informal systems. The IAD Framework explains how rules evolve through experience, while Social Capital Theory illustrates how cooperation accelerates that evolution. Together, they show that adaptive capacity is not only a function of resources, but also of institutional learning and social cohesion (Ostrom and Cox, 2022; Putnam, 2021).

For South African municipalities, this synthesis underscores the fact that legal compliance alone is insufficient for disaster risk governance. Institutional resilience depends on how administrators interpret, apply, and internalise policy principles through participatory processes and shared learning. When social networks reinforce formal structures, governance becomes self-organising and adaptive. Conversely, when institutional rigidity suppresses collaboration, policy effectiveness decreases. Thus, theoretical integration provides a framework for understanding resilience not as a static outcome but as an evolving process of interaction among laws, organisations, and communities. It bridges the divide between administrative practices and human behaviour, offering a holistic lens for evaluating disaster governance in South Africa’s local government landscape.

3.7 How Policies and Regulations Influence Administrative Practices

Policies and regulations are instrumental in defining administrative behaviour and shaping how local governments conceptualise and implement disaster risk adaptation. The literature indicates that these regulatory frameworks establish the rules, norms, and incentives that guide organisational processes, decision making, and coordination (Coetzee et al., 2023; Hlongwane and Ncube, 2025). Within the South African context, national policies such as the Disaster Management Act (2002), Municipal Systems Act (2000), and Municipal Finance Management Act (2003) constitute the institutional backbone of local governance, creating formal mechanisms that translate national objectives into municipal action (Govender, 2023). These laws set the parameters for planning, budgeting, and accountability, thereby shaping the quality of the administrative practices that underpin resilience.

The IAD Framework explains that such legal structures form the "rules-in-use" rules in use that define how collective decision-making occurs at different governance levels (Ostrom and Cox, 2022). When these rules are clear, consistent, and properly enforced, they enable effective coordination and information-sharing across institutions. However, when they are fragmented or poorly integrated, administrative inefficiencies emerge (Hlongwane and Ncube, 2025). Thus, policies are not neutral instruments; they actively influence administrative culture and the extent to which resilience and adaptation are institutionalised within municipal systems.

From a Social Capital Theory perspective, policies and regulations determine the relational context within which governance occurs. Trust, reciprocity, and collaboration are shaped by the extent to which policies promote transparency, fairness, and participatory decision-making (Putnam, 2021). In municipalities where, administrative practices are guided by inclusive regulatory frameworks, community engagement and stakeholder cooperation tend to be stronger, resulting in more effective disaster management (Agyemang, 2025). Conversely, overly bureaucratic or centralised policies can discourage participation and reduce accountability, leading to disengagement among key actors.

3.7.1 Guidance and Direction

Policies provide strategic guidance and direction for disaster risk management and establish a framework for aligning institutional roles and objectives across governance levels. The Disaster Management Act (2002) mandates that every municipality develop an integrated disaster management plan that is compatible with national and provincial frameworks. This

legal requirement ensures that disaster governance is not isolated from mainstream development planning but is instead embedded within IDPs and SDFs.

The IAD Framework suggests that such an alignment promotes policy coherence and reduces duplication of efforts, enabling more efficient allocation of resources and smoother coordination among government departments (Ostrom, 2021). The Social Capital Theory implies that guidance mechanisms work effectively when institutional rules are supported by trust and mutual respect between actors (Putnam, 2021). When local officials perceive national policies to be relevant and legitimate, they are more likely to commit to implementation, thereby transforming compliance into cooperation.

Research shows that in South Africa, policy alignment has improved significantly over the last decade in municipalities that integrate disaster management objectives into urban planning and climate adaptation programmes (Govender, 2023). However, gaps remain in the vertical coordination between national and local levels, due to differing priorities, resource limitations, and bureaucratic inertia (Hlongwane and Ncube, 2025). This highlights that, while policies provide the necessary direction, the quality of intergovernmental relationships determines their practical effect.

3.7.2 Standardization and Compliance

Standardisation is another critical function of policy and regulation. Governments can promote consistency and accountability across municipalities by establishing uniform administrative procedures and benchmarks The National Disaster Management Framework (2005) defines minimum standards for risk assessment, preparedness and response, requiring municipalities to develop systems for monitoring hazards, maintaining early warning mechanisms and reporting on progress (Coetzee, Van Niekerk and Raju, 2023).

The IAD Framework interprets these standards as “collective-choice rules”, which influence the collective behaviour of institutional actors (Ostrom and Cox, 2022). Standardisation allows municipalities to coordinate activities using shared norms, ensuring that local practices align with national objectives. It also promotes comparability and enables oversight bodies to evaluate performance against measurable indicators (Hlongwane and Ncube, 2025). However, excessive centralisation can stifle local innovation and adaptability, especially when standardised procedures do not account for contextual diversity (Govender, 2023). Social Capital Theory underscores that compliance is most effective when supported by a culture of

trust rather than coercion. When local administrators internalise policy objectives through collaborative processes, they are more likely to sustain good governance practices beyond formal requirements (Putnam, 2021). The literature shows that in environments where compliance is perceived as punitive or imposed from above, officials prioritise procedural adherence over genuine outcomes (Agyemang, 2025). These dynamic highlights the need to balance standardisation with local flexibility to foster adaptive trust-based administrative systems.

3.7.3 Monitoring and Evaluation Mechanisms

Monitoring and evaluation (M and E) systems are integral in understanding how policies influence administrative effectiveness. They provide mechanisms for assessing performance, identifying gaps, and supporting evidence-based decision-making. In the context of disaster risk management, continuous learning is important to ensure that institutions remain responsive to changing risks and contexts (Coetzee, Van Niekerk and Raju, 2023).

From an IAD standpoint, M and E represents feedback mechanisms that enable institutions to adjust rules and processes based on their experience (Ostrom and Cox, 2022). Learning occurs when organisations collect data, reflect on outcomes, and adapt their procedures accordingly. This adaptive cycle enhances institutional resilience and ensures that administrative practices evolve, rather than remain static.

Social Capital Theory enriches this interpretation by emphasising the relational dimension of learning. Information sharing and knowledge exchange rely on trust, openness, and communication among the actors (Putnam, 2021). When officials and communities collaboratively engage in M and E processes, they co-produce knowledge that enhances institutional accountability and collective problem-solving (Yekani, Ngcamu, and Pillay, 2024). In contrast, when M and E is treated as a bureaucratic exercise, it fails to generate meaningful learning or behavioural changes.

3.7.4 Policy Adaptability and Continuous Improvement

The adaptive governance literature stresses that policies must evolve continuously to address emerging risks, shifting environmental conditions, and socio-economic changes (Nyide et al., 2023). Rigid policy frameworks are inadequate for managing dynamic risks, such as climate-

induced disasters. By contrast, adaptive policies embed mechanisms for periodic reviews, stakeholder consultations, and iterative improvements (Zimmermann, 2023).

The IAD Framework conceptualises adaptability as the ability of institutions to revise rules considering new information or changing conditions (Ostrom and Cox, 2022). This process depends on well-defined feedback loops, leadership commitments, and institutional capacities. Similarly, Social Capital Theory posits that adaptability flourishes in environments where relationships are cooperative and learning is shared across institutional boundaries (Putnam, 2021). Municipalities that maintain strong cross-sectoral networks are better positioned to translate new knowledge into policy reforms.

The literature on South African municipalities highlights that adaptability is constrained by bureaucratic rigidity, political interference, and limited resources (Ndabezitha, 2024). However, case studies show that when local administrations institutionalise participatory learning and policy reflection, they can build adaptive capacity, even under resource limitations (Nyide et al., 2023). Therefore, the integration of adaptive governance principles into local policy cycles represents a pathway for sustainable resilience.

3.8 Factors Influencing Administrative Practices for Adaptation to Disaster Risks in Municipalities

The factors influencing administrative practices for adapting to disaster risks in municipalities encompass a diverse array of elements. This shapes how local governments prepare for, respond to, and recover from disasters. These factors reflect the complex interplay of social, economic, environmental, and political dynamics within the municipal context.

3.8.1 Resource Availability

Adequate financial, human, and technological resources are essential for municipalities to effectively implement disaster risk adaptation strategies. The literature consistently highlights that insufficient funding and human capacity are primary barriers to institutional performance in South African local governments (Thom and Burger, 2025; Coetzee, Van Niekerk and Raju, 2023). Municipalities depend heavily on intergovernmental transfers, which restrict fiscal autonomy and limit their ability to respond swiftly to emerging risks (Treasury SA, 2025).

The IAD Framework explains that such financial constraints stem from institutional design weaknesses at the constitutional and collective-choice levels, where resource allocation

mechanisms are overly centralised and lack flexibility (Ostrom and Cox, 2022). This has resulted in uneven disaster preparedness across municipalities. Technological deficits further exacerbate vulnerability, as inadequate access to data systems, monitoring tools, and early warning technologies impedes proactive decision-making (Hallegatte et al., 2020).

The Social Capital Theory introduces an alternative dimension to this challenge. Where resources are limited, strong networks and partnerships can help to compensate for material shortages. Municipalities that build trust-based collaborations with community organisations, private actors, and NGOs can mobilise additional funding and expertise (Jahan, Rahman and Alam, 2024). Thus, while resource constraints are structural, social capital can mitigate these effects by enhancing cooperation and innovation in resource use.

3.8.2 Capacity Building and Expertise

Institutional capacity encompasses technical skills, managerial competencies, and organisational systems that enable municipalities to effectively carry out their mandates. In the field of disaster risk management, capacity building involves continuous training, knowledge management, and professional development (Kunguma et al., 2023). However, studies have revealed that many South African municipalities face high staff turnover, limited technical training, and insufficient institutional memory, which hinder learning and adaptive management (Malan, 2025).

From an IAD perspective, capacity deficits arise when operational-level rules fail to institutionalise long-term learning systems (Ostrom and Cox, 2022). Institutional competence requires mechanisms for mentoring, performance evaluation, and peer review that embed knowledge in organisational routines. Without these, learning remains individual rather than institutional.

The Social Capital Theory emphasises the social dimension of learning. Knowledge transfer is most effective when supported by collaborative networks and mutual trust (Putnam, 2021). Informal communication among departments and partnerships with universities, research institutes, and communities enhance collective learning. Municipalities that cultivate such relationships can more effectively adapt to complex disaster risks. In contrast, hierarchical cultures that discourage participation inhibit creativity and responsiveness (Jahan et al., 2024)

3.8.3 Political Will and Leadership

Political and administrative leadership plays a decisive role in shaping disaster risk governance. Leadership determines strategic priorities, resource allocation, and the level of accountability in implementing adaptation policies (Coetzee, Van Niekerk and Raju, 2023). Leadership commitment varies widely in South African municipalities, with some local authorities demonstrating proactive governance and others constrained by political instability or competing developmental agendas (Malan, Fourie and Van der Waldt, 2025).

The IAD Framework conceptualises leadership as an institutional driver that influences the enforcement of rules and alignment of collective goals (Ostrom and Cox, 2022)). Effective leaders strengthen coordination mechanisms, encourage participatory planning and ensure compliance with disaster management legislation. Conversely, weak leadership leads to policy fragmentation and an inconsistent execution.

The Social Capital Theory expands this analysis by highlighting the relational foundation of leadership. Trust between leaders, administrators and communities enhances legitimacy and facilitates collective action (Putnam, 2021). Leaders engaging in transparent communication and collaboration tend to foster stronger institutional resilience. On the other hand, the absence of politics will erode public confidence and contribute to governance inertia (Agyemang, 2025).

3.8.4 Policy Coherence and Integration

Policy coherence refers to the alignment of various legislative, regulatory, and developmental frameworks governing disaster risk management (Zembe, Nemakonde and Chipangura, 2023). Institutional integration ensures that different departments collaborate toward shared objectives. According to Zembe et al. (2023), a lack of coordination between disaster management, environmental planning, and infrastructure development leads to fragmented implementation and duplication of efforts.

The IAD Framework attributes these coordination gaps to weak linkages between collective choices and operational rules (Ostrom and Cox, 2022). Administrative performance is affected when institutional mandates overlap or remain ambiguous. Policy coherence requires integrated planning instruments that link disaster risk management with broader developmental priorities at the municipal level (Coetzee et al., 2023).

Social Capital Theory underscores that policy integration depends on interpersonal trust and interdepartmental communication (Zembe et al., 2023; Putnam, 2021). Informal relationships bridge structural gaps where formal coordination mechanisms fail. Municipalities with collaborative organisational cultures tend to achieve greater synergy among departments, leading to more effective disaster risk adaptation. Conversely, bureaucratic rigidity and mistrust perpetuate silos, and that undermines integration efforts (Mahlangu and Sibanda, 2022).

3.8.5 Data Availability and Information Sharing

Effective use of data and information systems is vital for risk assessment, planning, and monitoring (Taherdoost, 2021). Technological innovations such as GIS, data analytics, and early warning systems enhance municipalities' ability to anticipate and respond to disasters (Girotto et al., 2024; van der Hoogen et al., 2024). However, the literature notes that digital disparities and weak data-sharing practices constrain evidence-based decision-making in many municipalities (Cornelius and Jansen van Rensburg, 2024).

From an IAD standpoint, information management constitutes an institutional rule that governs transparency, accountability, and feedback (Filgueiras and Silva, 2022; Ostrom, 2021). When data systems are fragmented, coordination across administrative units declines, reducing the quality of disaster response. The institutionalisation of interoperable data platforms and performance-monitoring tools can address this gap.

Social Capital Theory highlights that data and technology are not purely technical resources, but social instruments embedded in networks of users. The willingness of departments to share information depends on trust and mutual benefits (Putnam, 2021). Collaborative data governance and cross-sector partnerships can enhance the accessibility and reliability of disaster-related information.

3.8.6 Organisational Culture and Administrative Values

Institutions' internal cultures shape how policies are interpreted and implemented. An organisational culture characterised by openness, accountability, and innovation promotes adaptive governance, whereas hierarchical and rigid cultures constrain responsiveness (Mahlangu and Sibanda, 2022). Administrative values influence whether employees prioritise compliance, learning, control, or collaboration.

In the IAD Framework, organisational culture represents the implicit "rules-in-use" that determines behavioural norms within institutions (Schlager and Villamayor-Tomas, 2023; Ostrom and Cox, 2022). These norms influence how actors interpret formal policies and allocate efforts to collective tasks. A culture of learning and cooperation enhances institutional adaptability, whereas one dominated by political interference and risk aversion reduces innovation.

Social Capital Theory complements this understanding by asserting that administrative values grounded in trust and shared purposes strengthen social cohesion (Kangana et al., 2024). When officials perceive themselves as part of a collective mission, their motivation to act in the public interest increases. Conversely, divisions, patronage, and a lack of accountability undermine cooperation and weaken institutional legitimacy **(**Ma et al., 2024).

3.8.7 Intergovernmental and Stakeholder Collaboration

Effective disaster risk adaptation depends on the collaboration of multiple actors, including national, provincial, and municipal governments as well as non-state stakeholders (Tumembow, Ferriswara and Haryati, 2025). The South African model of cooperative governance aims to promote coordination across spheres, yet its implementation remains uneven (Musekiwa, Masiya and Lubinga, 2025). Weak horizontal and vertical linkages result in delayed responses and the duplication of initiatives.

The IAD Framework explains that intergovernmental collaboration hinges on clearly defined collective choice rules that establish responsibilities and communication channels (Ostrom and Cox, 2022). Without this, actors pursue fragmented agendas. Social Capital Theory states that collaboration relies on networks of trust that transcend bureaucratic boundaries (Sutiyoso et al., 2024; Putnam, 2021Where relationships between institutions are strong, coordination improves, and joint problem-solving becomes feasible.

Studies have shown that municipalities with active partnerships involving academia, civil society, and the private sector demonstrate higher levels of innovation and resilience (Coetzee et al., 2023). These partnerships foster knowledge exchange and resource pooling, enabling municipalities to compensate for their internal capacity limitations. Therefore, enhancing stakeholder collaboration is integral for strengthening adaptive governance in disaster management.

3.9 Linking Theory to Empirical Strategy

The theoretical lenses applied in this chapter Social Capital Theory and the Institutional Analysis and Development (IAD) framework provide important implications for the empirical design of this study. Both frameworks emphasise that disaster risk governance is shaped by institutional rules, relational networks, patterns of trust, coordination mechanisms, and collective decision-making processes. These constructs are not directly observable through quantitative indicators alone but require examination of lived administrative practice and governance interactions.

The literature review further identified gaps relating to the operationalisation of institutional resilience strategies, the role of administrative practice in shaping adaptive capacity, and the functioning of monitoring and feedback mechanisms within municipal systems. Addressing these gaps requires observing how institutional actors interpret, implement, and adapt disaster risk management policies within their organisational settings. Accordingly, the study must engage directly with municipal officials responsible for disaster risk management, as these actors operate within the rule-bound environments described by the IAD framework and participate in the relational networks highlighted by Social Capital Theory. Understanding how institutional resilience is constructed in practice therefore necessitates qualitative inquiry capable of capturing meaning-making processes, governance dynamics, and context-specific administrative experiences.

The theoretical and conceptual foundations outlined in this chapter thus directly inform the methodological approach adopted in Chapter 4, where a qualitative design is employed to generate in-depth, actor-centred evidence aligned with the study's objectives.

3.10 Summary of the Chapter

This chapter examined administrative practices for adapting to disaster risks. This positioned them within the theoretical, policy, and institutional contexts relevant to South African local government. The chapter established that disaster risk adaptation is not a single administrative function, but a multidimensional process embedded within institutional, social, and regulatory systems. Drawing from the IAD framework and Social Capital Theory, this chapter demonstrated that the capacity of municipalities to manage disaster risks depends on both the strength of institutional structures and the quality of relationships among governance actors. A key argument advanced in this chapter is that administrative practices gain significance when

they are embedded within robust legal and policy frameworks. However, despite these comprehensive frameworks, the literature has identified persistent implementation challenges arising from fragmented mandates, insufficient capacity, and weak interdepartmental coordination. A consistent theme throughout this chapter is the interdependence of structure and agency in disaster governance. Institutional structures define the rules of engagement, whereas agency is expressed through leadership, participation, and learning. The literature reviewed in this chapter revealed that successful administrative practices for disaster adaptation require both institutional coherence and relational strength.

The next chapter builds on these theoretical and contextual foundations to present the research methodology. It outlines the philosophical orientation, research design, population, sampling strategy, data collection methods, and analytical techniques employed in this study.

CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 Introduction

The previous chapter laid the foundation for the theoretical frameworks the study employed. This chapter goes into detail on the study methods used to evaluate the administrative practices and institutional resilience mechanisms employed by the municipalities that were identified. This chapter provides a detailed discussion of the research paradigm, research design and methodology that served as the foundation for this investigation. The sample size, sampling protocol and target population for this study are described in this chapter. It also outlines the methods for collecting and analysing the data. Most importantly, the chapter concludes with a description of how the validity, bias and reliability of this study were ensured.

4.2 Philosophy of Research

According to Mubangizi (2025), a research paradigm represents the overarching worldview or belief system that guides how a study is conceptualised, conducted, and interpreted. It encompasses the researcher's assumptions about reality, knowledge, and values, which collectively shape the choice of research approach and methods. Gannon, Taheri and Azer (2022) further describe a paradigm as the framework that governs how researchers acquire, evaluate, and validate knowledge, serving as the foundation upon which methodological decisions are built.

Closely related to this is the concept of research philosophy, which refers specifically to the underlying assumptions about how knowledge is developed and understood. As Paudel (2024) explains, research philosophy reflects the ontological (nature of reality), epistemological (nature of knowledge), and axiological (role of values) orientations that underpin a study. In essence, while the research philosophy provides the theoretical foundation regarding how the researcher perceives reality and knowledge, the research paradigm operationalises these beliefs into a coherent framework that guides the entire research process from problem formulation to data interpretation.

The interpretivist philosophy was adopted, forming the basis of the interpretivist paradigm. Interpretivism emphasises understanding the meanings individuals assign to social phenomena

rather than seeking universal explanations (William, 2024). It assumes that reality is socially constructed and best understood through the experiences and perspectives of those involved in a specific context. This worldview aligns with the qualitative nature of the study, which seeks to explore how institutional actors perceive and enact disaster risk management practices within municipal systems. The interpretivist orientation directly shaped the methodological choices of this study. Because the research seeks to understand how municipal officials interpret, enact, and adapt institutional resilience strategies within their governance environments, the study required methods capable of capturing subjective meanings, institutional norms, and decision-making processes. Interpretivism assumes that social reality is constructed through interaction and institutional practice; therefore, understanding disaster risk governance necessitates engagement with the actors who operate within these systems. This philosophical position justified the use of qualitative inquiry, as it allows for the exploration of administrative behaviour, governance relationships, and contextual dynamics that cannot be adequately measured through quantitative indicators alone.

The interpretivist paradigm guided the researcher in selecting qualitative methods that allow for in-depth exploration and contextual understanding (Muzari, Shava, and Shonhiwa 2022). It also shaped the researcher's reflexive stance, acknowledging that knowledge is co-constructed through interaction between the researcher and participants rather than objectively observed from a distance. The following factors also played a role in adopting the interpretivist paradigm. Because interpretivism assumes that reality is socially constructed and understood through actors' meanings, the study adopted in-depth interviews and thematic analysis to access those meanings directly. This philosophical position therefore guided both the data collection and analysis strategy.

4.2.1 The Subject Nature of Research

Thanh and Thanh (2021) note that interpretivism is more concerned with context-related elements and in-depth phenomena since people create richer meanings than do physical phenomena. It assumes that studying people cannot be done in the same way that studying physical phenomena can. Interpretivism is effective in fields of study where understanding people's subjective experiences and viewpoints is crucial. Interpretivism enabled the researcher to examine how the citizens of various municipalities view and comprehend financial management system, which was important since the researcher wanted to evaluate the administrative practices and institutional resilience tactics employed by municipalities (Jam, Mbhele and Mofolo, 2024).

4.2.2 The Multifaceted Social Environment

The approach aims to explore how municipal personnel perceive and interpret their roles and experiences within their institutional settings, without imposing predefined analytical categories (Paudel, 2024). The study focuses on the difficulties, and experiences associated with the implementation of administrative resilience methods and administrative practices in municipalities' disaster risk management, which is a complex process. The researcher was able to explore the subtleties of this complexity by using interpretivism.

4.2.3 Applicability of the Qualitative Method

The qualitative research approach was considered most suitable for this study because it enables an in-depth understanding of disaster risk management practices and institutional processes within municipalities. Unlike quantitative methods that focus on measurement, qualitative research allows the researcher to explore meanings, experiences, and perspectives within real-life contexts (Iandolo et.al., 2025). Through methods such as semi-structured interviews, qualitative inquiry facilitates rich and detailed exploration of stakeholders' perceptions, beliefs, and lived experiences.

This approach is valuable for examining the complex and context-specific processes involved in developing and implementing resilience strategies and administrative responses to disasters. As Duchek (2020) noted, qualitative data collection methods such as interviews, focus groups, participant observation, and document analysis, which are central to interpretivist research and contribute to the development of grounded and contextually informed theories. Qualitative methodologies provide the flexibility required to adapt data collection to emerging insights during the research process (Lim, 2024). This adaptability allows the researcher to follow new themes and deepen understanding as the study unfolds, ensuring that findings remain responsive to the dynamic realities of municipal disaster governance.

4.2.4. Contextual Knowledge

Interpretivism emphasises the importance of understanding social phenomena within their social and cultural contexts. In this study, the interpretivist approach enabled the researcher to examine disaster risk management practices within the specific organisational and governance environments of the two municipalities in KwaZulu-Natal. By focusing on participants' experiences and institutional settings, the study was able to generate contextually grounded insights into how institutional resilience strategies are interpreted and implemented in practice.

According to Silverman (2024), interpretivist research views context as integral to understanding social behaviour, emphasising that knowledge is produced within institutional and cultural settings rather than as universally generalisable explanations.

4.3 Design of the Research

The research design represents strategies to be used in data collection and analysis (Creswell and Creswell, 2023). The study design, which acts as a guide for data collecting, measurement and analysis, also includes an explanation of what must be done, from developing the research questions to conducting the final data analysis (Silverman, 2024). According to Schiele, Tornikoski and Klitmøller (2022), the research design explains how the objectives of the study were fulfilled and how the problems that emerged during the inquiry were addressed. A qualitative approach was chosen due to the nature of the study, which was guided by the research aim, objectives, and questions. This design helps the researcher analyse how the different stakeholders in the disaster management centres of Msunduzi Local Municipality and eThekwini Metropolitan Municipality construct and respond to disaster events within their respective governance contexts. The discussion that follows provides a comprehensive explanation of the selected research design. It enables the researcher to examine the interacting social, cultural, political and economic factors that shape disaster risk governance, which is essential for understanding the administrative and institutional practices that support disaster response and recovery, as outlined in the preceding section.

4.3.1 Identifying the Case Study Type

This study examined the resilience strategies, administrative practices, and disaster management approaches used by municipalities in KwaZulu-Natal. Specifically, the research focused on Msunduzi Local Municipality and eThekwini Metropolitan Municipality. The study analysed the adoption and effectiveness of resilience strategies, identified factors influencing their implementation, and proposed a framework to improve these practices. An interpretive analytical approach was employed to examine complex governance dynamics by exploring stakeholders' beliefs, attitudes and behaviours in specific disaster management contexts. The descriptive qualitative approach was selected for its flexibility in collecting rich qualitative data and its ability to capture the complex experiences of stakeholders without imposing restrictive structures.

The study further conducted a comparative evaluation of disaster risk management and resilience-building approaches in Msunduzi and eThekwini municipalities. The use of a multiple case study design enhanced the credibility of the findings by revealing key challenges and enabling factors in the implementation of administrative practices. This multi-case study approach allowed for an examination of the socio-economic, organisational and institutional factors that influence disaster management and resilience strategies. These insights provide context-specific knowledge that informs the development of tailored frameworks to strengthen administrative capacity and resilience-building efforts within KwaZulu-Natal municipalities.

4.3.2 Presenting the Results of Case Studies

Because it is suitable and adaptable to exploratory case studies, this study used a linear-analytic structure (Yin, 2023). Since research reports are usually generated and assembled in this manner, the linear-analytic framework was used (Creswell and Creswell, 2023). Creating issue statements is the first step in this process, which then proceeds to reviewing prior research, the research technique, the findings and the conclusion (Yin, 2023).

4.4 Target Population

In research methodology, the term target population refers to the entire group of individuals, institutions, or entities to which the findings of a study are intended to apply (Creswell and Creswell, 2023). It refers to the total group of participants selected for investigation within the defined area of study, ensuring that the findings provide meaningful insights relevant to that specific context (Saunders, Lewis and Thornhill, 2023).The identification of a clearly defined target population is a foundational step in any research process, as it establishes the scope, boundaries, and relevance of the study's conclusions.

This study focuses on the municipal disaster management departments of KwaZulu-Natal, specifically within Msunduzi Local Municipality and eThekwini Metropolitan Municipality. For confidentiality purposes, Msunduzi Local Municipality will hereafter be referred to as M Municipality, and eThekwini Metropolitan Municipality as E Municipality. According to Creswell and Creswell (2023), ethical qualitative research requires the protection of participants' identities and any identifiable features of organisations or settings involved in the study. Researchers therefore often use pseudonyms to ensure confidentiality and minimise potential risks associated with disclosure.

These municipalities were purposefully selected because they fulfil their constitutional and legislative obligations relating to disaster risk governance. In terms of Section 152 of the Constitution of the Republic of South Africa, 1996, municipalities are mandated to promote safe and sustainable communities. Furthermore, the Disaster Management Act 57 of 2002 specifically requires municipalities to establish disaster management structures and capacity. Section 43 of the Act mandates municipalities to establish municipal disaster management centres, while Section 44 outlines the functions and responsibilities of these centres in coordinating disaster risk reduction, preparedness, response, and recovery activities. This selection aligns with the interpretivist paradigm that values context-specific and socially embedded knowledge, emphasising how institutional and administrative realities differ across local governance contexts (Alharahsheh and Pius, 2020; Dlamini and Nkosi, 2023).

Both municipalities have experienced recurrent natural disasters such as floods, storms, and wildfires, which have tested their institutional resilience and administrative capacity. These events provide an empirical foundation for examining the intersection of institutional resilience, administrative practices, and disaster risk management. The M and E municipalities are also central nodes in KZN's socio-economic landscape, responsible for urban infrastructure, community safety, and local development. Therefore, their disaster management centres provide a representative microcosm of local governance challenges in implementing national disaster risk reduction frameworks.

The M Municipality' Disaster Management Centre, located in Pietermaritzburg, plays a pivotal role within the district. The centre comprises approximately 11 officials, including managers, administrators, reaction teams, and support staff. Their collective functions include risk assessment, emergency response coordination, public education, and recovery planning. The E Municipality's Disaster Management Centre, based in Durban, employs approximately 14 staff members including senior managers, communication and coordination officers, field operatives, and administrative personnel. Each official contributes to specific operational domains, such as planning, early warning dissemination, interdepartmental coordination, and public engagement.

From the perspective of the Institutional Analysis and Development Framework (Ostrom and Cox, 2022), these centres represent institutional arenas where rules, actors, and resources interact to produce collective outcomes in disaster risk management. Their configuration embodies operational rules that determine decision-making autonomy, communication flows,

and intergovernmental collaboration. Social Capital Theory provides an additional lens through which these disaster management entities can be understood as relational networks that depend on trust, reciprocity, and shared learning among officials, communities, and external partners (Putnam, 2021). The interactions among actors within and beyond these centres shape how administrative systems adapt to complex and evolving risks.

Selecting these two municipalities allows for a comparative institutional analysis within a shared provincial context but with differing governance capacities. M Municipality, a local municipality, reflects the challenges of limited capacity, resource constraints, and high vulnerability among peri-urban populations. E Municipality, as a metropolitan municipality, represents a more complex administrative system with broader jurisdictional responsibilities and relatively advanced infrastructure. The dual-site focus provides a balanced lens for understanding how institutional resilience and administrative practices manifest across the distinct tiers of local governments.

The target population is not limited to personnel within the disaster management centres but also includes the institutional environment in which they operate. This includes formal structures, legal mandates, and informal norms that guide decision-making and coordination during disasters. By engaging with officials who directly plan, manage, and execute disaster management strategies, this study captures the lived experiences and institutional realities shaping municipal resilience.

The target population therefore provides an ideal foundation for examining how local governance structures translate national disaster risk policies into operational practice and how institutional and administrative mechanisms contribute to or hinder adaptive capacity within South African municipalities. The focus on KZN's two most prominent municipalities enhances the generalisability of our findings to similar urban and semi-urban local governments across the country.

4.5 Methods of Sampling and Sample Size

Sampling refers to the methodological process through which a researcher identifies and selects a portion of the population for a detailed analysis, ensuring that the findings accurately represent the broader group being studied (Saunders, Lewis and Thornhill, 2023). The selection of a suitable sampling method depends on the nature of the research, the objectives of the study, and the characteristics of the target population (Hossain and Islam, 2024). In this study, the size

of the population was relatively small and clearly defined, comprising officials within the disaster management centres of M and E municipalities. Consequently, this study adopts a census sampling approach.

Census sampling involves collecting data from every member of a defined population rather than selecting a subset of participants (Hossain and Islam, 2024; Bryman, 2023). This approach eliminates sampling errors and ensures that the data collected fully represent the views and experiences of all individuals directly engaged in the phenomenon under investigation (Creswell and Creswell, 2023). Given that the target population consisted of only twenty-five officials across the two municipalities, it was both practical and methodologically sound to include all the individuals in the study. The census approach also aligns with the interpretivist paradigm that underpins this research, as it enables the inclusion of all relevant participants to achieve a comprehensive and contextual understanding of their experiences and perspectives, rather than seeking statistical generalisation (Nickerson, 2022).

The census method enabled the researcher to obtain a holistic view of the administrative practices, institutional structures, and operational challenges that influence disaster management in KZN. The decision to use census sampling is also theoretically informed. From the perspective of the IAD framework (Ostrom and Cox, 2022), disaster management centres in both municipalities represent institutional arenas where multiple actors interact under formal and informal rules. Including all members of these centres allowed the study to capture the full range of institutional relationships, decision-making patterns, and coordination dynamics that shape disaster resilience. Similarly, Social Capital Theory emphasises the value of relational trust, collaboration, and network density in understanding how institutions function collectively during crises (Putnam, 2021; Aldrich and Meyer, 2022). A census approach ensured that these social dynamics were observed in their entirety rather than inferred from a partial sample.

Furthermore, census sampling provides an empirical advantage for comparative analysis. M and E municipalities differ significantly in terms of administrative scale, capacity, and resource availability. By incorporating all personnel from each disaster management unit, this study was able to examine these variations comprehensively and identify how institutional structures influence resilience outcomes across municipalities. As Hlongwane and Ncube (2025) and Dlamini et al. (2023) observed, such exhaustive institutional assessments are critical in local governance research, where small administrative units operate with distinct configurations that

cannot be meaningfully represented through probabilistic sampling.

The total sample consisted of twenty-five officials distributed across two municipalities. The sample was composed of four disaster managers, twelve response team members or coordinators, and nine administrators, as presented in Table 4.1. By engaging participants with strategic, operational, administrative and community-focused responsibilities, the study gained comprehensive insights into the administrative practices and institutional resilience strategies employed during disaster preparedness, response and recovery (Bouncken, Czakon and Schmitt, 2025).

The inclusion of twenty-five participants was adequate for this study given the qualitative and exploratory nature of the research, as well as the specificity of the target population. Qualitative enquiry seeks depth of understanding rather than statistical generalisation (Levitt, 2021). Thus, adequacy is determined by the richness, relevance, and saturation of data rather than by numerical magnitude (Braun and Clarke, 2025; Mpofu, 2021). Studies employing in-depth interviews achieve conceptual saturation with as few as 12–20 participants when the population is homogeneous and contextually bounded (Sarfo et al., 2021). In this study, the population of twenty-five officials constitute the entirety of disaster management personnel within the M and E municipalities. As a result, the number is not only adequate but also exhaustive, ensuring that all possible perspectives within the defined institutional environment are represented.

Table 4.1: Sample size of the study

Name of Municipality	Disaster Managers	Response Team/ Coordinators	Administrators	Total
M Municipality	1	6	4	11
E Municipality	3	6	5	14
Total Sample	4	12	9	25

4.6 Data Collection

Data collection is a systematic process of obtaining information to develop a comprehensive understanding of a research problem (Taherdoost, 2021). This study employed semi-structured interviews complemented by document analysis to capture a holistic view of disaster management practices and institutional resilience mechanisms within the M and E municipalities. The combination of these two qualitative methods ensured depth, triangulation, and contextual richness of the findings (Chand, 2025).

Semi-structured interviews were chosen because they offer flexibility, allowing participants to express their views in their own terms, while providing the researcher with opportunities to probe for elaboration and clarification (Ruslin et al., 2022). Silverman (2024) highlighted that semi-structured interviews promote consistency across respondents, while enabling adaptability to explore emerging issues. This method was suited to the current study, which sought to capture diverse administrative, operational, and community engagement experiences within municipal disaster-management systems.

In line with the IAD framework (Ostrom and Cox, 2022), the data collection process was structured to capture the operational realities of how formal rules, decision-making processes, and actor interactions shape disaster management outcomes. Similarly, the incorporation of Social Capital Theory provides an interpretive lens for understanding the relational dynamics, trust networks, and communication patterns influencing collective action and institutional coordination within municipal systems (Putnam, 2021; Aldrich and Meyer, 2022).

4.6.1 Design of Interview Schedule

The interview schedule served as the principal data-collection instrument. The schedule was designed to guide discussions while ensuring that all research objectives were addressed. This study is comprised of two sections. The first captured demographic and background information, whereas the second focused on thematic questions related to administrative practices, institutional resilience, and disaster risk management. The structure of the schedule aligned with the conceptual framework and theoretical foundations of the study.

In-depth interviews were selected not merely as a qualitative preference, but as a methodological necessity aligned with the study's inductive logic. The research seeks to uncover how institutional resilience is interpreted and operationalised within municipal administrative systems. Such insights require access to informant-centric accounts of governance practices, coordination routines, and adaptive decision-making processes.

This approach aligns with the qualitative rigour principles articulated by Gioia, Corley and Hamilton (2013), who emphasise the importance of allowing theoretical categories to emerge from participants' lived experiences. While the full Gioia methodology was not applied, the study adopts its core logic of systematic, transparent coding grounded in informant narratives.

Furthermore, qualitative methodological authorities emphasise that semi-structured interviews are particularly suited to examining institutional meaning systems and cultural governance practices (Gioia, 2021; Price & Smith, 2021). Given that disaster risk governance is embedded within rule-bound institutional contexts, interviews enabled the researcher to probe how formal structures and informal norms interact in practice.

4.6.2 Pilot testing

Prior to the full-scale deployment, the pilot study is essential for evaluating and improving the research methods (Teresi et al., 2022). The primary goals are to assess and improve the document analysis process and interview protocol. Singh et al. (2024) contend that pilot studies are essential for identifying issues and modifying research tools to ensure efficiency and clarity. The researcher can detect and rectify flaws with interview questions, document collecting and analysis methodologies by running a pilot study (Muasya and Mulwa, 2023). This technique establishes an adequate basis for the primary research, ensuring that the data gathering methods are both practical and efficient. Two administrative clerks who did not form part of the sample were chosen for each of the two municipalities to accurately reflect the jobs and responsibilities of the desired sample in the entire study. The draft interview schedule was used to conduct semi-structured interviews. The researcher concentrated on assessing participant answers, question clarity and conversational flow during these interviews. This input was used to pinpoint and fix any areas where questions might need to be changed or modified to be more successful.

4.6.3 The Duration and Process of the Interviews

During data collection, interviews were conducted in environments that were convenient for participants, either within municipal offices or in designated meeting rooms. Each interview session lasted between 45 and 90 minutes, depending on participant availability and depth of discussion. With the participants' consent, interviews were audio recorded to ensure the accuracy and completeness of the data. Field notes were also taken to capture nonverbal cues, contextual observations, and researcher reflections, which contributed to the depth of interpretation during the analysis (Nowell and Albrecht, 2023).

4.7 Data Analysis

The data gathered from the selected municipalities were qualitatively analysed using thematic

and cross-case analysis techniques. The combination of these two approaches provides both depth and breadth, ensuring that unique institutional characteristics and shared administrative patterns are captured (Lim, 2025). Thematic analysis systematically identifies, analyses, and interprets patterns of meaning within qualitative data, whereas cross-case analysis compares multiple cases to uncover both convergence and divergence across municipal contexts (Braun and Clarke, 2023; Miles, Huberman and Saldaña, 2023). Qualitative data analysis software NVivo was used to support the organisation, coding, and retrieval of interview data. The software facilitated systematic categorisation of themes while maintaining transparency and auditability in the coding process.

4.7.1 Preparation of Data

Before the commencement of the analysis, all audio recordings from the interviews were transcribed verbatim to maintain the accuracy and authenticity of the participants' responses (Hill et al., 2022). Each transcript was reviewed alongside field notes and researcher memos to confirm completeness and contextual fidelity. Data cleaning followed, involving the removal of repetitions, conversational fillers, and unrelated material, while retaining all contextually significant statements (Nowell and Albrecht, 2023; Miles, Huberman and Saldaña, 2023). Data from document analysis, including municipal policies, strategic frameworks, disaster management plans, and annual reports, were categorised according to thematic areas corresponding to the research objectives. This process allowed triangulation between the textual data and interview narratives, thus enhancing the credibility and coherence of the findings (Meydan and Akkas, 2024).

4.7.2 Thematic Analysis Process

Thematic analysis served as the principal analytical method because of its suitability in identifying latent meanings and complex relationships embedded in participants' experiences (Ahmed et al., 2025). The process began with data familiarisation, which ere the researcher repeatedly read transcripts and documents to gain an in-depth understanding of the content. The initial coding was performed manually to ensure active engagement with the data. This involved assigning short descriptive labels to statements that captured the core concepts related to disaster risk management, institutional coordination, and adaptive resilience.

Codes were gradually grouped into categories and subsequently refined into broader themes, such as leadership coordination, communication and trust, interdepartmental integration, and institutional learning. Continuous comparison and reflection ensured that the themes were

internally coherent and distinct from one another. Through this method, patterns of interaction and governance emerged, revealing how institutional capacity and social relationships shaped resilience in the municipal context (Christou, 2022). Thus, thematic analysis allowed the researcher to move beyond descriptive accounts toward the interpretation of underlying processes that influence administrative performance in local government systems (Braun and Clarke, 2023; Nowell and Albrecht, 2023).

4.7.3 Cross-Case Analysis

As the study involved two municipalities, a cross-case analysis was conducted to compare the patterns emerging from each case. This approach is effective in studies seeking to understand administrative diversity across institutional contexts (Pedersen and Blok, 2024; Mensah et al., 2022). The analysis examined how each municipality implemented disaster management frameworks, managed coordination structures, and developed adaptive governance mechanisms.

Similarities were identified in areas such as the presence of legislative guidance and prioritisation of community resilience, while differences appeared in leadership style, interdepartmental coordination, and resource allocation. The cross-case comparison also illuminated how contextual factors, such as the size of the municipality, organisational culture, and political commitment, affected administrative effectiveness. These insights provide a deeper understanding of how systemic and relational factors interact within municipal disaster management frameworks in KZN.

4.7.4 Interpretation and Synthesis

Once the coding and cross-case comparisons were complete, data interpretation was performed to synthesise the findings across all sources. The synthesis involved linking thematic outcomes to the theoretical foundations of the study, particularly the IAD framework and Social Capital Theory. These frameworks assist in interpreting how formal institutional rules and informal trust networks shape administrative actions and resilience outcomes (Munshifwa, 2023).

The process of interpretation went beyond thematic descriptions to identify causal linkages and institutional mechanisms that explain how municipalities adapt to disaster risks. This analytical depth ensured that the findings were not limited to surface-level observations, but grounded in theoretical logic that could inform both policy and academic discourse. The interpretive process also drew attention to interdependencies among themes, illustrating how leadership,

coordination, and capacity development collectively influence adaptive performance.

When carefully analysed, qualitative data offer insights into behavioural dynamics, institutional learning, and organisational transformation. They enable researchers to understand the complexity of administrative systems and provide recommendations grounded in real-life realities (Creswell and Poth, 2023). However, as Tracy (2020) argue, the success of such a qualitative analysis depends on the researcher's ability to apply systematic, grounded, and reflexive methods to interpret the data meaningfully.

Data were analysed using thematic analysis. NVivo qualitative data analysis software was utilised to support systematic coding, organisation, and retrieval of data. The analytical process involved data familiarisation, generation of initial codes, categorisation of codes into themes, and iterative refinement to ensure credibility, transparency, and trustworthiness of the findings. The use of NVivo enhanced the auditability of the analysis and supported a structured linkage between raw data, coded segments, and emerging thematic patterns.

4.8 Ensuring Rigour and Trustworthiness, and Addressing Bias

To maintain the integrity and credibility of this study, it was necessary to ensure that all the procedures adhered to the highest standards of qualitative rigour and ethical transparency. The interpretive nature of qualitative enquiry requires careful attention to accuracy, credibility, and bias control (Yadav, 2022). This section outlines the methodological strategies employed to ensure that the research process and its findings are rigorous, trustworthy, and free from undue researcher influence.

4.7.1 Ensuring Rigour

Rigour in qualitative research ensures that the findings are both credible and defensible. According to Yadav (2022), qualitative research must be conducted systematically, and its results must be reported thoroughly to ensure validity and reliability. Achieving methodological rigour involves establishing trusting relationships with participants, focusing on the quality rather than the length of interviews, and continuously monitoring researcher assumptions that might affect data interpretation (Yin, 2023). Braun and Clarke (2023)) cautioned against using rigid or uniform procedures to achieve rigor, noting that such approaches can suppress reflexivity and reduce methodological flexibility.

To uphold rigour in this study, several strategies were implemented, including triangulation, member checking, audit trails, reflexivity, peer debriefing, and data saturation (Creswell and Poth, 2023). Triangulation was central to ensuring the credibility of the data. Data were collected from multiple sources, including interviews, municipal documents, and field notes, which allowed for the cross-verification of information and strengthened the reliability of the findings. Member checking was conducted by sharing summaries of interpretations with the selected participants to confirm their accuracy. An audit trial was maintained to document methodological decisions, ensure transparency, and enable replication. Reflexivity was exercised through ongoing self-evaluation of assumptions, while peer debriefing allowed a scholarly review of the analytical conclusions. Collectively, these measures enhanced the reliability and analytical precision of the study outcomes (Toste, Talbott and Cumming, 2023).

4.7.2 Trustworthiness

Trustworthiness in qualitative research relates to the credibility, dependability, confirmability, and transferability of findings (Ahmed et al. 2025). This ensures that the conclusions drawn from the study accurately represent the participants' perspectives and can withstand external scrutiny. Hollnagel (2023) described trustworthiness as the foundation of qualitative validity, encompassing the credibility of the researcher and the methodological consistency of the study.

To achieve trustworthiness, the researcher applied strategies that guaranteed transparency and authenticity throughout the research. Triangulation was used to validate the data obtained from multiple respondents and municipal documents, ensuring the convergence of the evidence. The inclusion of different categories of participants across the two municipalities provided diverse insights and confirmed recurring administrative patterns. This integration of multiple viewpoints enhances both the credibility and transferability of the findings (Yadav, 2022).

Although qualitative data collection can be contextually challenging, triangulation improves validity by confirming themes across data sources (Donkoh and Mensah, 2023). The credibility was further strengthened by assessing the reliability of each source. The researcher verified the accuracy of the documents and cross-checked the interview contents to ensure factual consistency. Confirmability was achieved by maintaining neutrality throughout the interpretation, allowing findings to emerge directly from the data rather than from researcher assumptions.

Dependability was ensured through systematic documentation of the research process, which

provided an auditable record of all methodological steps. These strategies collectively reinforce the authenticity and transparency of the study's results (Mensah et al., 2022).

4.7.3 Addressing Bias

Bias is a persistent concern in qualitative research because of the subjective nature of interpretation (Haq et al., 2023). Manyena (2022) defines bias as the difference between how participants construct their reality and how they present it to the researcher. This discrepancy may lead to distortions such as exaggerated consensus or underrepresented dissent. To mitigate these risks, the researcher adopted a reflexive stance throughout data collection and analysis, remaining alert to personal assumptions and interpretive predispositions.

Lim (2024) emphasises that skilled qualitative researchers must examine not only what participants say but also how they communicate, including tone, emotion, and non-verbal behaviour. This perspective guided both the data collection and interpretation. Triangulation serves as the principal strategy to address bias by drawing data from multiple sources and periods, enabling the verification and corroboration of emerging findings (Donkoh and Mensah, 2023). This approach ensured that the conclusions reflected an accurate and balanced representation of the municipal realities.

To further minimise bias, the researcher submitted preliminary findings for review by two independent scholars specialising in public administration and disaster management. Their feedback was incorporated to refine conceptual arguments and reduce subjective interpretations. The researcher also remained open to alternative explanations, revising the assumptions when confronted with new evidence. This adaptive stance helped to maintain objectivity and reduced the influence of personal expectations on the analytical process (Haq et al., 2023; Mulisa, 2022).

By combining reflexivity, triangulation, and peer validation, this study effectively minimises bias while maintaining transparency and academic integrity (López, 2024). These methodological safeguards ensured that the study's findings were both credible and representative of the lived experiences and administrative realities within South African municipalities.

4.8 Ethical Consideration

Ethics is an essential component of any research endeavour aimed at collecting and analysing

data responsibly (Cilliers and Viljoen, 2021). The researcher ensured full compliance with the ethical standards of the Durban University of Technology and obtained formal ethical clearance under reference number IREC 139/24 before commencing data collection. In addition, official gatekeeper letters were secured from both the M and E municipalities, granting permission to access the participants and relevant documentation.

In conducting this study, the researcher adhered to fundamental ethical principles, including obtaining informed consent from all participants prior to the commencement of the interviews. Each participant was provided with a clear explanation of the study's objectives, procedures, and voluntary right to participate or withdraw at any point without consequences. This process ensured that all participants made informed decisions regarding their involvement, which was consistent with the ethical guidelines of the Durban University of Technology.

Participants' privacy was rigorously protected throughout the study. All personal information, interview recordings, and municipal data were treated as confidential and were used exclusively for academic purposes. Details were removed during transcription and analysis to maintain anonymity. As already mentioned above, pseudonyms were adopted to ensure confidentiality and minimise potential risks associated with disclosure. This approach strengthened trust between the researcher and participants, enabling candid engagement during data collection. Participation in the study did not expose any individuals or institutions to harm, whether psychological, social, or professional. Furthermore,

4.9 Summary of the chapter

This chapter provided a comprehensive overview of the research methodology adopted for the study of institutional resilience strategies and administrative practices for managing disaster risk within the selected municipalities. The chapter outlined the philosophical underpinnings of the research, the qualitative case study design, and the interpretivist paradigm that guided the data collection and analysis. In this chapter, the target population and sample size were clearly defined, with a focus on officials involved in disaster risk management in the selected municipalities. The chapter proceeded to capture how data were collected and analysed systematically using a combination of thematic analysis and cross-case synthesis. This chapter established a strong methodological foundation for the study, ensuring that the research design was credible, ethical, and methodologically rigorous. The next chapter presents the data analysis and findings derived from the interviews and document reviews.

CHAPTER FIVE
DATA ANALYSIS

5.1 Introduction

This chapter presents an analysis of data collected from respondents in the selected municipalities. It begins with a comprehensive overview of these chosen municipalities, followed by a synopsis of the respondents' profiles to establish context for their articulated opinions. The results for each study aim are then provided, accompanied by verbatim quotations to preserve the authenticity of the respondents' voices. A comparison of the two municipalities underscores their individual strengths, challenges and potential for mutual learning.

The discussion is enriched by the diversity of experiences and institutional contexts, illustrating the political, organisational, and socio-cultural dimensions of disaster risk governance, as well as the technical and operational challenges involved. The findings offer detailed insights into how local governments in KZN understand and implement resilience policies and administrative practices for effective disaster risk management. This chapter concludes with a comparative examination of two municipalities, emphasizing their distinct strengths, challenges, and opportunities for mutual learning to enhance successful disaster risk governance in KZN.

5.2 General description of the selected municipalities

As highlighted in the research methodology chapter, this study focused on two municipalities located within the province of KZN. This section provides a general description of each municipality.

While most respondents occupied managerial or technical roles within the disaster risk management system, the inclusion of an administrative support officer and a municipal intern provided valuable operational perspectives on the day-to-day functioning of institutional processes. These roles interact directly with administrative workflows, documentation procedures, communication channels, and coordination activities that underpin disaster risk governance. As such, they offer insight into the practical implementation of institutional rules and coordination mechanisms within the municipal system.

From an Institutional Analysis and Development (IAD) perspective, these actors contribute to understanding the "rules-in-use" that shape administrative behaviour, while Social Capital Theory highlights the importance of informal communication networks and trust relationships that often emerge at operational levels of organisations. Including these perspectives therefore strengthens the study's ability to capture both formal governance structures and the everyday administrative realities through which disaster risk management practices are enacted.

5.2.1 General Overview of E Municipality

The EThekwini Municipality is a Metropolitan Municipality in the city of Durban and is located on the eastern coast of KZN. As South Africa's third-largest city and the centre of its main port, E Municipality is essential to local and national tourism, logistics, and the economy. The municipality's diverse terrain comprises heavily populated metropolitan centres, peri-urban zones, and rural areas, which pose both possibilities and problems for service delivery and administration. The municipality faces risks including coastal erosion, floods, the vulnerability of informal settlements, and the effects of climate change. The effective Disaster Management Unit emphasises early warning systems, collaborative efforts among stakeholders, proactive planning, and community-oriented disaster risk mitigation. Significant events such as floods and civil unrest have influenced its risk management goals, encouraging investments in sustainable urban development and integrated planning (Rezvani et al., 2023).

5.2.2 General Overview of M Municipality

Msunduzi Local Municipality is located within the uMgungundlovu District Municipality and includes Pietermaritzburg, the provincial capital of KwaZulu-Natal. The municipality functions as an important administrative and economic centre in the Midlands region. Its spatial composition includes urban, peri-urban and surrounding rural communities, which create diverse service delivery demands and governance challenges.

The municipality faces several risks, including ageing infrastructure, rapid urbanisation, periodic flooding and institutional capacity constraints. The municipal Disaster Management Centre is responsible for coordinating disaster preparedness and response activities; however, limited financial and institutional resources often constrain comprehensive resilience planning. Consequently, the municipality has increasingly prioritised urban revitalisation, sustainable service delivery and the integration of disaster risk reduction measures into local planning processes.

5.3 Summary of Respondents Profiles

Table 5.1 summarises the distribution of respondents by municipality and role. Of the 25 interviewees, 15 were from E Municipality and 10 from M Municipality, representing a range of positions from field officers and clerks to senior managers and disaster coordinators. This diversity provided comprehensive insights into institutional resilience strategies at both operational and strategic levels.

Table 5.1: Respondent Distribution by Municipality and Role

Municipality	**Respondent**	**Position**	**Mode of interview**
M Municipality	Respondent 1 (R1)	Manager	Face-to-face
	Respondent 2 (R2)	Senior Administrative Clerk	Face-to-face
	Respondent 3 (R3)	Ward Councillor Liaison	Face-to-face
	Respondent 4 (R4)	Community Risk Outreach Coordinator	Face-to-face
	Respondent 5 (R5)	Disaster Management Officer	Face-to-face
	Respondent 6 (R6)	Junior Risk Management Assistant	Face-to-face
	Respondent 7 (R6)	Operations Manager	Face-to-face
	Respondent 8 (R8)	Environmental Health Office	Face-to-face
	Respondent 9 (R9)	Local Government Intern	Face-to-face

	Respondent 10 (R10)	Administrative Support Officer	Face-to-face
E Municipality	Respondent 11 (R11)	Head: Disaster Management Centre	Face-to-face
	Respondent 12 (R12)	Infrastructure Planner	Face-to-face
	Respondent 13 (R13)	Disaster Management Training Officer	Face-to-face
	Respondent 14 (R14)	GIS and Data Analyst	Face-to-face
	Respondent 15 (R15)	Emergency Preparedness Supervisor	Face-to-face
	Respondent 16 (R16)	Community Engagement Officer	Face-to-face
	Respondent 17 (R17)	Internal Auditor	Face-to-face
	Respondent 18 (R18)	Interdepartmental Liaison	Face-to-face
	Respondent 19 (R19)	Field Operations Led	Face-to-face
	Respondent 20 (R20)	Communications Coordinator	Face-to-face
	Respondent 21 (R21)	Budget and Strategy Analyst	Face-to-face
	Respondent 22 (R22)	Policy Implementation Officer	Face-to-face
	Respondent 23 (R23)	Administrative Support Officer	Face-to-face
	Respondent 24 (R24)	Simulation and Drills Facilitator	Face-to-face
	Respondent 25 (R25)	Resilience Planning Specialist	Face-to-face

Considering its bigger institutional scale, E Municipality's team had more respondents, but M Municipality's respondents provided similarly insightful information from a more limited, smaller system. A rich observational background was made possible by the fact that most interviews were done in person. All interviews were conducted face-to-face, allowing for rich observational insights.

5.4 Demographic Profile of Respondents

This section presents the demographic profile of the respondents, including their age, gender and years of service in the municipalities. This allows for contextualising the results and demonstrating the variety and representativeness of views expressed.

5.4.1 Age Distribution

Most respondents (15) were between 34 and 49 years old, indicating a mature workforce, with the remainder split evenly between younger (26-33 years) and older (50+) employees. Junior personnel were predominantly employed in administrative or field positions, whilst senior personnel were over the age of 40. The age distribution indicates the presence of a multi-generational workforce in the selected municipality . Czainska (2024) asserts that such a spread functions as an asset for capacity building, knowledge transfer, and the sustainability of institutional knowledge within municipalities.

Table 5.2: Age Distribution of Respondents

Age Group	Frequency	Percentage (%)
26–33	5	20%
34–41	7	28%
42–49	8	32%
50+	5	20%

5.4.2 Gender Distribution

Table 5.3 indicates an almost equal gender distribution among respondents, reflecting increasing inclusivity in municipal disaster management. Female respondents contributed valuable insights into empathetic communication and community engagement, vital yet underemphasised aspects of disaster management.

Table 5.3: Gender Distribution of Respondents

Gender	Frequency	Percentage (%)
Male	13	52%
Female	12	48%

5.4.3 Years of Service in the municipality

The data shows a healthy balance of staff experience within the municipalities. Most respondents (6–10 years) occupy mid-level roles, supported by a smaller group of newcomers and a strong presence of senior officials with over 11 years of service. This mix combines institutional memory with fresh perspectives, supporting continuity and effective disaster management capacity.

Table 5.4: Years of Service in the municipality

Years of Service	Frequency	Representative Roles
Less than 1 year	2	Junior clerks, administrative interns
1–5 years	5	Disaster coordinators, outreach officers
6–10 years	8	Mid-level supervisors, senior clerks
11–15 years	6	Strategic planning officials, unit leads
More than 15 years	4	Executive heads, seasoned risk analysts

5.5 Data analysis as per research themes and research objectives

This section presents the findings of this study according to the themes that emerged in the endeavour to address the research objectives. The themes presented below emerged through an iterative coding and thematic development process informed by the study's research questions and theoretical framework.

Table 5.5: Linking Research Questions, Codes and Themes

Research Question	Illustrative First-Order Codes (From Interviews)	Theme	Practical Meaning (So What?)
How are institutional resilience strategies implemented in municipal disaster risk management systems?	"Limited interdepartmental communication"; "unclear coordination roles"; "departments working in silos"	Institutional Coordination Challenges	Effective disaster risk management requires formalised cross-departmental coordination mechanisms, clearly defined roles and responsibilities, and integrated governance structures to avoid fragmentation and duplication.
What institutional barriers affect disaster risk governance at municipal level?	"Insufficient resources"; "delays in funding approvals"; "staff shortages"	Resource and Capacity Constraints	Municipal resilience strategies must be supported by adequate financial resources, skilled personnel, and streamlined budgetary processes to ensure sustained operational capacity.
How do governance relationships influence disaster risk management effectiveness?	"Informal networks help coordination"; "trust between departments"; "relationships matter for response"	Social Capital in Institutional Coordination	Trust-based relationships and informal coordination networks enhance responsiveness and cooperation, suggesting that institutional resilience depends not only on formal structures but also on relational governance dynamics.
How can institutional resilience strategies be strengthened?	"Need for monitoring systems"; "learning from past disasters"; "improved reporting mechanisms"	Monitoring, Learning and Adaptive Governance	Institutional resilience requires embedded monitoring systems, structured learning processes, and adaptive feedback mechanisms that translate experience into improved policy and operational reform.

5.5.1 Theme 1: Institutional Resilience Strategies

The results of the first research objective, which was to examine institutional resilience

strategies adopted by selected municipalities in KZN to manage disaster, are presented in this part. This section examines how risk is identified, how planning is influenced by past events, the kinds of tools and instruments used, the nature of mitigation efforts and the performance metrics that support resilience management using thematic categorisation derived from interview data and document analysis. Below, sub-themes are examined together with quotes and comparisons between the municipalities of E Municipality and M Municipality. This analysis is based on questions 1 to 5 covered in Section B of the interview schedule.

- **Approaches to Identifying Disaster Risks**

In response to the question on how their municipalities identify and evaluate potential disasters and risks within their communities, differing views emerged between the selected municipalities. There is a consensus in E Municipality that a systematic, data-driven approach is used, involving GIS mapping, vulnerability analyses, climate modelling and external input from universities and the South African Weather Service. Respondent 14 (R14) from E Municipality explained, "*Every year, we create detailed risk profiles for every ward within the municipality. These profiles evaluate risks related to flooding, fires, infrastructural deficiencies and population density among additional factors. The insights obtained immediately drive our emergency preparedness practices and resource allocation techniques, ensuring that high-risk locations receive prioritised attention and resources. This proactive strategy allows for the more effective deployment of personnel, equipment and help during disasters hence improving community resilience and reducing possible losses.*"

In contrast, the respondents from M Municipality expressed dependence on informal and reactive strategies. This integrates community feedback, reports from ward councillors, and historical disaster trends to support disaster management strategies. Respondent 3 (R3) from M Municipality stated, "*We lack the advanced tools and technology available to facilitate proactive disaster planning. Our planning mainly depends on lessons learned from the previous year instead of proactively addressing potential future risks. This indicates that we react to crises as they occur rather than taking measures to prevent or mitigate them in advance. The absence of real-time data and automated systems hinders our forecasting and preparedness capabilities, potentially delaying responses and worsening impacts on vulnerable communities.*"

Junior staff in both municipalities indicated deficiencies in formal training on risk identification strategies which could compromise long-term resilience capability. Respondent 6 (R6) from M Municipality indicated, "*I have not received formal training on how to make effective use of hazard maps despite my two-year employment with the municipality. In a lack of adequate direction, interpreting the data shown by these maps and using it effectively in disaster preparation and reaction becomes difficult. This deficiency in training constrains my capacity to fully engage in risk assessments and disaster-preparedness initiatives. It also establishes a disparity between available resources and actual capabilities which impacts the overall efficacy of our crisis management measures.*"

These discrepancies indicate broad institutional difficulties regarding equality and resource distribution that affect disaster risk governance. M Municipality's ad hoc and limited resources methodology indicates a mainly reactive organisation, while E Municipality's organised and systematic approach promotes proactive planning and risk management. This discrepancy correlates with the findings of Pelling and Garschagen (2023), which indicate that institutional fragmentation and unequal resource allocation can lead to varying levels of resilience within a same region. The United Nations Office for Disaster Risk Reduction (UNDRR, 2023) emphasises that institutional coherence and planning foresight are essential aspects for effective local government response to disaster hazards.

- **Role of Past Events in Informing Strategy**

Learning from past disasters is a fundamental aspect of institutional resilience. The municipality regulates learning by implementing structured reviews, conducting simulated exercises, and performing systematic after-action evaluations. Respondents were prompted to provide instances of past disasters encountered by the municipality and to articulate the significance of risk assessment and planning in the management of these events. Respondent 20 (R20) from E Municipality indicated, "*We perform a formal evaluation following each event to determine what was successful, what was unsuccessful and what requires modification." This strategy includes collecting input from all stakeholders, assessing response times, resource distribution and the efficacy of communication. Insights gained are included into revised processes to optimise disaster management strategies and enhance community safety'' safety.*"

Although learning does occur in M Municipality, it is not formally institutionalised. Respondents indicated that informal discussions and experience-sharing often take place;

however, there is little evidence of systematic documentation or structured application of lessons learned. Respondent 2 (R2) from M Municipality explained: *"We regularly discuss these issues in meetings. There is no systematic approach to properly document or follow up on what was shared."* As a result, important insights and lessons may be overlooked or lost over time, limiting opportunities for sustained organisational improvement. The absence of formal monitoring and documentation mechanisms therefore reduces the municipality's ability to learn from past experiences and strengthen disaster management practices.

A mid-level official in M Municipality expressed concern regarding the ongoing mistakes made during disaster response and administrative practices. These mistakes arise from insufficient training, limited funds and excessive workloads. This collectively undermines the accuracy and efficiency of operations. The official highlighted that these errors not only postpone essential interventions but also jeopardise community trust in the municipality's capacity to manage disasters effectively. Respondent 8 (R8) from M Municipality expressed frustration regarding ongoing problems, stating, *"Addressing the same community for the same problem annually, despite the possibility of prevention, is profoundly discouraging. We appear to be ensnared in a cycle of recurring crises, failing to achieve substantial progress. This situation not only depletes our finite resources but also destroys community trust and morale. The statement underscores the pressing necessity for enhanced preventive strategies and extensive long-term planning*."

This subject effectively illustrates the significance of organisational learning systems. The E Municipality possesses a unique adaptive advantage. It effectively transforms insights from previous experiences into formal regulations and procedures. This capacity to systematically collect, analyse, and use knowledge continually enhances disaster risk management. Berke et al. (2022) assert that municipalities employing a learning-oriented governance model are likely to demonstrate greater institutional resilience, in the face of recurrent climate-related disasters. The municipality enhances institutional memory and fosters a culture of preparedness by integrating these lessons into training programs, operational planning, and communication strategies. The UNDRR (2023) contends that adaptable institutions, capable of learning from errors and reacting flexibly, are the most effective means to protect communities and mitigate vulnerabilities amid growing threats.

- **Tools and Practices Used for Risk Assessment**

To further understand institutional resilience, respondents were asked about the specific tools or practices their municipalities use to conduct risk assessments A noticeable difference appeared between the two municipalities in the implementation of digital and administrative tools for managing disaster risks. In E Municipality, integrated digital systems like mobile alert platforms, GIS overlays, and real-time dashboards are employed. These technological tools enhance public communication, foster interdepartmental collaboration, and enable timely data collection. Respondent 12 (R12) from E Municipality remarked, "*I am able to provide the risk status of any ward from my tablet. All information is continuously updated via our integrated digital system, which gathers real-time data from various sources such as weather reports, sensor networks, and field assessments. This constant flow of up-to-date information allows us to monitor evolving risks closely and make quick, informed decisions during emergencies, significantly improving our response times and resource allocation.*"

On the other hand, M Municipality faces significant challenges stemming from its reliance on manual practices and obsolete systems. Employees rely on outdated contact lists, phone trees, and printed maps, which can be incomplete or inaccurate. This outdated method obstructs communication and coordination in emergencies, leading to delays in response and heightening risks for impacted communities. Respondent 5 (R5) shared their experience stating, "*We mostly arrange information using Excel sheets and occasionally use WhatsApp groups to share updates and plan actions. Although these tools are not ideal and lack the sophistication of dedicated disaster management software, they provide a basic level of communication and record-keeping. Given our limited resources, this approach is better than having no system at all, but it also highlights the need for more reliable and integrated solutions to improve efficiency and accuracy.*"

Several respondents from M Municipality expressed concerns regarding equity and access to resources. The tools and resources provided are not equally accessible across departments resulting in disparities in teams' capacities to perform their duties successfully. Some staff lack the necessary technologies or current information, hindering coordinated efforts and resulting in inefficiencies or delays in disaster response. Respondent 7 (R7) indicated, "*certain software and essential information systems are limited to senior staff members resulting in communication and decision-making bottlenecks. Frontline employees become aware of ongoing incidents only post-occurrence which hinders their capacity to respond promptly or engage effectively. The hierarchical access structure impedes operational flow and minimises*

overall responsiveness in emergencies by impacting the efficiency of disaster management efforts."

This sub-theme underscores the critical importance of digital infrastructure in determining an organisation's capability and responsiveness. Robust, intuitive digital technologies provide expedited data gathering, immediate interaction, and seamless interdepartmental collaboration, therefore, enhancing the agility and efficacy of disaster response. Alam et al. (2022) contend that digital transformation in the public sector significantly enhances situational awareness and facilitates rapid, evidence-based decision-making in emergencies. Conversely, inadequate or restricted digital technologies may lead to operational issues, hinder emergency responses, and decrease the overall efficacy of institutional risk management. The World Bank (2023) emphasises that investment in inclusive, interoperable digital infrastructure is crucial for enhancing resilience in vulnerable urban areas faced with escalating climate and disaster threats. Consequently, prioritizing digital transformation is essential for enhancing operational efficiency and protecting communities.

- **Selection and Implementation of Mitigation Strategies**

To understand how municipalities prioritise and address disaster risks, respondents highlighted distinct approaches between E Municipality and M Municipality. The E Municipality for instance, respondent 18 (R18) said "*We use a comprehensive scoring system that considers several critical factors, including population exposure, the severity of potential risks and the constraints of our available budget to determine our priorities. We can objectively determine which wards or areas need immediate attention and budget allocation owing to our systematic technique. We can ensure that our actions are both successful and long-lasting by balancing risk reduction initiatives with financial realities through the measurement of these factors. This approach assists us in making data-driven choices that safeguard the most vulnerable groups and have the greatest possible impact. Stormwater enhancements, early warning systems, and the demolition of high-risk informal settlements are a few examples of mitigation measures that are carried out in coordination with environmental planners and engineers*."

Respondent 1 (R1) from M Municipality on the other hand characterised mitigation efforts as largely reactive, motivated by disasters and community pressure *"After every tragedy, we fix the damage but unfortunately we lack specific strategies or funding to stop the same problems from happening again. Our efforts are still concentrated on short-term remedies rather than long-term solutions since the funding never extends far enough to finance long-term mitigating*

measures. This cycle of reactive maintenance leaves communities vulnerable and means we are constantly playing catch-up instead of building resilience." A significant concern inM Municipality is the politicization of prioritisation. Respondent 10 (R10) emphasised that disaster risk initiatives are influenced by ward-level pressures or lobbying by councillors, leading to delays or redirection of interventions to politically strategic rather than high-risk areas: "*Even if their ward is not the most dangerous, it receives attention if a councillor yells the loudest*."

This comparison demonstrates the substantial impact of institutional culture on the implementation of resilience techniques. Municipalities that promote a culture of foresight, responsibility and continuous learning include disaster risk reduction into fundamental governance activities, facilitating improved coordination and preventative strategies. In contrast, reactive institutional cultures devoid of strategic vision typically respond solely in times of crisis, leading to fragmented responses and ineffective resource allocation. Such institutional behaviour directly affects community outcomes, long-term resilience and sustainable recovery capacity. Van Niekerk and Coetzee (2022) emphasise that cultivating a proactive risk culture in local government is essential for sustainable disaster governance, supported by committed leadership, stakeholder engagement and ongoing capacity development. Likewise, the OECD (2023) stresses that institutional resilience depends not solely on resources but fundamentally on the norms, values and daily decision-making practices within the public sector.

- **Success Metrics for Institutional Planning**

To examine the effectiveness of municipalities' risk assessment and planning initiatives in enhancing disaster reduction and community resilience, participants were questioned about their approaches to measuring the performance of these initiatives concerning resilience outcomes. Respondent 16 (R16) from E Municipality stated that, although the intricacy and variability of disaster events complicate precise success evaluation their municipality utilises various performance indicators. These include decreased household displacement, expedited emergency response times and enhanced service restoration rates to assess progress. These indicators provide concrete criteria for institutional success, although they may not comprehensively encompass the whole range of community vulnerabilities. *"We gauge success by our prompt responses and a reduced impact on households when compared with previous years.*" Nonetheless, ongoing challenges were noted regarding interdepartmental

reporting and data sharing within E Municipality. Conversely, respondent 9 (R9) from M Municipality indicated that their municipality lacks formal monitoring methods and assesses . *"We presume everything went smoothly if no one calls to voice their complaints. We gauge impact in this way. But this isn't always accurate many communities don't have the means or confidence to report problems. Silence doesn't mean success; it means people have given up trying to engage with the system.*"

The need for inclusive feedback loops was highlighted by the disengagement of junior officials from outcome reporting in both municipalities. Respondent 24 (R24) from E Municipality noted, "*Although I assist with relief coordination, I never see the final reports. We are not included in the assessment.*"

This situation limits the capture of on-the-ground realities, creating blind spots in planning and response, which ultimately weakens institutional learning and responsiveness over time.
The significance of comprehensive monitoring and evaluation systems was highlighted as essential for continuous development and learning within an organisation. Efficient systems provide ongoing assessment of initiatives, prompt detection of implementation problems and delivery of real-time, data-informed insights to guide strategic and operational decision-making. Lavell and Maskrey (2022) assert that continual monitoring is essential for assessing the efficacy of disaster risk reduction measures and for adjusting tactics in response to changing risk profiles. In the absence of such monitoring advancements may remain unrecognised and vital possibilities for enhancement might be neglected, in volatile risk contexts.

The UNDRR (2023) emphasises that well developed participatory assessment frameworks are essential for adaptive disaster governance, enabling municipalities to enhance their actions optimise resource allocations and bolster accountability. Thus, investing in comprehensive monitoring and evaluation systems is not only a technological need but a strategic imperative for creating enduring institutional resilience.

- **Conclusion Objective 1: Strategies for institutional resilience**

The findings indicate that E Municipality applies a systematic, data-driven approach to resilience through GIS mapping, vulnerability analyses and climate modelling, whereas M Municipality relies on informal methods such as councillor reports and historical patterns. This divergence highlights disparities in institutional maturity and access to resources. Respondents in M Municipality underscored that insufficient training and ad hoc planning undermine

proactive preparedness.

This aligns with the United Nations Office for Disaster Risk Reduction (UNDRR, 2023), which stresses that municipalities with institutionalised data-driven risk assessments are more likely to implement successful resilience measures. In contrast, fragmented or informal approaches as seen in M Municipality, tend to perpetuate reactive disaster management cycles. Additionally, employees in both municipalities observed a lack of similarity in training and skill development, highlighting a significant capacity gap. Without ongoing investment in technical knowledge, risk assessment tools may become underutilised. This concurs with the observation by Van Niekerk and Coetzee (2022) that institutional resilience in South Africa depends on technological adoption and the development of human capital. The study concludes that the effectiveness of institutional resilience techniques is dependent upon the resources, training, and political support that support them. The contrast between municipalities illustrates the urgent need to embed systematic, technology-supported resilience tools into everyday planning, supported by continuous staff development and knowledge transfer.

- **An Overview of Strategies for Institutional Resilience**

According to the results, E Municipality exhibits a comparatively sophisticated and integrated approach to disaster risk management, complete with planning systems, tools and organised educational practices. In contrast, M Municipality is still primarily reactive due to its inadequate resources, political meddling and unofficial practices.

Table 5.6 Overview of Strategies for Institutional Resilience

Strategy	**E municipality**	**M Municipality**
Risk Planning	Annual GIS-based profiles	Community and councillor input
Learning Integration	Formal debriefs and simulations	Informal experience sharing
Tools and Technology	Real-time dashboards, mobile apps	Manual tracking, Excel sheets
Mitigation Prioritisation	Risk scoring systems	Incident-driven, political input
Monitoring and Evaluation	KPIs and dashboards	Informal feedback and assumption

Both municipalities acknowledge the need for more robust resilience mechanisms, notwithstanding their differences not in awareness, but in ability to act. This realization prepares the reader for the following section, which examines the variables affecting the application of these tactics.

5.5.2 Theme 2: Factors Influencing the Application of Resilience Strategies.

The second research objective, which is to determine factors influencing the application of resilience strategies, in KZN municipalities, is covered in this section. Itis covered in section C, from C1 to C5 of the interview schedule. Thematic analysis revealed five main themes. Below is a discussion of each sub-theme.

- **Absence of Knowledge and Awareness**

In response to how your municipality ensures that relevant staff members are knowledgeable and aware of institutional resilience strategies, there were clear differences across municipalities regarding how staff are trained and kept informed about resilience strategies. In E Municipality, respondents reported that structured programmes exist to build knowledge, including simulation exercises, formal training, and collaboration with external partners. The purpose of these initiatives is to foster ongoing awareness among staff. As highlighted by the R2E municipality, "*We regularly conduct scenario planning workshops and resilience training sessions to keep staff updated on institutional strategies*." In a similar vein, (R5,E Municipality) said, "*Our disaster risk officers participate in annual refresher courses, which include insights from universities and the provincial disaster management centre.*"

By contrast, respondents from M Municipality and other smaller municipalities noted that training is irregular, ad hoc and dependent on external support or donor funding. (R8,M Municipality) explained, *"Sometimes training is promised, but it never materialises due to budget issues."* (R12,M Municipality) added, *"I have been in the department for three years and have never attended a resilience-focused workshop."* Junior staff also reported being excluded from formal capacity-building initiatives, with (R6,M Municipality) noting, *"There is no structured induction or guidance on resilience strategies for new staff, so we learn on the job."*

These findings indicate that while institutional awareness is prioritised in well-resourced municipalities like E, gaps persist in smaller or underfunded municipalities. The uneven distribution of knowledge weakens institutional resilience, as frontline staff are not adequately prepared to interpret or implement strategies effectively. This aligns with the arguments of Dube and Muswede (2023), who emphasise that many South African municipalities face capacity deficits due to weak training systems and staff retention challenges. Similarly, UNDRR (2023) stresses that staff awareness and continuous education are critical components of resilience, as disaster risk reduction relies on informed personnel at all levels. Without consistent training and awareness programmes, resilience strategies risk becoming policy documents with little practical impact. Overall, awareness and knowledge-building are inconsistently implemented across municipalities. E Municipality demonstrates a more systematic approach, while smaller municipalities remain constrained by resources, leading to knowledge gaps.

- **Resource allocation and utilisation**

To understand the enabling or constraining factors affecting the application of institutional resilience strategies, respondents were asked: What resources (financial, human, technological) are available to support the application of institutional resilience strategies within your municipality and how are they implemented. Insufficient material and financial resources were reported as a persistent obstacle in both municipalities, significantly reducing their ability to implement proactive disaster risk reduction (DRR) measures. Respondents from M Municipality consistently identified funding as their main challenge, noting that budget allocations tended to be reactive and cantered on emergency response rather than preventive measures. Respondent 1 (R1) from M Municipality noted, "*The budget exclusively addresses emergency response, regardless of efforts to plan for risk mitigation. Funding for prevention is non-existent, which severely limits our ability to implement proactive measures. Without dedicated resources, we are always reacting to crises rather than preventing them. This cycle hampers long-term resilience building and leaves communities vulnerable.*"

The issue extended beyond financial allocations to a lack of basic operational resources. Several field officers noted that they had to work without essential equipment or vehicles, which undermined response capacity and created inefficiencies. Respondent 25 (R25) from M Municipality stated that "*Even when funds are allocated, procurement delays mean equipment and support arrive too late to make a meaningful impact".* Respondent 4 (R4) from M

Municipality elaborated that, "*We might have to wait days for transportation to go to the impacted areas, which severely delays urgent relief efforts and puts vulnerable communities at risk., we have no choice but to borrow vehicles and equipment from other departments, leading to further logistical complications and inefficiencies in our response*."

While E Municipality had greater access to resources, respondents also described financial bottlenecks due to inter-departmental competition and rigid budgetary structures. Respondent 5 (R5) from E Municipality *noted that* "*We receive budget allocations for DRR, but competing priorities such as housing and water services reduce the amount actually available for resilience programmes*." Respondent 17 (R17) from E Municipality confirmed this, stating, "*Disaster risk management competes with housing, roads and clinics for the same pot of money. We lose out because urgent service delivery projects tend to get prioritised over long-term risk reduction. This competition means that funding for resilience initiatives is insufficient, limiting our ability to implement comprehensive disaster preparedness and mitigation strategies.*"

Respondents also acknowledged the political dynamics shaping financial allocations. In many cases, emergency response funding was easier to secure than prevention funding because the impacts of disasters were more visible and politically pressing. Respondent 13 (R13) from E Municipality noted that "*It's easier to get money after the flood than to argue for money to prevent it. Politicians tend to react to visible damage, resulting in a cycle where reactive funding takes precedence over proactive initiatives. The emphasis on immediate crises results in inadequate funding and neglect of long-term resilience initiatives hindering the development of sustained disaster preparedness. The financial dynamics greatly impact municipalities' capacity to maintain resilience-building initiatives. Budget constraints hinder investments in critical areas, including preventive infrastructure improvements, early warning systems, staff training and inclusive community engagement initiatives. Smaller municipalities such as M find themselves in a reactive cycle, tackling crises as they arise without the necessary capacity to tackle systemic risk factors or to implement long-term mitigation strategies.*"

This illustrates the "resilience paradox" described by Peters et al. (2022), wherein repeated exposure to disasters does not necessarily lead to enhanced preparedness due to financial and institutional constraints that sustain a short-term, reactive orientation. The South African Local Government Association (SALGA, 2023) emphasises that municipalities face persistent

underfunding for disaster risk reduction (DRR), resulting in fragmented planning and weakened interdepartmental collaboration. Globally, the UNDRR (2023) and Smith and Wekesa (2023) contend that sustained resilience requires dedicated, multi-year finance and political commitment to prevention, since reactive strategies usually increase costs and vulnerabilities over time.

- **Resource Limitations and Operational Challenges**

Respondents were questioned about resource constraints or limitations that affect the implementation of the strategies, they highlighted persistent challenges in aligning policies with practice, accessing resources and ensuring internal accountability. In M Municipality, respondents consistently emphasised a lack of internal coherence with national legislation as well as weak enforcement mechanisms. As respondent 7 (R7) from M Municipality noted, "*Our disaster management plan is in place, but neither the budget nor the IDP incorporates it. This disconnect means that, despite having a formal strategy, there are no allocated resources or clear implementation pathways. As a result, the plan remains largely theoretical and fails to translate into practical actions on the ground"*. Another added, "*We are aware of the law, but there are no internal repercussions for non-compliance. Such a deficiency in accountability fosters a situation in which regulations are disregarded or neglected without consequences. This diminishes the efficacy of disaster management initiatives and dissuades personnel from fully engaging in their duties.*" *(R2,M Municipality).*

Conversely, respondents from E Municipality recognised improved integration of national frameworks but they still reported challenges in coordinating across conflicting policy agendas. As respondent 21 (R21) from E Municipality explained, "*We're complying with too many documents and sometimes they contradict each other, but that doesn't mean we don't comply*." Respondent 10 (R10) from E Municipality pointed out that policy design fails to reflect ground realities, especially in informal settlements. *"Policy ignores the reality of people's lives and the rapid changes within informal settlements. Zoning regulations are outdated and do not reflect how communities have expanded and adapted over time. Yet, we are still expected to enforce these rules, even when they no longer make practical sense on the ground*" (R10, M Municipality).

Taken together, these findings illustrate how institutional aims and operational realities remain out of sync, undermining effective disaster management. While policy frameworks prioritise

resilience, sustainability and proactive risk management, their translation into practice is constrained by resource shortages, bureaucratic inertia and limited adaptability to local conditions. Bridging this gap requires not only stronger resource allocations but also a deeper understanding of the socio-political and institutional contexts shaping implementation.

The literature confirms these insights. Few et al. (2022) emphasise that narrowing the gap between policy and practice is essential for translating high-level disaster risk reduction (DRR) commitments into tangible outcomes. The UNDRR (2023) highlights that resilience cannot be attained just by policy declarations, it necessitates ongoing contextually suitable implementation led by frontline practitioners. If institutional objectives are mismatched with practical reality, resilience strategies may remain just symbolic rather than transformational resulting in municipalities being inadequately prepared for increasing disaster risks.

- **Leadership commitment and advocacy**

When respondents were asked to what extent does leadership provide support, resources and guidance for the implementation of these strategies. leadership emerged as a powerful enabling or constraining factor in resilience planning. Respondents highlighted that the tone set by political and administrative leaders strongly influenced governance structures, multi-stakeholder coordination and the prioritisation of adaptive decision-making. In E Municipality, leadership has been defined by stability, experience and a commitment to resilience. Respondent 16 (R16) from E Municipality indicated, "*the executive team actively promotes disaster planning to convey a significant message about its importance throughout the municipality. Their commitment establishes disaster readiness as an organisational priority, which impacts the attitudes and actions of other departments. This leadership fosters a culture of preparedness that improves coordination and accountability*."

Mid-level managers in E Municipality emphasised the importance of continuity, highlighting that leadership stability sustained institutional memory and facilitated the retention of lessons learned. Respondent 19 (R19) from E Municipality added "*We truly carry out the ideas when leaders remain for enough time. We start over every year when they rotate*." In contrast, respondents from M Municipality indicated a restricted strategic vision, characterizing resilience planning as reactive and disjointed. The absence of leadership consistency was seen as a significant impediment, with frequent managerial alterations undermining momentum. Respondent 5 (R5) from M Municipality elucidated the challenges associated with leadership

change. "*Over the past five years we have experienced three managerial changes." Momentum diminishes as individuals present diverse views. Every new management introduces a distinct vision and plan, so disrupting continuity and postponing execution. Maintaining development becomes challenging when leadership has altered.*"

The respondents also emphasised how disaster risk management in M Municipality was ignored due to political considerations. Regarding political priorities, respondent 8 (R8) from M Municipality made a statement. "*Because it doesn't garner votes, no one wants to assume responsibility for disaster risk. Then focusing on long-term resilience planning. Politicians prioritise short-term, visible investments that will appeal to voters. Because of this, disaster risk management is overlooked and inadequately funded even though it is extremely important.*"

These findings demonstrate that leadership commitment and institutional culture are deeply connected. InM Municipality, the main organisational culture is reactive, strongly influenced by short-term political goals and divided among departments. Conversely, E Municipality promotes a proactive culture of accountability and evidence-based planning, wherein leadership continuity bolsters long-term resilience objectives. The literature corroborates this disparity. Van Niekerk and Coetzee (2022) contend that a proactive institutional culture, founded on open governance and a long-term vision, is crucial for effective resilience-building. The OECD (2023) underscores that integrating resilience into institutional frameworks demands steady, responsible, and imaginative leadership that can surpass political cycles. This leadership fosters cross-sector collaboration, enhances trust, and institutionalises best practices. In the absence of cultural and leadership alignment, disaster governance is at risk of becoming fragmented, reactive, and unsustainable.

- **Stakeholder Engagement and Collaboration**

Under this sub-theme, the respondents were asked whether the municipality engages stakeholders in resilience strategy application. The findings suggest that both E Municipality and M Municipality have developed structured platforms to involve stakeholders, though their approaches differ. Respondents from E Municipality noted a formalised and institutional approach emphasizing quarterly interdepartmental and inter-agency meetings that align resilience initiatives and facilitate the sharing of critical updates. Respondent 2 (R2) from E

Municipality stated, "*We conduct quarterly meetings with internal departments and external agencies to coordinate resilience initiatives and share updates*." Structured meetings enhance cross-sectoral communication diminish operational silos and ensure consistency of resilience strategies across departments and agencies.

M Municipality, on the other hand, emphasised grassroots-level participation, through the engagement of ward committees, civic organisations and business forums. Respondents noted that this approach ensures that strategies incorporate community-specific risks and reflect local priorities. As respondent 7 (R7) from M Municipality explained: "*In M Municipality, we involve local ward committees and business forums in discussions to ensure that strategies are practical and address community needs*." By directly involving community actors, the municipality draws on local knowledge and fosters a sense of shared responsibility in resilience planning.

Taken together, these findings demonstrate a two-tiered engagement process: E Municipality's institutional coordination through structured forums and Municipality's bottom-up community consultation. While Municipality prioritises formal, top-down collaboration among established institutions, M Municipality's emphasis on ward-level and business stakeholder input reflects a more participatory, bottom-up orientation. Both approaches reinforce inclusivity and multi-level participation, which are critical for comprehensive disaster resilience governance.

Research repeatedly underscores the significance of stakeholder engagement in enhancing resilience. The UNDRR (2021) identifies stakeholder engagement as fundamental to disaster resilience highlighting that varied perspectives enhance the technical strength and social legitimacy of resilience strategies. Oloruntoba et al. (2022) emphasise that multi-stakeholder practices improve decision-making quality, foster ownership, and ensure strategies are adaptable to diverse needs. Ramovha and Naidoo (2024) observes that structured inter-agency forums diminish siloed operations, whereas Few et al. (2022) contend that community-based participation improves contextual relevance and legitimacy. Boin and Lodge (2021) highlight that the establishment of stakeholder mechanisms fosters trust, accountability and long-term community resilience.

- **Participatory decision-making**

In response to the question on what mechanisms are in place to involve stakeholders in resilience strategy application. respondents from both municipalities confirmed that formalised structures for stakeholder involvement exist, though with slightly different emphases. In M Municipality, respondents highlighted the use of committees and cross-functional working groups as platforms where both community representatives and departmental heads contribute to planning and implementation. As respondent 4 (R4) from M Municipality explained: "*We use committees and working groups to involve both community representatives and departmental heads in planning and decision-making*." These committees ensure that voices from different sectors and community structures are integrated into planning, creating a more participatory process.

E municipality respondents described a similar yet more formalised approach through stakeholder forums and specialised task teams that bring together both internal departments and external partners. Respondent 1(R1) from E Municipality noted "*Stakeholder engagement forums and task teams allow us to include input from both internal departments and external partners ensuring decisions are well-informed and widely supported*." These mechanisms serve to coordinate municipal departments while also capturing external expertise, by enhancing the inclusiveness and quality of decision-making.

The evidence indicates that both municipalities have progressed from ad hoc consultation to centralised, participatory practices. Municipality M prioritises representation via committees that incorporate grassroots participants, whereas Municipality E utilises structured forums and task teams that amalgamate technical and organisational viewpoints. Collectively, these mechanisms augment transparency, promote accountability, and bolster stakeholder ownership, thereby fortifying the implementation of resilience strategies. The literature strongly confirms this assertion. Nkombi (2022) contends that participatory decision-making improves compliance, accountability, and the significance of disaster management strategies. Similarly, UNDRR (2021) emphasises that structured participation facilitates knowledge-sharing, enabling municipalities to blend local insights with expert input.

- **Communication and Coordination Across Departments**

In response to how the municipality collaborates with other departments or agencies in resilience strategy implementation, findings revealed stark differences between the two municipalities. Respondents from E Municipality highlighted that coordination is achieved through shared data systems, collaborative planning, and frequent interdepartmental forums. This structure enables the municipality to address disaster risk management as a cross-sectoral issue involving housing, engineering, health, and transport departments. Respondent 23 (R23) from E Municipality highlighted "*Every month, all line departments come together to participate in coordination meetings. These regular gatherings foster better communication and collaboration across different units. As a result, our ability to anticipate emerging risks and respond swiftly to disasters is significantly improved, ensuring more effective and unified action*."

Respondents in M Municipality reported that communication disruptions and territorial behaviour between departments created significant barriers to collaboration. Instead of smooth information-sharing, departments competed for control, resulting in delays, siloed responses and mistrust. Respondent 3 (R3) from M Municipality identified barriers. "*Individuals prioritise the defence of their own interests resulting in challenges to collaboration and the sharing of information. Important projects or developments are revealed only when construction begins, resulting in insufficient time for preparation or response. The silo mentality significantly restricts our capacity for effective coordination and proactive response to community needs.*"

Junior staff in M Municipality expressed dissatisfaction regarding their exclusion from vital information exchanges and decision-making processes. The exclusion reported hindered both professional development and the municipality's ability for effective implementation. Respondent 7 (R7) from M Municipality noted exclusion, "*We're always the last to be consulted, even though we're the ones on the ground dealing with day-to-day realities. Important decisions are made without our input because we're not invited to the key meetings where these discussions happen This exclusion impedes our ability to implement policies effectively and address community needs. The findings indicate that E Municipality has implemented a coordinated, whole-of-government approach, whereas M Municipality persists in operating in silos, which detracts from effective resilience planning.*"

The literature highlights the importance of collaboration between departments and agencies in disaster governance. Boin and Lodge (2023) argue that isolated governance structures impede prompt and effective disaster response, whereas integrated, networked governance models improve institutional flexibility and responsiveness. The UNDRR (2023) emphasises that disaster risk reduction necessitates comprehensive approaches involving both government and society, wherein departments synchronise strategies, share resources, and engage in ongoing collaboration. Effective interdepartmental coordination enhances adaptive capacity by ensuring that infrastructure, health, housing, and environmental systems are holistically integrated in resilience planning.

- **Community Awareness and Stakeholder Involvement**

Respondents were questioned about the municipality's engagement with local communities in implementing institutional resilience measures to investigate the role of cooperation in resilience-building. The results indicated significant disparities in the organisation and execution of stakeholder involvement between the two municipalities. In E Municipality, stakeholder involvement was characterised as systematic and proactive, encompassing ward-based education, school drills, organised public awareness campaigns and collaborations with civil society organisations. This method cultivated a culture of preparedness among communities. Respondent 24 (R24) from E Municipality indicated, "*We conduct regular school visits and simulate evacuations in areas prone to flooding." These activities enhance understanding of emergency measures among learners and teachers*''. *It also builds community preparedness by ensuring that even children understand how to respond during disasters"*. In addition ,E Municipality has invested in multilingual communication systems, using signage, public meetings and SMS alerts in both English and isiZulu. Respondent 15 (R15) from E Municipality noted, *"Alerts are sent out in both English and isiZulu. The warnings are understood and trusted by the public*." These mechanisms ensured broader inclusivity and trust in disaster communications, strengthening resilience efforts.

The municipality depended significantly on informal mechanisms, including ward councillors and committees. This approach enabled informal connections. However, it led to inconsistent messaging, fragmented communication, and varying levels of community engagement based on the councillor's commitment. Respondent 6 (R6) from M Municipality noted the variability

in ward councillor engagement, stating, "*It really depends on the ward councillor assigned to the area." Certain councillors demonstrate high levels of activity and engagement by regularly attending meetings, effectively communicating with the community, and diligently pursuing disaster risk initiatives. On the other hand, some individuals are entirely absent; they infrequently appear, do not address urgent needs, and leave residents feeling overlooked and unsupported during crucial periods*."

Others highlighted the lack of dedicated funding and resources for community awareness initiatives, which further weakened engagement efforts. Respondent 9 (R9) from M Municipality pointed out resource constraints, "*We don't have any dedicated funding or resources to carry out community awareness programs. Despite this, we are expected to take on these additional responsibilities on top of our regular duties. It's challenging to effectively educate and engage the community without proper support or materials, which limits the impact we can make*." This disparity highlights a critical governance challenge community participation in disaster risk reduction cannot be left to chance or depend solely on the goodwill, capacity, or personality of individual councillors or municipal staff. When participation is informal and driven by individual characteristics, it results in inconsistency, exclusion, and susceptibility to political interference or changes in leadership.

The literature supports these findings. Kitagawa and Samaddar (2022) highlight that integrating participation into institutional frameworks, such as ward-based disaster committees, public risk audits, and inclusive planning mechanisms, guarantees that engagement is systematic, fair, and enduring. The UNDRR (2023) emphasises that genuine resilience necessitates the empowerment of local actors via structured participation, transparency, and collaborative decision-making. In the absence of institutionalised mechanisms, engagement may devolve into a symbolic act rather than a meaningful process, consequently eroding resilience and public trust.

- **Monitoring and evaluating**

When asked to describe how their municipality monitors and evaluates the effectiveness of applied institutional resilience strategies, respondents highlighted the critical role of monitoring and evaluation (MandE) in enabling municipalities to assess the success of implemented strategies, identify shortcomings and adapt approaches to evolving risks

(UNDRR, 2022; Mahlasela and Phago, 2023). The findings reveal significant disparities between municipalities in the design and application of Mand E systems.

In E Municipality Metropolitan Municipality, respondents delineated a systematic monitoring and evaluation framework in which each resilience project is linked to distinct performance indicators. This includes response times, service restoration speed and departmental coordination efficiency. Quarterly progress reports and interdepartmental review meetings facilitate the assessment of these indicators. Respondent 15 (R15) from E Municipality stated, "*We implement an organised monitoring process in which each resilience project is linked to specific indicators. including response time and service restoration speed. Quarterly reports are compiled, and review meetings are held with all departments to assess progress and implement necessary adjustments.*"

This structured approach aligns with adaptive governance models that prioritise iterative learning via evidence-based assessments (Boin and Lodge, 2021; Dube, 2022). Integrating MandE into routine administrative cycles allows E Municipality to maintain dynamic resilience strategies that are responsive to emerging threats and integrated within development planning frameworks. The mechanisms exemplify what Mahlalela (2024) referred to as "administrative preparedness," in which routine monitoring promotes ongoing improvement and cross-sectoral collaboration.

M Municipality mainly depends on informal dialogues and experiential learning post-disasters, without structured monitoring and evaluation procedures. Respondent 7 (R7) from M Municipality stated, "*We lack a formal monitoring tool; typically, we only verify the effectiveness of a solution when confronted with a similar crisis again*. *Lessons are addressed informally; however, they are seldom recorded or utilised for future development*." This reactive stance leads to the loss of knowledge and persistent operational inefficiency. This concurs with Terblanche et al., (2022) (2022) assertion that municipalities with disjointed administrative frameworks have challenges in implementing resilience policies effectively due to a lack of established feedback mechanisms. In the absence of reliable data and uniform assessment measures, institutional learning is random, undermining the municipality's capacity to adjust plans over time (Kotschy et al., (2025)).

The disparity between the two municipalities reflects broader trends in disaster risk governance literature, which indicate that formalised MandE frameworks lead to higher resilience outcomes (UNDRR, 2022). In E Municipality, monitoring systems not only track performance but also strengthen accountability, resource allocation and stakeholder engagement (UN-Habitat, Annual Repor2023). In M Municipality, disaster risk management relies on personal recollection and informal networks, leading to variable execution and reduced institutional capability. Consequently, successful monitoring and evaluation in disaster risk governance must incorporate quantitative metrics, qualitative insights, and participatory review methods that engage both municipal departments and external stakeholders. This integration improves institutional learning and guarantees that resilience solutions are contextually appropriate, resource-efficient, and adaptive to future hazards (Boin and Lodge, 2021; Mahlasela and Phago, 2023).

- **Mechanisms to learn from past disasters**

Respondents indicated significant disparities in institutionalised learning and adaptive practices between E Municipality Metropolitan Municipality and M Municipality Local Municipality when asked about mechanisms for learning from past experiences and adapting strategies accordingly. Respondents in E Municipality talked on the official ways to keep track of what they learnt from earlier experiences. Respondent 15 (R15) from E Municipality said, *"After each major event, we have a formal debriefing where everyone talks about what happened and what problems they had. Updates to disaster management plans are based on lessons learned that have been written down. This stops mistakes from happening again and makes it easier to respond in the future.*" Research indicates that municipalities that integrate formal learning methods into disaster management augment their ability to foresee new hazards, boost coordination, and implement successful actions (Haque, 2024; Ross, 2024; Letebele, 2024).

In E Municipality, respondents described formal mechanisms to capture lessons from past incidents. Respondent 15 (R15), from E Municipality explained, "*After each major incident, we conduct a formal debriefing where all stakeholders share their experiences and challenges. Lessons learned are documented and these inform updates to our disaster management plans. This ensures that we don't repeat mistakes and can respond better in the future*." This method exemplifies an adaptive governance model highlighting the importance of iterative learning via

systematic monitoring and evaluation (Zhao, 2024; Terblanche, de Sousa and van Niekerk, 2022). Through structured after-action reviews and the documentation of lessons learned, E Municipality improves institutional memory encourages cross-departmental learning and integrates resilience into standard operational planning. These practices align with the Plan-Do-Check-Act (PDCA) cycle, promoting ongoing improvement and adaptability in institutional practices (ISO 22301:2019).Studies indicate that municipalities that integrate formal learning mechanisms into disaster management are better able to anticipate emerging risks, improve coordination and implement effective interventions (Rajić et al. (2023).

Respondent 7 (R7) from M Municipality noted the lack of formal learning mechanisms, "*We don't really have formal sessions to review past disasters. Sometimes people discuss what went wrong, but it's informal and rarely recorded. So, when a similar situation happens, we repeat the same mistakes*." This reactive and disjointed approach constrains the municipality's capacity to adjust its tactics informed by past experiences. In the absence of complete records and organised review methods lessons are overlooked and persistent operational inefficiencies continue (Terblanche, de Sousa and van Niekerk, 2022). Haque et al. (2024) state that inadequacies in institutional learning considerably undermine resilience since the ability to foresee, react and recover from risks relies on the proficient acquisition and use of historical information.

The comparison for the two municipalities demonstrates that merely having crisis management plans is inadequate. The efficacy of resilience methods is closely related to the municipality's capacity to learn from past events. The municipality's structured debriefing sessions and documentation methods illustrate exemplary practices in adaptive governance facilitating ongoing enhancement and knowledge assimilation (Letebele, 2024; Mahlasela and Phago, 202). M Municipality illustrates the risks of depending on informal ad hoc learning underscoring the crucial need for institutionalised institutional practices to improve organisational memory, accountability and proactive risk management.

- **Conclusion for Objective 2: Factors Influencing the Application of Resilience Strategies**

In various municipalities, essential enabling variables consist of political backing and sustained leadership which are more pronounced in E Municipality. Restrictions encompass budget

deficiencies, disjointed policy alignment and capability limits especially in M Municipality. These findings reflect the national necessity for reform in disaster risk finance. In 2025, the Deputy Minister of Finance announced that South Africa is implementing a proactive National Disaster Risk Financing Strategy to integrate disaster risk management into infrastructure and municipal grant frameworks (National Treasury, 2025; World Bank, 2023).The research indicates that E Municipality demonstrates more leadership commitment and enhanced interdepartmental collaboration; yet, both municipalities face challenges from competing financial objectives, including housing and service delivery. This illustrates what the South African Local Government Association (SALGA, 2023) describes as a "cycle of reactive spending," wherein resources are allocated to post-disaster aid instead of proactive mitigation efforts. Respondents emphasised that capacity constraints such as employee turnover, poor training, and insufficient technology, increase financial difficulties, resulting in disjointed execution of resilience solutions.

Policy misalignment surfaced as a substantial obstacle. E Municipality grapples with the intricacies of overlapping frameworks (housing, environment, development). Whereas M Municipality said that disaster management plans were not fully included into IDPs. This substantiates Sibanda's (2023) assertion that the absence of regulatory coherence undermines institutional efficacy. The effectiveness of resilience strategy execution is contingent not only on technical competence but also on the interaction of political will, financial change and policy integration. If these enabling conditions are not established, localities may continue to experience a resilience paradox (Peters et al., 2022), in which recurrent exposure to disasters fails to enhance preparation. The continuous advancement of South Africa's disaster risk financing framework is a vital measure for tackling these systemic limitations, but effective execution necessitates the integration of accountability mechanisms at the municipal level and the prioritization of proactive, prevention-focused investments over reactive relief efforts.

5.5.3 Theme 3: Administrative Practices

In line with objective three to identify the administrative practices carried out by KZN municipalities for the adaptation to disaster risks. More than just policy frameworks and general plans is needed for disaster risk adaptation; it mostly depends on the everyday administrative practices that translate these ideas into practical deeds. This part describes the basic administrative practices the E and M municipalities use to enable disaster risk adaptation. Resilience in local government has its practical basis in these operations (Matikinca,

Nyamakura and Shackleton, 2024; Nobambela, 2025). Six primary practice domains comprise the analysis:

- **Risk Assessments**

Respondents were asked to explain how municipality conduct thorough risk assessments to identify potential hazards and vulnerabilities. Risk assessments are fundamental to municipal disaster preparedness serving as the basis for informed decision-making and resource allocation (Rezvani et al., 2023). In the E Municipality, these evaluations are performed proactively concentrating on high-risk regions like as flood-prone areas and informal settlements. Respondent 2 (R2) from M Municipality stated, "*We conduct regular hazard assessments, especially for floods and informal settlements. These evaluations are aligned and embedded into our disaster management system.*" This method illustrates a systematic strategy that integrates geographical mapping into planning tools enabling the municipality to identify weaknesses methodically and prioritise mitigation strategies.

In contrast, M Municipality faces capacity constraints that limit its ability to conduct thorough, localised field assessments Respondent 14 (R14) from E Municipality. explained, "*Some risk assessments are limited due to capacity, so we rely on provincial reports Fieldwork is not always feasible.*" Although secondary data serves as a valuable foundation, relying on external sources could reduce the precision and accuracy of hazard assessment, thereby neglecting localised dangers that necessitate focused solutions. Analysis reveals that both municipalities utilise systematic risk assessment methodologies; nevertheless, their efficacy and detail differ. The E Municipality exhibits a proactive, technology-enhanced strategy, whereas M Municipality's reliance on provincial information underscores deficiencies in localised hazard identification and capability.

Systematic risk assessments are crucial for municipalities to prioritise initiatives and distribute resources effectively (SALGA, 2023; Nobambela, 2025; Jozini LM Policy Framework, 2022). Constraints in manpower, finance, or technical capabilities might compromise the precision of risk identification, thus affecting preparedness and mitigation efforts. To improve efficacy, municipalities, especially those with constrained internal resources, should provide funds for field-level evaluations, develop technical skills, and use sophisticated analytical methods to

augment secondary data. These methods would enhance evidence-based planning, guaranteeing that risk reduction initiatives are context-specific and in-depth.

- **Internal Correspondence and Escalation Systems**

In an emergency, clear administrative lines are vital. Standard Operating practices (SOPs) for internal reporting E has developed include templates, timelines and contact trees routinely verified through simulations. Respondent 22 (R22) from E Municipality explained, "*The administrator serves as a central hub and dispatcher; in times of crisis, we implement a universally understood communication protocol. Everyone knows the chain of command and what signals or codes mean. This ensures clarity and avoids confusion, especially when multiple departments are involved. It's all about quick, coordinated action under pressure.*"

The municipality has implemented explicit crisis management protocols; yet, respondents indicated different levels of adherence, swayed by personal judgment or personal motive. This inconsistency compromises uniformity and diminishes the trustworthiness of institutional responses in emergencies. In the absence of accountability procedures or performance monitoring, practices may devolve into mere symbolism rather than serving a practical purpose. According to Lavell and Maskrey (2022), successful disaster governance necessitates both explicit norms and rigorous implementation and institutional dedication.

Respondent 5 (R5) from M Municipality stated, "*If an individual has a connection in another department, procedures expedite; otherwise, it requires several hours. Processes accelerate when an informal relationship or personal connection exists. In the absence of such, petitions become mired in bureaucratic obstacles or are outright disregarded. It's frustrating because the system should work based on procedure, not personal ties.*" This disparity jeopardises collaboration especially in cases of cross-departmental contributions required. Literature shows that poorly organised administrative communication seriously compromises adaptive governance (Nzama, 2023; Akther and Evans, 2024).

Another key administrative responsibility is organising and documenting staff briefings, simulated exercises and seminars. Drills are recorded, evaluated and then supported in E by written reports and enhancement plans. *Respondent 15 (R15) from E Municipality remarked* "*Every activity is closely monitored to ensure smooth execution and effective participation. We*

conduct two significant simulation exercises each year, necessary for preparedness. The administrator is crucial in monitoring attendance, allocating resources, and maintaining full records of these operations. This methodical supervision enhances our reaction skills and guarantees responsibility throughout the process."

In M Municipality, emergency drills are conducted regularly; nevertheless, they are inconsistent and reactive rather than proactive. Moreover, the documentation of these exercises is not consistently maintained as numerous actions remain unrecorded due to the lack of standardised reporting formats or assigned administrative supervision. The absence of regular recording hinders institutional learning, undermines post-exercise assessments, and reduces the capacity for continuous improvement in disaster preparedness.

Respondent 8 (R8) from M Municipality lamented that "*We conducted a drill last year to test our disaster response practices; however, unfortunately, no formal documentation was created to capture the sequence of events or the lessons learned from the exercise. The absence of records indicates that significant ideas and opportunities for enhancement were never documented nor assessed. Consequently, monitoring progress or enacting adjustments based on the drill's results has proven difficult.*"

The absence of institutional learning mechanisms in M underscores a considerable deficiency in the municipality's ability to enhance disaster management progressively. This discovery corresponds with the claims of Nobambela (2025), who underscore that administrative resilience is fundamentally anchored in collective memory, institutional introspection, and ongoing learning. In the absence of systemic structures to record, document, and implement learning from previous occurrences, municipalities jeopardise the likelihood of repeating the same mistakes, responding to crises instead of averting them. COGTA (2024)) contend that the lack of organised learning techniques results in knowledge fragmentation, diminishes institutional memory, and undermines policy consistency. The UNDRR (2023) emphasises that incorporating feedback loops, after-action evaluations, and training updates into routine governance activities is crucial for adaptive and proactive disaster risk management. In the absence of such structures, M Municipality remains entrenched in a reactive stance, incapable of evolving or institutionalizing optimal practices for enduring resilience.

- **Key Performance Indicators (KPIs)**

Respondents were asked whether the municipality had developed key performance indicators (KPIs) to measure the effectiveness of administrative practices, including indicators related to response time, coordination efficiency, community engagement and resource utilisation. Findings indicate that some municipalities have implemented KPIs to evaluate administrative performance. These indicators are mostly limited to quantifiable operational factors such as reaction time and resource utilisation. Qualitative elements, like coordinating effectiveness and community engagement, are seldom evaluated or included in existing performance measurement frameworks.

Multiple respondents, including R10, R22, and R23, agreed that their municipalities possess key performance indicators related to response time and resource allocation. Respondent 10 (R10) from E Municipality stated that "*response times to emergency incidents are meticulously monitored, along with the efficacy of resource deployment, both vehicles and personnel*." Respondent 23 (R23) from E Municipality noted that "*KPIs are associated with the speed of the municipality's response to calls and the efficiency of logistics management during disaster events.*" These metrics are considered essential for evaluating operational preparedness and guaranteeing responsibility in crises.

However, responses from (R4, R5 and R7) reveal that coordination efficiency and community engagement though acknowledged as important are not systematically included in formal KPIs. Respondent 4 (R4) from M Municipality said, "*Our KPIs don't include coordination between departments or with outside partners presently, even though it's a big issue for us*." Respondent 7 (R7) from M Municipality said something similar: "*Community participation is seen as important, but we don't have structured metrics to measure it*." Respondent 16 (R16) and R18 from E Municipality stressed the necessity it is to have performance metrics that are more complete and include everyone. Respondent 16 (R16) said that some work was being done to assess how well things were working together, but they also said, "*We don't have the right indicators for community engagement, and this is something we're trying to improve*." Respondent 18 (R18) said the same thing, adding, "*KPIs focus on response and logistics, but we don't have any information on how well the community participates or sees our efforts*." These gaps show that although technical performance is being assessed, the relational and participative dimensions of disaster management are still inadequately examined. Respondent

6 (R6) from M Municipality voiced concerns over the practical difficulties in quantifying complicated or non-quantifiable domains. Respondent 5 (R5) from M Municipality said, "*It's harder to make KPIs for coordination or engagement because these are qualitative areas that need more detailed tracking methods."* This shows how limited current evaluation techniques are, since they generally put more weight on easily observable outputs than on process-oriented or impact-driven indicators.

In short, municipalities have made progress in creating KPIs for crisis management, especially when it comes to reaction time and resource deployment. However, there remains a big gap in monitoring how well they work together and how involved the community is. These elements have been recognised as essential for good disaster resilience but have still to be explicitly included into performance frameworks. To fill this vacuum, new ideas are needed, such adding stakeholder surveys, interdepartmental performance evaluations, and interactive feedback mechanisms to the KPI systems. This change to a more thorough performance review would help municipalities better understand and enhance all their disaster risk management methods. UNDRR (2023) assert that performance metrics in disaster management should extend beyond operational efficiency to encompass indicators that signify collaboration, preparedness, and public participation, which are critical determinants of long-term resilience results.

- **Existing policies, Practices and guidelines**

When asked to explain how your municipality evaluate the alignment of existing policies, practices and guidelines with best practices in disaster risk management*,* respondents revealed notable differences between E Municipality Metropolitan Municipality and M Municipality in their approaches to benchmarking and policy evaluation. In E Municipality Metropolitan Municipality, respondents described structured mechanisms to review existing policies against both national frameworks and international best practices. Respondent 10 (R10) from E Municipality explained, "*We benchmark our policies with the Disaster Management Act and look at UNDRR guidelines to see if our practices are still relevant*." Regular assessments are conducted to ensure conformity with international standards. *Respondent 14 (R14) from E Municipality stated,* "*Every three years, we perform a policy review, inviting external experts to evaluate whether our guidelines correspond with legal standards and best practices in disaster management. This systematic benchmarking method illustrates a concerted attempt to incorporate local legislation and global standards into municipal disaster risk governance.*" It

embodies adaptive governance concepts, wherein adherence to best practices guarantees that disaster management is contextually responsive and proactive (Van Niekerk, 2023; Shaw et al., 2020). Furthermore, the engagement of external specialists' augments responsibility, promotes knowledge transfer, and strengthens institutional legitimacy.

In contrast, respondents from M Municipality indicated that the alignment of policies and procedures with best practices is largely informal and inconsistent. Respondent 6 (R6) from M Municipality stated, "*We don't have a formal review process." When new rules arrive from the national government, we may update our policies, but we don't check to see if they follow international best practices*." Respondent 8 (R8) from M Municipality said, "*We care more about complying with the law right away than about looking at global standards or making things better all the time.*" This reactive approach offers a restricted view that is focused on compliance, where policy review is mostly driven by outside orders instead than a commitment to adopting best practices from inside. The lack of organised benchmarking makes it more difficult to change proactively, which creates gaps between official compliance and effective disaster risk governance.

The comparison indicates that E Municipality exhibits a proactive and systematic method of aligning policies with national and global norms, while M Municipality is predominantly reactive and focused on compliance. According to UNDRR (2023) and UN-Habitat (2023), municipalities that regularly evaluate and compare their policies with best practices are more adept at anticipating hazards, promoting innovation, and enhancing institutional resilience. Conversely, municipalities that confine themselves to mere compliance risk maintaining antiquated methods, thereby reducing their ability to effectively tackle growing difficulties.

The findings underscore the necessity for municipalities to incorporate formal benchmarking and regular evaluations into their disaster management frameworks. Established procedures that unify national legislation, international norms, and expert participation foster policy relevance and effectiveness while promoting adaptive capacity and institutional resilience over time (Letebele, 2024; Haque, 2024).

- **Comprehensive disaster planning**

When respondents were inquired whether their municipality have a disaster risk management plan. Both E and M municipalities possess official disaster management plans; nevertheless, their practical efficacy varies significantly. In E Municipality, the plan explicitly delineates roles, responsibilities, and timelines throughout all phases of disaster management, encompassing mitigation, preparedness, response, and recovery. Respondent 1 (R1) from E Municipality stated, "*Our disaster management plan clearly specifies the responsibilities, timelines, and procedures. It delineates steps for mitigation, readiness, reaction, and recovery*." This clarity allows municipal personnel to comprehend their designated jobs and responsibilities during an emergency, promoting swift and coordinated response.

The municipality's plan, although officially established, encounters difficulties in execution due to constrained financial and human resources. Respondent 2 (R2) from M Municipality stated, "*The plan is in place; however, certain activities remain unimplemented due to budgetary limitations. The constraints limit the municipality's capacity to implement specific preparedness and mitigation measures, which could reduce overall disaster readiness*." The disparity between planning and execution exemplifies an ongoing problem in smaller municipalities, where strategic frameworks may be established, yet practical implementation is obstructed by resource constraints.

Effective disaster management planning involves more than having a plan; it necessitates ongoing monitoring, regular updates, and the incorporation of insights gained from past events (UNDRR, 2023; Djalante et al., 2022)). Structured disaster planning facilitates systematic resource allocation, targeted staff training, and the establishment of clear communication protocols. Furthermore, municipalities that possess comprehensive plans are more effectively equipped to engage stakeholders, coordinate interdepartmental initiatives, and implement early warning systems with greater efficiency.

- **Staff preparedness and training**

When respondents were asked how the municipality ensures that administrative staff are adequately prepared to respond to disasters, they pointed out big variations between E and M municipalities when it concerned personnel training, preparation, and operational competence. In E Municipality, the people who serve in administration take part in regular training programs,

including as tabletop exercises, scenario-based simulations, and yearly refresher courses. Respondent 17 (R17) from E Municipality gave a justification: "*All our administrative staff undergo regular training sessions, including simulations and tabletop exercises. We also have refresher courses every year to make sure everyone is aware of the latest protocols and their specific roles during a disaster.*" Respondent 19 (R19) from E Municipality stated, "*We use drills and scenario-based exercises to assess our readiness. This process educates staff with practices and identifies gaps that can be addressed prior to an actual emergency.*"

Structured training initiatives align with international best practices, emphasizing the importance of practical preparedness, ongoing capacity-building, and regular testing (UNDRR, 2023; Rahman et al., 2024). Scenario-based exercises facilitate the incorporation of roles between staff and enhance interdepartmental coordination, which enhances overall institutional resilience (Alexander, 2022). Integrating regular training into administrative routines enables E Municipality to ensure that personnel are competent and confident in executing disaster response roles effectively. The municipality adopts a predominantly reactive strategy. Training occurs, typically initiated only after the introduction of new protocols or in response to a disaster, with simulations or drills being uncommon. Respondent 8 (R8) from M Municipality indicated, "*Training is irregular, and n only happens when a new procedure is introduced or after a crisis occurs. Many staff rely on experience rather than formal preparation.*" Respondent 11(R11) from M Municipality highlighted that "*There aren't consistent drills or simulations, so sometimes staff are unsure of their responsibilities when a disaster happens. We learn more on the job than from formal training.*"

The reliance on ad hoc learning weakens staff confidence, restricts procedural knowledge, and may impede prompt and efficient disaster response (Mokoena and Sebola, 2022; Shaw et al., 2020). The lack of organised capacity-building initiatives indicates less institutional preparedness, rendering the municipality more susceptible during crises.

The findings highlight that administrative readiness is an essential component of municipal disaster resilience. Municipalities that systematise training, simulations, and competence evaluations are more adept at anticipating obstacles, coordinating operations, and safeguarding vulnerable populations. Enhancing capacity-building procedures, including as regular drills, continuing education, and performance evaluation, is crucial for enabling administrative

personnel to respond quickly and effectively during emergencies (Haque, 2024; UNDRR, 2023).

- **Administrative Support and Early Warnings**

Dependence on ad hoc learning undermines staff trust, limits procedural knowledge, and may hinder swift and effective disaster response (Nobambela, 2025; Alexander, 2022)). The lack of structured capacity-building programs signifies diminished institutional readiness, making the municipality more vulnerable during emergencies. The results underscore that administrative preparedness is an essential component of municipal disaster resilience. Municipalities that arrange training, simulations, and competency assessments are more proficient in predicting challenges, coordinating activities, and protecting high-risk groups. Improving capacity-building protocols, such as routine drills, ongoing training, and performance assessments, is essential for equipping administrative staff to respond swiftly and efficiently in emergencies (Haque, 2024; UNDRR, 2023).

Respondents were inquired whether their municipality has established early warning systems for various disasters, including floods, earthquakes, and storms, and how these systems are coordinated with communication channels to effectively reach at-risk communities promptly. In E Municipality, administrative personnel disseminate early warnings using SMS alerts, printed notices, updates to community WhatsApp groups, and published circulars. Respondent 24 (R24) from E Municipality stated, "*We distribute alerts in three distinct languages to guarantee extensive accessibility and comprehension among varied communities. Alerts are sent via numerous channels, including SMS, community radio broadcasts, and WhatsApp groups, to maximise reach and efficacy*. *The administrator is crucial in orchestrating these initiatives, guaranteeing prompt and precise communication. This multilingual and multi-platform strategy ensures the public remain well-informed and prepared during crises*." This statement emphasises E Municipality's multi-platform strategy, ensuring redundancy and enabling extensive and effective communication during crises.

By contrast, M Municipality relies on occasional public announcements through loudspeakers and communications facilitated by ward councillors to disseminate warnings. Respondent 10 (R10) from M Municipality explained, *"A standardised system for communication does not currently exist within the municipality, which creates inconsistencies in how information is shared with residents. It is only beneficial if a person receives correspondence directly from a*

councillor, as this may be their primary source of important updates. But if residents have no access to these channels, they are unaware about important concerns and events." The response shows how M Municipality's informal communication system does not work well and isn't always reliable especially in distant or informal settlements. This puts vulnerable groups at more risk since they don't always have access to accurate and up-to-date data. The effectiveness of early warning systems relies on regular, consistent, and coordinated administrative input to enable timely data collection, processing, and dissemination. In M Municipality, the administrative support for early warning systems is insufficiently developed, resulting in notable problems in communication and coordination among departments.

This deficiency hinders the system's capacity to provide alerts in a timely and precise manner, for vulnerable and hard-to-reach populations. As a result, early warnings do not elicit sufficient community preparedness and response measures, thereby heightening residents' vulnerability to disaster effects. Rahman et al. (2024) emphasises that effective implementation of early warning systems requires robust administrative frameworks, facilitating seamless information flow between agencies and communities. The UNDRR (2023) emphasises that the effectiveness of early warning systems is closely associated with the supporting institutional capacities, thereby underscoring the importance of integrated governance, regular testing, and ongoing training. Therefore, strengthening administrative practices through clear roles, accountability and resource allocation is critical for improving early warning effectiveness and ultimately reducing disaster vulnerability.

- **Documenting and Evaluating Disaster Risk**

When asked how their municipality uses evaluation findings to develop action plans for addressing identified gaps and improving administrative practices over time, respondents provided contrasting accounts from E Municipality Metropolitan Municipality and M Municipality. Respondent 12 (R12) from E Municipality stated, "*Following the evaluation process, the deficiencies are identified and formulated into an action plan with explicit responsibilities, timelines, and resources. Each department is assigned objectives, and advancement is monitored at future review sessions*." Respondent 15 (R15) stated, "*The findings are not simply documented; they are used to revise our disaster management plans and synchronise them with overall municipal strategies*." These remarks demonstrate E Municipality's established feedback mechanism, wherein assessment results are converted into systematic action plans that guide both operational modifications and enduring administrative

enhancements. This approach corresponds with Zhao's (2024) notion of "learning-oriented governance," wherein performance evaluations stimulate adaptive measures. Incorporating evaluation findings into planning cycles improves accountability, resource distribution and promotes a culture of ongoing enhancement (Letebele, 2024; Mahlasela and Phago, 2023).

Conversely, respondents from M Municipality indicated an absence of formal processes to translate evaluation findings into implementable strategies. Respondent 7 (R7) observed, "Respondent 3 (R3) indicated, "*There are discussions after events, but they seldom result in documented actions or modifications to our administrative practices.*" The results indicate M Municipality's dependence on ad hoc responses instead of systematic planning, which hinders the institutionalisation of lessons learned. The lack of formal action planning results in persistent inefficiencies and lost opportunities for organisational learning. Nobambela (2025) note that these municipalities sustain fragmented practices, which reduce resilience and adaptive capacity.

The comparative analysis indicates that E Municipality has a proactive and systematic method for enhancing administrative practices via review, whereas M Municipality exhibits a reactive and inconsistent approach. The difference highlights the essential significance of institutional frameworks that convert evaluative insights into tangible, measurable actions. Effective disaster risk governance necessitates that municipalities perform assessments and institutionalise results through recorded action plans, participatory reviews, and strategic updates (UNDRR, 2022; UN-Habitat, 2023). Consequently, municipalities aiming at enhancing resilience should emphasise the formalization of methods that guarantee assessments directly influence operational and strategic changes, thereby bridging the divide between information and action to cultivate adaptive capacity over time.

- **Conclusion to Objective 3: Administrative Practices for Adaptation to Disaster Risks**

The investigation indicated that municipalities employ several administrative strategies to mitigate disaster risks. These are risk profiling, community participation platforms, interdepartmental coordination, and policy integration. Discrepancies were apparent in implementation .E Municipality had a greater dependence on formalised institutions integrating stakeholder forums and inter-agency task teams. M Municipality favoured ward

committees and informal processes, which lacked consistency. This conflict illustrates broader governance issues. The OECD (2023) underscores that institutional resilience necessitates the inclusion of administrative practices that are inclusive and standardised. This assures continuity beyond individual leadership or political cycles. The lack of such structures, as shown in M Municipality, means administrative practices are characterised by fragmentation and reactivity.

Respondents identified challenges related to bureaucratic inertia, inadequate interdepartmental communication, and the exclusion of junior staff from decision-making processes. The identified gaps undermine institutional coherence and underscore the dangers connected with a siloed governance culture. Boin and Lodge (2023) assert that resilience necessitates both horizontal and vertical integration, involving collaboration among all levels of government and departments on common priorities. Consequently, although administrative practices are established in theory, their effectiveness is compromised by inconsistent application, inadequate accountability, and restricted establishment. Municipalities must establish binding policies, implement continuous training, and develop multi-level accountability frameworks to advance beyond mere symbolic compliance in adaptive practices.

5.5.4 Theme 4: Administrative Adequacy of Administrative Practices

In line with objective four, to evaluate the adequacy of these administrative practices, based on respondents' points of view and supported by modern research, the evaluation is arranged around five main indicators. The literature on disaster risk governance widely recognises these indicators as essential components of administrative resilience (Boin and Lodge, 2023; UNDRR, 2023; Nobambela, 2025).

- **Timeliness and Responsiveness**

In response to question regarding the municipality's methods for regular reporting and monitoring of the success of administrative practices. Respondent 14 (R14) from E Municipality stated, "*The government guarantees that internal situation reports are automatically recorded within 30 minutes of an incident facilitating prompt documentation and response. The quick reporting system ensures that all pertinent departments are informed and facilitates rapid decision-making. The technology enhances overall efficiency by automating the logging process, hence reducing delays and human error. Timely and precise reporting is crucial for efficient disaster management and resource coordination*." This statement

emphasises E Municipality's utilisation of real-time dashboards and automated notifications that facilitate prompt internal responses essential for efficient disaster risk adaptation.

Research by Mahlasela and Phago (2023) and UN-Habitat (2023) identifies operational efficiency, defined by the quick gathering, processing, and distribution of information, as a crucial factor in effective disaster management. Effective reporting systems enhance coordination, optimise resource allocation, and provide prompt responses that ultimately preserve lives and reduce damage. These findings underscore the need of investing in efficient administrative practices to improve resilience and institutional learning. Respondent 8 (R8) from M Municipality noted substantial delays caused by manual practices, hierarchical barriers, and unclear escalation procedures: "*At times, critical decisions are postponed because one must wait for a signature or email approval, even as the community is already experiencing the immediate effects of a disaster. Bureaucratic delays may impede prompt responses and reduce the effectiveness of relief initiatives*."

The delays highlight weaknesses in the municipality's decision-making and communication processes. Improving approval processes is essential for enabling faster responses and strengthening protections for affected communities. This demonstrates that administrative obstacles impede timely decision-making and emergency responses in M Municipality. Delays are especially significant in rapid-onset disasters such as flash floods, where even slight administrative barriers may impede prompt and effective responses. The limited timeframe for intervention necessitates swift decision-making and prompt allocation of funds; any delay or procedural obstacles heighten risks to lives, property, and infrastructure. Inefficiencies place additional pressure on emergency services, thereby diminishing the overall capacity for disaster management.

Furthermore, ongoing delays lead to public dissatisfaction and diminish trust in local authorities, thereby weakening social cohesion and community resilience. Boin and Lodge (2023) assert that administrative agility, defined by streamlined practices, empowered decision-making, and flexible resource allocation, is essential for effective crisis management in rapidly evolving hazard situations. The UNDRR (2023) emphasises that improving institutional responsiveness and reducing bureaucratic inertia are essential for reducing disaster impacts and fostering resilient communities. Therefore, fostering administrative agility is a crucial component of strengthening municipal disaster preparedness and response capabilities.

- **Documentation and Data Administration**

Respondents were asked about the methods employed by their municipality to guarantee regular reporting and monitoring of the effectiveness of administrative practices. Respondent 19 (R19) from E Municipality indicated "*We can access data regarding any relief efforts carried out over the past five years is readily accessible. All relevant data is stored in a centralised digital system, with comprehensive audit trails to guarantee accountability and transparency. This configuration facilitates rapid retrieval, enhances resource tracking, and supports informed planning grounded in historical trends*." This demonstrates E Municipality's effective utilization of shared directories, cloud-based solutions, and automated logging, which improve accountability, data accessibility, and reliability.

In contrast, Respondent 5 (R5) from M Municipality *indicated a dependence on handwritten logs, paper documentation, and disorganised spreadsheets:* "*The ability to substantiate any occurrence or incident heavily relies on the proper filing and organisation of all relevant documentation. In the absence of precise and prompt records, confirming events, evaluating responses, and justifying resource allocation becomes challenging. Incomplete or incorrectly filed paperwork can result in delays, miscommunication, and potential disputes during audits or investigations*." Consequently, comprehensive documentation is crucial for ensuring accountability and facilitating effective disaster management. This indicates substantial difficulties in systematic data management and continuity within M Municipality.

The absence of consistent data flows and dependable record-keeping in M Municipality severely constrains its capacity for reflective analysis, precise documentation and proactive planning. Without these, institutional learning is hindered because lessons from past events cannot be effectively captured or applied to improve future risk reduction strategies. The United Nations Office for Disaster Risk Reduction (UNDRR, 2023) emphasises that data continuity is foundational for adaptive governance, permitting municipalities to track evolving hazards, evaluate outcomes and adjust policies responsively.

Rahman and Djalante (2024) contend that the integration of strong data management systems strengthens resilience by facilitating evidence-based decision-making and encouraging cross-sector collaboration. In the absence of such systems, municipalities are likely to continue reactive, ad hoc actions instead of progressing towards deliberate, proactive disaster

management. Thus, investing in digital data infrastructure and established monitoring techniques is essential for enhancing institutional memory and facilitating sustained disaster risk reduction.

- **Policy and Institutional Consistency**

Respondents were asked how their municipality evaluates the alignment of existing policies, practices and guidelines with best practices in disaster risk management, Respondent 22 (R22) from E Municipality stated, "*All administrative acts must be clearly linked to an existing policy; if not, the action is flagged during our internal audits. This system ensures that all decisions and expenditures are traceable and adhere to governance protocols. It fosters accountability and minimises the likelihood of capricious or unapproved actions within the disaster management framework.*" This illustrates E Municipality's alignment of administrative practices with the IDP and the Service Delivery and Budget Implementation Plan (SDBIP), strengthened by consistent internal audits to guarantee compliance and accountability.

Respondent 2 (R2) from M Municipality acknowledged the necessity of adhering to policies while also highlighting challenges in maintaining consistent enforcement. "*We understand the legal requirements and what is expected of us regarding compliance. Our ability to maintain consistent adherence is impeded by a shortage of qualified personnel and strict time constraints. The constraints force the focus on urgent tasks, sacrificing procedural adherence and consequently affecting the overall efficiency of disaster management efforts*." This suggests that limited capacity, insufficient oversight, and intermittent opposition within M Municipality result in gaps between policy and practice, which ultimately undermine operational efficiency and accountability.

Văn Niekerk (2023) indicates that ongoing implementation gaps reflect underlying structural governance challenges, wherein legal compliance necessitates not only the existence of regulations but also strong operational support and explicit, enforceable directives. In the absence of these elements, policies become symbolic rather than actionable, which undermines accountability and institutional effectiveness, thus impeding significant progress in disaster risk reduction (DRR). The United Nations Office for Disaster Risk Reduction (UNDRR, 2023) reports that numerous local governments in developing contexts encounter significant difficulties in implementing national disaster risk reduction (DRR) policies at the local level,

primarily due to capacity deficits, fragmented operations, and inadequate enforcement mechanisms. Furthermore, Nobambela (2025) highlight that the absence of concrete implementation strategies supported by budgets, trained personnel, and monitoring frameworks results in well-drafted policies failing to produce practical resilience outcomes. Addressing this gap requires a whole-of-government approach in which policy frameworks are operationalised through vertical coordination, localised resource allocation and institutional cultures that support continuous compliance and adaptive learning.

- **Reflections on Adequacy**

Respondents from both municipalities acknowledged the vital role of administration in developing effective disaster responses. Staff from M Municipality described feeling overwhelmed and overburdened, stating, "*An individual administrator simply cannot fulfil the responsibilities meant for four different employees. It's not a matter of laziness or inefficiency we are not idle; we are overwhelmed and overburdened. The workload is excessive and without adequate staffing, critical tasks are delayed or compromised, especially during high-pressure situations"* (R10, M). This highlights the significant administrative capacity challenges faced in M Municipality, during emergencies.

In contrast, E Municipality staff demonstrated confidence in their administrative systems highlighting the significance of effective and well-supported administrative teams. "*Building a strong administrative team is essential for creating a resilient municipality. Competent and adequately supported administrators constitute the foundation of efficient disaster planning, coordination and response. A robust administrative foundation enhances system functionality, facilitating expedited decision-making and improved community protection*." Respondent 12 (R12)E Municipality. This highlights the critical role of strong administrative capacity to accomplish successful disaster governance.

The findings highlight the neglected importance of administrative competency in disaster risk management. Effective governance relies on sound policies and infrastructure, as well as on skilled administrative personnel capable of coordinating resources, managing information flows, and ensuring compliance with regulatory frameworks (van Niekerk, 2023; Rahman and Djalante, 2024). A robust administrative framework is essential; otherwise, even carefully

planned plans may fail due to ineffective implementation, fragmented communication, and delayed responses.

- **Conclusion to Objective 4: Adequacy of Administrative Practices**

Administrative practices in municipalities exhibit variability and are contingent upon contexts. The practices of E Municipality demonstrated effectiveness, and they established frameworks that facilitate resilience planning, stakeholder engagement, and interdepartmental collaboration. Resource competition, administrative delays, and political turnover consistently limit overall effectiveness. M Municipality exhibited notable gaps in adequacy, marked by insufficient integration of disaster management within IDPs, ineffective implementation of current frameworks, and restricted community involvement. This disparity illustrates the "two-speed" system of local governance identified by the South African Cities Network (2023), in which larger, resource-rich municipalities construct advanced resilience systems, while smaller municipalities are structurally unprepared.

Respondents consistently emphasised that plans in M Municipality remain theoretical, without clear resource allocation or implementation mechanisms, reducing their real-world impact. The findings confirm that adequacy is not only about the presence of policies or administrative structures but about their consistent execution, resource backing and accountability. The UNDRR (2023) stresses that resilience measures that lack these conditions risk being symbolic rather than transformative, leaving communities vulnerable to escalating risks such as climate change. The study concludes that the effectiveness of administrative practices is constrained by persistent funding constraints, inconsistent policy alignment, and reactive governance cultures. In the absence of municipal intervention to address systemic challenges, disaster risk governance will remain inconsistent, sustaining vulnerability in communities, in under-resourced areas.

5.6 Integrated and Adaptive Strategic Framework for Disaster Risk Mitigation

This section outlines an integrated and adaptive strategic framework to proactively and coordinatively mitigate disaster risk and enhance the institutional resilience of the municipalities in KZN in accordance with Objective 5 of the study. The framework is derived from the synthesis of empirical findings and the existing literature on disaster governance, institutional resilience, and adaptive management. The framework adopts a pillar-based

configuration, symbolising the essential foundations that uphold resilient municipal systems. Each pillar represents a strategic domain critical to the institutionalisation of resilience, encompassing planning, resourcing, governance, participation, implementation, and learning. Together, these pillars form a holistic, cyclical system that promotes continuous improvement, collaborative governance, and evidence-based adaptation.

Thus, the conceptualisation of disaster risk mitigation is a systematic and dynamic operation that is incorporated into municipal structures, but not as an episodic operation. This framework resonates with the principles of cooperative governance, which are integrated in Chapter 3 of the Constitution of the Republic of South Africa (1996) and realised in Disaster Management Act 57 of 2002, which focuses on multilevel cooperation, integration, and collective responsibility in the management of disaster risks.

The framework operates as an iterative system rather than a linear process. Monitoring and evaluation processes generate feedback that informs institutional learning, policy revision, and adaptive governance reforms. These feedback loops ensure that lessons derived from disaster events continuously reshape preparedness strategies, resource allocation decisions, and coordination mechanisms. The explicit inclusion of feedback mechanisms reinforces the framework's emphasis on institutional resilience as a dynamic and evolving process.

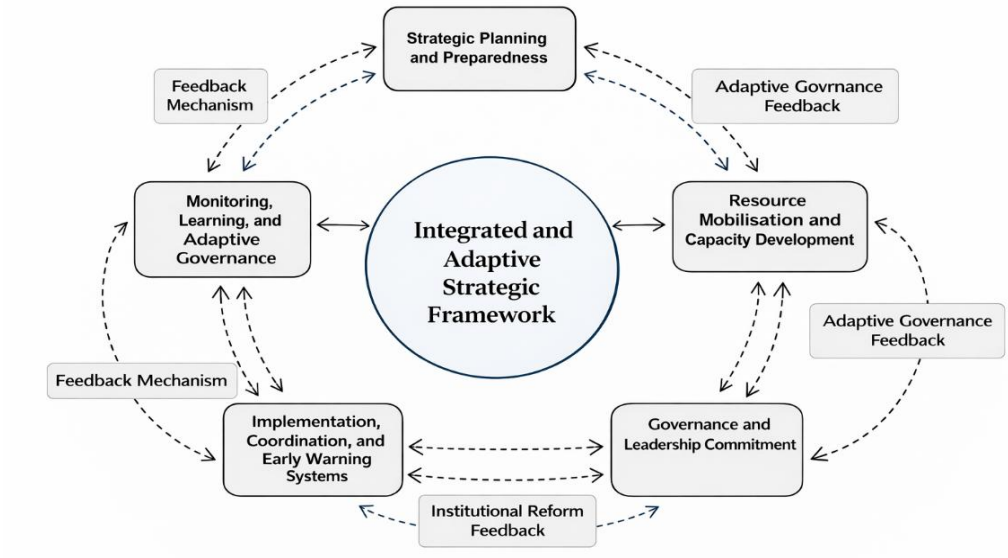

Figure 5.1: Integrated and Adaptive Strategic Framework for Disaster Risk Mitigation

Source: Author's Own Work

5.6.1 Strategic Planning and Preparedness

This pillar highlights proactive and risk-informed planning as the foundation for resilience. Municipalities must integrate disaster risk considerations into the IDP, spatial frameworks, and sectoral policies. Core actions include hazard identification, vulnerability assessment, participatory planning, and scenario modelling. Through institutionalised risk assessment and foresight planning, municipalities can transition from reactive responses to anticipatory governance, ensuring that development decisions minimise exposure to hazards.

5.6.2 Resource Mobilisation and Capacity Development

Resilience depends on the availability and sustainability of the financial, human, and technological resources. This pillar focuses on building institutional capability through adequate budget allocations, continuous professional training, and access to advanced tools, such as GIS and early warning technologies. Municipalities should also cultivate partnerships with universities, private sector actors, and provincial agencies to strengthen their capacities. Sustained investment in resources and human development promotes operational readiness and adaptive competence across municipal departments.

5.6.3 Governance and Leadership Commitment

This pillar underscores the importance of visionary and accountable leadership as anchors for institutional resilience. Effective governance structures, political will, and leadership continuity are essential for embedding disaster risk management in municipal systems. Transparent decision-making and interdepartmental coordination foster trust and coherence, while leadership advocacy ensures that disaster risk reduction remains a municipal priority. Governance mechanisms such as oversight committees and performance-linked accountability systems help institutionalise resilience practices and prevent policy fragmentation.

5.6.4 Stakeholder and Community Engagement

Disaster resilience cannot be achieved without the participation of stakeholders and local communities. This pillar promotes structured platforms for collaboration, including ward-based disaster forums, community partnerships, and inter-sectoral networks. Engagement ensures that resilience initiatives reflect the local knowledge, cultural values, and lived experiences. Inclusive participation strengthens social cohesion, fosters mutual accountability, and empowers communities to act as safety and preparedness co-producers. Partnerships with

civil society, academia, and traditional leadership enhance information-sharing and expand the resource base for resilience initiatives.

5.6.5 Implementation, Coordination, and Early Warning Systems

This operational pillar translates strategy into action through institutional coordination, communication, and early warning systems. Municipalities must establish clear SOPs, functional coordination mechanisms, and incident command systems to guide disaster response. Early warning infrastructure, supported by ICT tools, local broadcasting networks, and multilingual messaging, ensures timely alerts and coordinated actions. Breaking down departmental silos and promoting horizontal and vertical coordination (across municipal, provincial, and national levels) are critical to achieving an integrated and effective response.

5.6.6 Monitoring, Learning, and Adaptive Governance

The final pillar emphasises institutional learning and adaptive capacity. Municipalities must adopt continuous monitoring and evaluation systems, conduct after-action reviews, and document lessons learned. This process ensures that experiences of past events can inform future strategies. Building feedback loops between departments and communities encourages reflective governance and innovation. Adaptive learning transforms municipalities into learning organisations that evolve through practice, ensuring that their strategies remain responsive to dynamic risk environments.

5.6.7 Summary of the Framework

The six-pillar framework articulates a holistic strategy for disaster risk mitigation within KZN municipalities. This demonstrates that institutional resilience arises not from isolated interventions, but from the synergy of planning, resources, leadership, participation, implementation, and learning. The adaptive character of the framework allows municipalities to revise and realign their practices continuously in response to new risks, knowledge, and contexts. By operationalising the concept of adaptive institutional resilience, this framework advances both theory and practice. It bridges the scholarly understanding of resilience with actionable strategies for municipal governance, providing a novel contribution to disaster management scholarship and offering a practical roadmap for South African municipalities transitioning towards proactive, coordinated, and learning-driven disaster risk governance.

5.7 Summary of the chapter

This chapter has provided an analysis of institutional resilience strategies and administrative practices in disaster management between E Municipality and M Municipality. The findings indicate that although both municipalities are dedicated to mitigating disaster risk, substantial differences are present in their methodologies, resources, and ability for adaptive learning.
The municipality exhibits a proactive, data-driven strategy supported by modern technology, structured learning methodologies, and strong interdepartmental collaboration. Conversely, M Municipality has ongoing difficulties, such as resource limitations, dependence on informal techniques, and insufficient institutionalisation of lessons learned from previous occurrences. These disparities directly influence each municipality's capacity to prepare for, respond to, and recover from disasters, eventually impacting long-term community resilience. Key themes identified in the analysis encompass the essential function of resources, the significance of systematic organisational learning, and the necessity for inclusive, well-coordinated administrative practices. Addressing these gaps in less-resourced municipalities will be essential for building equitable and sustainable resilience across the region. An integrated and adaptive strategic framework that strengthens institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation was formulated in this chapter.

The following chapter will discuss these findings in relation to the existing literature, explore their broader policy and practical implications and offer targeted recommendations to strengthen institutional resilience in KZN’s local government sector

CHAPTER SIX
DISCUSSION AND INTERPRETATION OF FINDINGS

6.1 Introduction

This chapter examines the findings presented in Chapter 5 and contextualises them within the extensive literature on disaster risk mitigation, institutional resilience, and public administration. The purpose is to analyse the data critically, compare it to other studies, and come up with lessons that inform policy and practice. The chapter draws the conclusion with recommendations for municipalities in KZN, South Africa, to enhance their resilience-building strategies.

6.2 Discussion of Findings

The discussion of the findings is organised according to the study's four objectives and is divided into subthemes that correspond to the results of each objective.

6.2.1 Objective 1: Institutional Resilience Strategies

This objective examined the institutional resilience strategies adopted by the selected municipalities in KZN to manage disaster risks. The findings revealed marked differences in how E Municipality and M Municipality conceptualise, plan for, and operationalise resilience initiatives. The analysis demonstrates that E Municipality applies a structured, data-driven, and learning-oriented approach, while M Municipality remains largely reactive and constrained by resource limitations, technological inequalities, and political influence. These distinctions illustrate how institutional capacity, leadership commitment, and access to technology shape the resilience trajectories of local governments. The following discussion expands on each sub-theme that emerged from data analysis.

- **Approaches to Identifying Disaster Risks**

The findings revealed that E Municipality has adopted systematic and evidence-based approaches to identifying and evaluating disaster risks. The municipality employs Geographic Information System (GIS) mapping, vulnerability analyses, and climate modelling, supported by partnerships with universities and the South African Weather Service. These tools provide

real-time data that can inform preparedness and response strategies. Respondents described this as an integral part of institutional planning, in which annual ward-based risk profiles were compiled to guide emergency interventions. Such an approach fosters anticipatory governance and aligns with UNDRR (2023), which emphasises the importance of institutional coherence and planning foresight in enhancing local resilience. The proactive use of risk profiles allows E Municipality to direct its limited resources to high-risk areas, reducing potential losses and improving the speed and effectiveness of response operations.

This structured methodology embodies the institutional maturity that Van Niekerk and Coetzee (2023) regard as central to sustainable disaster governance in South Africa. The evidence further shows that E Municipality's commitment to scientific risk evaluation enables it to predict emerging hazards, strengthen interdepartmental coordination, and integrate risk reduction into broader municipal planning frameworks such as the IDP.

By contrast, M Municipality's risk identification processes rely on informal and reactive methods. The municipality primarily depends on councillor reports, community feedback, and historical experience to identify risks. Respondents acknowledged the absence of digital tools, structured data systems, or systematic hazard mapping. As a result, disaster planning is typically triggered by incidents rather than proactive risk forecasting. This practice limits a municipality's ability to respond efficiently, when dealing with simultaneous or complex disasters. The absence of technological infrastructure and formalised planning processes supports Pelling and Garschagen' s (2023) observation that institutional fragmentation and unequal resource allocation within a region produce disparate levels of resilience.

Respondents from M Municipality also highlighted the lack of formal training in risk-identification strategies. Junior officials reported difficulty interpreting hazard maps and using available data, illustrating a gap between resources and capacity. The combination of weak institutional support and inadequate training hinders their ability to meaningfully participate in risk assessments. These challenges indicate that resilience is undermined when knowledge and capacity are unevenly distributed across an organisation. In line with the UNDRR (2023), these results confirm that institutions lacking coherence, coordination, and planning foresight remain trapped in reactive cycles of disaster response.

Overall, E Municipality's structured and evidence-driven risk identification system demonstrates a proactive culture of preparedness, while M Municipality's reliance on ad hoc

measures highlight the deep institutional and technical asymmetries that weaken resilience. The results affirm that sustainable resilience depends on both technological capacity and the institutionalisation of risk assessment processes across all administrative levels.

- **Role of Past Events in Informing Strategy**

These findings underscore the critical role of learning from past events in shaping disaster management strategies. E Municipality was found to institutionalise organisational learning through structured post-disaster reviews, simulation exercises, and stakeholder debriefings. The respondents described how, after each disaster, formal evaluations were conducted to assess what worked well, identify shortcomings, and document lessons for future improvement. This process not only strengthens preparedness but also contributes to the continuous refinement of operational procedures.

The approach adopted by E Municipality reflects the adaptive learning framework advanced by Haque et al. (2024), who emphasise that municipalities that systematically collect and apply experiential knowledge demonstrate higher institutional resilience. By transforming lessons into updated SOPs, E Municipality ensures that learning becomes embedded in practice rather than an informal exchange of experiences. The findings also showed that the municipality integrates lessons learned into staff training, operational planning, and communication strategies, reinforcing a culture of evidence-based improvement.

Conversely, M Municipality lacks structured mechanisms for organisational learning. Respondents revealed that discussions about past disasters take place informally during meetings, without follow-up or documentation. The absence of formal tracking or review processes results in repetitive errors, inefficient resource utilisation, and diminished community confidence. One respondent lamented the frustration of addressing the same community issues every year, without meaningful progress. This situation illustrates what the UNDRR (2023) describes as a “cycle of recurring crises” that characterises institutions that fail to learn systematically from experience.

The findings further reveal that institutional learning is not only a technical process but also a cultural one. E Municipality’s learning culture enhances accountability, motivates staff, and builds collective ownership of risk management outcomes. In contrast ,M Municipality’s reliance on informal knowledge transfer exposes it to information loss, especially staff

turnover. Haque et al. (2024) argue that municipalities with institutionalised learning mechanisms possess greater adaptive capacity and are better able to withstand recurring shocks. Therefore, the evidence confirms that resilience is sustained through a deliberate learning framework, supported by leadership commitment and adequate resources.

- **Tools and Practices Used for Risk Assessment**

The tools and technologies used by municipalities to assess and manage risks differ significantly between the two municipalities. E Municipality's investment in digital systems, such as mobile alert platforms, GIS overlays, and real-time dashboards, has enhanced its ability to collect, analyse, and disseminate information during disasters. Respondents highlighted that these technologies facilitate interdepartmental coordination, enabling rapid and well-informed decision-making. This capability improves situational awareness and promotes agile response to evolving hazards. These findings affirm Rahman and Djalante (2024), who asserted that digital transformation in the public sector strengthens the accuracy, transparency, and timeliness of disaster response.

Furthermore, the use of integrated digital systems in E Municipality supports collaborative planning and improves public communications. Respondents indicated that these tools enable continuous monitoring of risk indicators, ensuring that decision makers are alerted promptly to any emerging threat. The integration of technological tools across departments illustrates a mature institutional approach that aligns with the World Bank (2023), which stresses the importance of inclusive and interoperable digital systems for strengthening urban resilience.

On the other hand, M Municipality continues to depend on manual systems such as spreadsheets, paper-based reporting, and WhatsApp groups for coordination. The respondents explained that these methods are prone to delays, inaccuracies, and information bottlenecks. Technological inequity across departments further exacerbates these challenges, as some staff members lack access to the necessary digital tools or updated information. Respondents also noted that hierarchical control of information limits operational efficiency, with frontline employees receiving updates only after incidents have occurred.

These findings highlight that inadequate digital capacity in M Municipality restricts its ability to communicate, coordinate, and make time-sensitive decisions. This technological divide contributes to a municipality's reactive management style and undermines its potential to adopt

preventive measures. These results align with those of Van Niekerk and Coetzee (2023), who argue that the adoption of technology in disaster management enhances coordination and overall governance effectiveness. Thus, the results demonstrate that the strength of institutional resilience is closely tied to the integration of digital tools that facilitate real-time decision-making, transparency, and collaboration.

- **Selection and Implementation of Mitigation Strategies**

The study found that E Municipality applies a structured, evidence-based framework for selecting and implementing mitigation strategies. The municipality uses a comprehensive scoring system to evaluate the severity of risks, exposure levels, and budgetary limitations before allocating resources. This objective approach promotes equity, transparency, and accountability in the distribution of disaster mitigation funding. Respondents indicated that this scoring model ensures that interventions are prioritised based on needs rather than political considerations, allowing the municipality to safeguard vulnerable communities more effectively.

Examples of E Municipality's mitigation initiatives include upgrading stormwater infrastructure, installing early warning systems, and relocating high-risk informal settlements. These efforts were implemented in collaboration with engineers, planners, and environmental officers, demonstrating an integrated governance approach. Van Niekerk and Coetzee (2023) argue that municipalities that institutionalise such proactive risk cultures demonstrate improved coordination and sustainability in their resilience initiatives.

By contrast, M Municipality continues to operate reactively, with mitigation efforts typically undertaken after disasters occur. Respondents acknowledged that interventions are prioritised based on councillor pressure or community protests, rather than technical assessments. This politicisation of disaster management distorts prioritisation and results in short-term, piecemeal responses. Respondents also noted that resource scarcity and budget constraints hindered the municipality's ability to implement long-term risk reduction strategies.

These findings correspond with those of the OECD (2023), which highlight that the institutional culture of local governments plays a critical role in determining disaster risk outcomes. Municipalities with proactive leadership, accountability mechanisms, and stakeholder collaboration demonstrate stronger resilience than those characterised by reactive

decision-making and political interference. The evidence confirms that E Municipality's culture of foresight, data-based decision-making, and coordinated planning fosters adaptive capacity, whereas M Municipality's reactive orientation perpetuates vulnerability and inefficiency.

- **Success Metrics for Institutional Planning**

The evaluation of success indicators for institutional planning revealed another key difference between municipalities. E Municipality employs a range of measurable indicators, such as reduced displacement, improved emergency response times, and faster service restoration, to assess the performance of their resilience strategies. These indicators provide an evidence base for evaluating progress and identifying areas of improvement. However, the respondents acknowledged that challenges remain in achieving seamless interdepartmental reporting and ensuring that data from all units are consolidated in performance assessments.

M Municipality lacks formal monitoring and evaluation mechanisms. Respondents indicated that the municipality equated the absence of complaints with successful service delivery. This assumption-based approach limits a municipality's ability to detect implementation gaps or community dissatisfaction. As one respondent noted, "Silence doesn't mean success; it means people have given up trying to engage with the system." The exclusion of junior officials from the outcome evaluation processes further compounded the problem by restricting the flow of ground-level insights into policy reviews.

These findings confirm that comprehensive monitoring and evaluation systems are essential for continuous improvement and institutional learning. Letebele (2024) maintains that sustained monitoring is crucial for evaluating the effectiveness of disaster management strategies and adapting to changing risk profiles. Similarly, UNDRR (2023) emphasises that participatory evaluation frameworks enhance accountability, inclusivity, and adaptive governance. E Municipality's efforts toward institutionalising performance indicators reflect progress toward these principles, whereas M Municipality's informal assessment methods perpetuate inefficiency and information asymmetry.

- **Conclusion on Institutional Resilience Strategies**

The findings illustrate two contrasting models of institutional resilience among the selected municipalities. E Municipality exemplifies a proactive, integrated, and learning-oriented

governance model characterised by evidence-based planning, digital innovation, and structured evaluation mechanisms. In contrast, M Municipality exhibits a reactive model constrained by inadequate resources, limited capacity, and politicised decision-making processes.

Both municipalities demonstrate an awareness of the importance of systematic planning and risk identification, yet they differ in their ability to institutionalise resilience practices. The comparison underscores that institutional resilience is not solely dependent on financial resources, but also on leadership stability, knowledge management, technology adoption, and the integration of learning systems into everyday governance.

The results affirm that disaster resilience in KZN municipalities must move beyond compliance with statutory requirements toward the development of adaptive governance cultures that promote innovation, learning, and inclusivity. E Municipality's approach offers a practical model for embedding resilience thinking within local government operations, whereas M Municipality's experiences highlight the barriers that need to be addressed for equitable and sustainable disaster risk management across the province.

6.2.2 Objective 2: Factors Influencing the Application of Institutional Resilience Strategies

This study sought to determine the factors influencing the application of institutional resilience strategies by municipalities in KZN. The findings revealed that the implementation of resilience strategies is shaped by the complex interaction of institutional knowledge, financial resources, leadership stability, political context, and community engagement. The data highlighted notable differences between E Municipality and M Municipality, in relation to awareness levels, resource allocation, leadership continuity, and participatory governance.

- **Absence of Knowledge and Awareness**

The findings demonstrate that the level of knowledge and awareness among municipal personnel strongly influences the success of resilience initiatives. In E Municipality, staff development is institutionalised through structured training programmes, simulation exercises, and partnerships with universities and the provincial disaster management centre. Respondents highlighted that scenario planning and annual refresher courses were regularly conducted to sustain their awareness of resilience strategies. Such programmes encourage institutional

learning and align with UNDRR (2023), which emphasises that continuous education among disaster management practitioners is critical for preparedness and adaptive capacity.

Conversely, M Municipality exhibits sporadic and ad hoc training. Respondents indicated that workshops were irregular, depended on external funding, and seldom included junior officials. Many employees reported learning on their jobs, reflecting a lack of structured induction or mentorship systems. This uneven distribution of knowledge weakens institutional resilience by leaving frontline staff ill-equipped to effectively interpret or apply policy frameworks. These observations correspond with those of Mahlasela and Phago (2023), who found that many South African municipalities struggle with capacity deficits due to weak training systems and poor staff retention. The evidence suggests that E Municipality's consistent approach fosters a knowledge-driven culture, while the fragmented awareness mechanisms in M Municipality perpetuate a reactive and dependent model of disaster management.

- **Resource Allocation and Utilisation**

The availability and utilisation of financial, human, and technological resources have emerged as the dominant determinants of resilience implementation. Respondents from both municipalities identified funding as a persistent obstacle, although their severity differed .M Municipality operates with limited budgets that prioritise emergency response over prevention. Respondents described this as a "cycle of reactive spending", where funding is released after disasters occur rather than for proactive risk mitigation. This cycle limits the municipality's capacity to invest in preventive infrastructure, staff training, and community awareness programmes. This situation aligns with Boin and Lodge (2023), who describe this as the "resilience paradox", which are repeated disaster exposure does not lead to improved preparedness because of resource and institutional constraints.

E Municipality, although better resourced, still faces competition among departments for limited funding. Respondents noted that disaster risk management competes with housing and service delivery for the same municipal budget, resulting in insufficient allocation for long-term mitigation projects. This competition reflects the findings of SALGA (2023), which reports that South African municipalities underfund disaster risk reduction initiatives due to conflicting service delivery priorities. Respondents also highlighted that politicians tend to favour visible post-disaster interventions over preventive actions, because they attract more public and political attention.

Therefore, the results indicate that both municipalities operate within fiscal environments that favour short-term relief over long-term investment. As UNDRR (2023) and Rahman and Djalante (2024) contend, sustainable resilience requires dedicated, multi-year financing and political commitment to prevention, rather than ad hoc responses to crises.

- **Resource Limitations and Operational Challenges**

Resource limitations are compounded by operational challenges that hinder alignment between policy intent and practical implementation. Respondents from M Municipality reported a lack of coherence between the disaster management plans and municipal budgeting processes. Although policy frameworks exist, they are not integrated into the IDP or linked to funding streams, rendering them largely theoretical. Respondents observed that non-compliance with disaster management policies has no consequences, fostering an environment where accountability is weak and implementation is inconsistent.

By contrast, E Municipality demonstrate better integration of national frameworks, although respondents reported difficulties in coordinating conflicting policy directives. Overlapping regulations across housing, environmental, and infrastructure departments creates administrative confusion. Respondents also criticised the rigidity of policy design, arguing that it failed to reflect the realities of informal settlements.

These findings illustrate the disconnect between strategic objectives and operational realities that Van Niekerk (2023) describe as the "policy–practice gap." UNDRR (2023) similarly notes that resilience cannot be achieved through policy declarations alone but requires adaptive, context-specific implementation driven by practitioners. The analysis shows that without adequate resources, enforcement mechanisms, and contextual policy adaptation, disaster management strategies risk remaining symbolic, rather than transformative.

- **Leadership Commitment and Advocacy**

Leadership commitment has emerged as a defining factor in determining how effectively municipalities apply resilience strategies. In E Municipality, stable and experienced leadership ensures continuity and sustained institutional memory. Respondents described a leadership team that actively promoted disaster planning, reinforced accountability, and institutionalised preparedness as organisational norms. Leadership continuity enables municipalities to embed resilience in long-term governance processes.

In contrast, M Municipality is characterised by leadership instability and limited strategic vision. Frequent managerial changes and politically driven appointments disrupt continuity and delay the implementation. Respondents lamented that each new manager introduced a different plan, undermining institutional momentum. This instability produces fragmented and short-lived interventions that prevent municipalities from developing a consistent resilience trajectory.

Respondents further indicated that political considerations influence leadership priorities, with disaster risk management sidelined in favour of projects that yield immediate electoral visibility. This reactive culture confirms Van Niekerk and Coetzee (2023), who argue that a proactive institutional culture grounded in open governance and a long-term vision is essential for resilience-building. The OECD (2023) also emphasises that sustained resilience depends on leadership that transcends political cycles and promotes coordinated, evidence-based decision-making. The findings affirm that E Municipality's leadership fosters a proactive and accountable culture, while M Municipality's reactive and politically influenced leadership constrains institutional resilience.

- **Stakeholder Engagement and Collaboration**

Stakeholder collaboration and community involvement are pivotal for effective resilience governance. Both municipalities engage stakeholders; however, the methods differ significantly .E Municipality employs formal structures, such as quarterly interdepartmental and inter-agency meetings, which align institutional priorities and enhance information sharing. The respondents noted that these structured meetings reduced operational silos and ensured coherence across departments. This institutionalised engagement approach aligns with UNDRR (2021), which identifies stakeholder integration as fundamental to disaster resilience.

M Municipality, on the other hand, favours grassroots engagement through ward committees, civic organisations, and business forums. This bottom-up approach ensures that resilience strategies reflect the local context and community priorities. Respondents highlighted that this participatory model builds ownership and ensures that the solutions are locally relevant. However, reliance on informal structures also means that engagement levels vary, depending on the commitment of individual councillors or community leaders.

Both approaches illustrate the multi-level nature of resilience governance by combining top-down coordination with bottom-up participation. The literature has affirmed this balance. Haque et al. (2024) found that inclusive multi-stakeholder participation enhances decision-making, fosters accountability, and improves adaptability. Similarly, Alexander (2020) and Van Niekerk (2023) argued that the involvement of community actors ensures that technical solutions remain context-sensitive and legitimate.

- **Communication and Coordination Across Departments**

Effective communication and interdepartmental coordination are central to successful implementation of resilience strategies. The findings revealed that E Municipality promotes cross-departmental collaboration through shared digital platforms, regular coordination meetings, and joint task teams. This integration enables the departments responsible for housing, health, engineering, and environmental management to align their disaster risk initiatives. Respondents emphasised that these forums facilitate early warning dissemination, enhance data sharing, and improve response efficiency.

However, M Municipality continues to operate in silos. The respondents indicated that poor communication and territorialism among departments created duplications and conflicts. Departments withhold information, delay response, and weaken coordination. Junior staff members expressed frustration when they were excluded from the planning and decision-making processes, which limited institutional learning and operational efficiency.

These observations confirm Boin and Lodge (2023), who asserted that isolated governance structures undermine institutional flexibility and responsiveness. By contrast, integrated governance models strengthen institutional learning and accelerate adaptation to emerging risks. The UNDRR (2023) reinforces this view, noting that holistic coordination among departments is necessary for municipalities to implement comprehensive disaster resilience measures.

- **Community Awareness and Stakeholder Involvement**

Community awareness and structured participation are vital to embedding resilience at the local level. E Municipality's engagement is systematic and proactive, including school drills, public awareness campaigns, and partnerships with civil society organisations. Respondents emphasised that multilingual communication through signage, community meetings, and SMS

alerts foster inclusivity and public trust. This approach ensures that even children and vulnerable groups understand how to respond to disasters, thereby creating a culture of preparedness.

In contrast, M Municipality's community involvement depends heavily on ward councillors and committees. This informal approach resulted in inconsistent communication and uneven community participation. Respondents noted that engagement depended on the councillor's enthusiasm and capacity, making the process unpredictable and fragmented. The absence of dedicated funding for awareness campaigns limits outreach and continuity.

These findings echo Letebele (2024)), who argue that institutionalising participation through ward-based disaster committees and risk audits ensures equity and sustainability in resilience building. Similarly, UNDRR (2023) stresses that participation must be structured, inclusive, and continuous rather than dependent on individuals. Without institutionalised mechanisms, engagement risks become symbolic rather than meaningful.

- **Monitoring, Evaluation, and Learning from Past Disasters**

Monitoring and evaluation are essential to assess and improve resilience strategies. E Municipality has formalised monitoring and evaluation systems that link each project to measurable indicators, including response times, service restoration, and coordination effectiveness. Regular progress reviews allow departments to identify gaps, adjust strategies, and integrate lessons into their future planning. This structured system reflects the adaptive governance principles that promote iterative learning (Boin and Lodge, 2023; Letebele, 2024).

However, M Municipality relies on informal post-disaster discussions without formal documentation or performance indicators. The respondents admitted that lessons were rarely recorded, leading to repeated mistakes and inconsistent progress. This finding supports Nobambela (2025)who argue that municipalities without structured feedback mechanisms struggle to institutionalise learning.

The contrast between municipalities illustrates how structured monitoring enhances accountability and adaptive capacities. The UNDRR (2023) and UN-Habitat (2023) affirm that systematic monitoring fosters institutional learning, equitable resource allocation, and continuous improvement. Municipalities that adopt integrated monitoring frameworks are therefore better positioned to respond to evolving risk.

- **Conclusion on Factors Influencing the Application of Resilience Strategies**

The findings indicate that the application of institutional resilience strategies is shaped by interconnected factors including leadership stability, knowledge and awareness, resource availability, community engagement, and interdepartmental collaboration .E Municipality demonstrates that strong leadership, structured learning, dedicated financing, and systematic monitoring foster institutional resilience. By contrast, M Municipality's fragmented leadership, inconsistent training, and resource limitations perpetuate reactive responses and undermine long-term preparedness.

The results underscore that resilience building depends not only on the existence of formal policies, but also on the institutional and political ecosystems that enable their implementation. These findings mirror national policy developments such as South Africa's emerging National Disaster Risk Financing Strategy (Republic of South Africa, 2025), which aims to embed proactive risk management within municipal frameworks. However, effective implementation requires the alignment of financial mechanisms, leadership accountability, and participatory governance at the local level.

6.2.3 Objective 3: Administrative Practices for Adaptation to Disaster Risks

This section discusses the findings related to the third objective, which sought to identify the administrative practices implemented by municipalities in KZN to adapt to disaster risks. The results reveal that while both E Municipality and M Municipality have established administrative systems intended to support disaster management, there are significant differences in their levels of institutionalisation, coordination, and accountability. The discussion is structured into several key subthemes derived from the data: risk assessment, internal correspondence, performance measurement, policy alignment, disaster planning, staff preparedness, early warning systems, and evaluation practices.

- **Risk Assessments**

Risk assessment forms the cornerstone of effective disaster preparedness and provides an empirical basis for decision-making and prioritisation. The findings show that E Municipality adopts a proactive and data-driven approach to risk assessment, focusing on high-risk areas such as flood zones and informal settlements. This practice integrates GIS mapping, vulnerability profiling, and periodic field assessments to ensure a comprehensive coverage.

The respondents indicated that these risk profiles are updated annually and embedded within broader disaster management systems, reflecting a methodical and technologically supported approach.

In contrast, M Municipality relies heavily on secondary data from provincial departments because of its limited internal capacity for field assessments. Although this practice ensures compliance with minimum reporting standards, it compromises the accuracy and locality of risk data. This dependency reduces the municipality's ability to identify nuanced community-level hazards, which in turn affects the precision of its preparedness and mitigation strategies. These findings reinforce earlier observations by Rezvani et al. (2023) and UNDRR (2023), who noted that localised data and direct field verification enhance the contextual relevance of disaster risk planning.

Systematic risk assessments, therefore, are essential not only for resource allocation but also for embedding evidence-based planning into municipal governance. The limited internal technical capability and reliance on secondary data observed in M Municipality underscores the need for targeted investment in analytical tools and staff training to achieve comprehensive, locally responsive disaster management (Rahman and Djalante, 2024).

- **Internal Correspondence and Escalation Systems**

Administrative communication plays a vital role in determining how effectively disaster responses are coordinated, within and across departments. E Municipality has developed formalised Standard Operating Practices (SOPs) with clear reporting templates, defined contact trees, and time-bound escalation procedures. Respondents noted that these mechanisms were reinforced through regular simulations, ensuring that all employees understood their roles during crises. This level of administrative orderliness fosters rapid and coherent responses during emergencies.

However, adherence to SOPs is not always consistent and is occasionally influenced by personal discretion or informal practice. Such inconsistencies undermine the reliability of institutional responses, and highlight the need for stronger performance monitoring. Letebele (2024)) argue that effective disaster governance requires not only explicit rules but also sustained institutional commitment to their enforcement.

By contrast, M Municipality exhibits fragmented communication practices that depend heavily on personal and informal networks. Respondents admitted that procedures tend to move faster when officials have personal connections within other departments but are otherwise delayed by bureaucratic inefficiencies. This reliance on informal relationships undermines accountability and equity in administrative operations, aligning with Mahlasela and Phago's (2023) finding that weak communication systems hinder adaptive governance.

E Municipality further strengthens its administrative coordination through the documentation of drills and simulation exercises, while M Municipality's record-keeping remains irregular. The absence of formal records in M Municipality erodes institutional memory and obstructs organisational learning. As highlighted by Haque et al. (2024) and Nobambela (2025), effective administrative resilience relies on structured learning processes, continuous documentation, and incorporation of lessons into routine governance.

- **Performance Measurement and Key Performance Indicators**

Performance monitoring provides municipalities with mechanisms for assessing the effectiveness of disaster management activities. Both municipalities developed key performance indicators (KPIs) with differing scopes and emphases. E Municipality's KPIs cover quantifiable metrics, such as response times, coordination efficiency, and resource utilisation. Respondents highlighted that these metrics are critical for promoting accountability and improving operational readiness.

However, M Municipality limits its KPIs primarily to logistical aspects, such as emergency response speed, with less emphasis on coordination, communication, and community engagement. Respondents indicated that qualitative elements such as interdepartmental cooperation or citizen participation are rarely measured. This narrow focus reflects a performance gap that restricts holistic evaluation of disaster resilience.

Letebele (2024)argue that resilience-oriented performance systems should include both operational and participatory dimensions. The findings confirm that while E Municipality has made progress in developing structured KPIs, both municipalities still need to broaden their indicators to assess the relational, communicative, and community-oriented aspects of disaster management. Integrating stakeholder feedback and interdepartmental evaluations into

performance reviews will promote a more comprehensive understanding of institutional resilience.

- **Policy Alignment and Institutional Guidelines**

Effective disaster governance depends on how well municipal policies align with national frameworks and the best international practices. E Municipality demonstrates a structured and periodic review process, benchmarking its policies against the Disaster Management Act, UNDRR guidelines, and global standards. Respondents noted that these reviews, conducted every three years, involved external experts who provided independent validation and technical recommendations. This systematic approach ensures that policies remain both adaptive and contextually relevant.

By contrast, M Municipality exhibits a more reactive approach to policy alignment. Respondents acknowledged that reviews occur primarily in response to external directives, rather than as part of a continuous improvement process. This compliance-oriented approach limits innovation, and reduces institutional adaptability. The UNDRR (2023) and UN-Habitat (2023) assert that municipalities that regularly benchmark their practices are more capable of anticipating risks and embedding resilience in everyday governance. Therefore, the comparison illustrates that E Municipality's proactive benchmarking approach strengthens accountability and promotes learning, whereas M Municipality's reliance on ad hoc policy updates reinforces administrative rigidity and reactivity.

- **Disaster Planning and Preparedness**

Comprehensive disaster management planning establishes a strategic foundation for municipal coordination. Both municipalities possess official disaster management plans, but their implementations differ markedly. E Municipality's plan clearly outlines roles, responsibilities, and timelines across all phases of disaster management: mitigation, preparedness, response, and recovery. Respondents highlighted that this clarity enhances coordination, ensures accountability, and promotes the rapid mobilisation of resources during emergencies.

M Municipality's plan, though compliant on paper, suffers from limited operationalisation due to budgetary and personnel constraints. The respondents admitted that some activities remained unimplemented because of insufficient resources. This gap between planning and execution reflects a recurring challenge in smaller municipalities, where strategic documents exist, but

lack operational support for implementation. Rahman and Djalante (2024) and UNDRR (2023)) note that disaster plans must be continuously reviewed, tested, and supported through dedicated funding to remain effective.

- **Staff Preparedness and Training**

Readiness of administrative personnel is essential for successful disaster adaptation. E Municipality integrates continuous professional development into its administrative routines, including annual refresher courses, scenario-based simulations, and tabletop exercises. The respondents indicated that these exercises were designed to enhance both technical proficiency and interdepartmental coordination. This institutionalised training culture ensures that staff are confident and competent when responding to disasters.

On the other hand, M Municipality conducts training irregularly and in reaction to recent crises or policy changes. Respondents observed that this reactive model leaves employees uncertain about their roles during emergencies and reduces their operational efficiency. This lack of systematic training reflects a broader pattern of administrative reactivity. These observations correspond with those of Mahlasela and Phago (2023) and Letebele (2024),who argued that sporadic training undermines institutional resilience and perpetuates knowledge gaps.

Regular training and evaluation, therefore, are not only a technical necessity but also a strategic investment in institutional capacity. As Haque et al. (2024) and UNDRR (2023) contend, municipalities that embed training and learning into their administrative systems cultivate a culture of continuous improvement and adaptability.

- **Early Warning Systems and Administrative Support**

E Municipality has institutionalised an integrated, multilingual early warning system that uses SMS, community radio, and digital communication platforms to reach diverse audiences. Respondents explained that administrative staff coordinate these alerts through multiple channels to ensure redundancy and accessibility. The municipality's emphasis on multilingual dissemination reflects its inclusivity and sensitivity to community diversity.

By contrast, M Municipality depends on ward councillors and loudspeaker announcements, resulting in inconsistent and unreliable information dissemination. Respondents acknowledged that this approach excluded residents from remote areas, leaving them unaware of imminent

threats. These findings demonstrate the significance of administrative capacity for sustaining early warning systems. Rahman and Djalante (2024) and UNDRR (2023) emphasised that effective early warning mechanisms rely on well-trained personnel, institutional coordination, and resource adequacy to ensure timely communication and response activation.

- **Documentation, Evaluation, and Organisational Learning**

Evaluation and documentation practices determine how effectively municipalities learn from their experience. E Municipality employs structured post-event evaluations, in which findings are transformed into action plans with defined timelines and responsibilities. Respondents noted that the outcomes from these reviews were incorporated into policy updates and operational strategies, illustrating a closed loop learning system that supports adaptive governance.

The M Municipality, however, lacks formal documentation. Respondents revealed that discussions after disaster events seldom resulted in written action plans or institutional follow-up. This informal approach perpetuates inefficiencies and prevents knowledge from being institutionalised. Letebele (2024) argue that municipalities that fail to document the lessons learned remain trapped in cyclical crisis responses. The practices observed in E Municipality exemplify Van Niekerk's (2023) learning-oriented governance, where continuous reflection and adaptation strengthen institutional resilience.

- **Conclusion on Administrative Practices**

These findings confirm that administrative practices form the operational backbone of municipal disaster resilience. E Municipality demonstrates stronger institutionalisation of risk assessments, policy benchmarking, performance monitoring, and staff training, reflecting an integrated and proactive governance model. Conversely, M Municipality remains constrained by reactive practices, weak documentation, and limited resource capacity, leading to fragmented responses.

These contrasts underscore that resilience is not solely dependent on policies but on the effectiveness of administrative processes that translate them into daily practice. Consistent with the OECD (2023) and Boin and Lodge (2023), the study affirms that resilience in local governments requires inclusive administrative systems, accountability mechanisms, and interdepartmental collaboration. Strengthening documentation, training, and communication

structures will enable municipalities to shift from reactive adaptation to proactive resilience building.

6.2.4 Objective 4: Adequacy of Administrative Practices

This section evaluates the adequacy of the administrative practices used by the KZN municipalities in adapting to disaster risks. The analysis was guided by five key indicators derived from both the data and literature: timeliness and responsiveness, documentation and data administration, policy and institutional consistency, administrative capacity, and overall reflections on adequacy. These dimensions are widely recognised as core determinants of administrative resilience (Boin and Lodge, 2016; UNDRR, 2022; Letebele, 2024). The discussion compares how E Municipality and M Municipality perform across these indicators, highlighting their operational strengths, systemic weaknesses, and implications for future disaster risk governance.

- **Timeliness and Responsiveness**

Timely decision-making and operational responsiveness are fundamental for effective disaster risk management. E Municipality demonstrates high levels of administrative agility through automated reporting systems and real-time dashboards that capture incident data within 30 minutes of occurrence. Respondents explained that these digital platforms facilitate rapid information sharing and immediate coordination among departments, minimising delays and improving overall situational awareness. The use of automated alerts reduces dependence on manual reporting and supports evidence-based time-sensitive decisions.

These practices align with Mahlasela and Phago (2023) and UN-Habitat (2023), who identified operational efficiency, defined by the rapid collection, processing, and distribution of information, as a critical factor for effective disaster management. In contrast, M Municipality relies on manual reporting and hierarchical approval systems, which delay responses. Respondents noted that crucial decisions are sometimes postponed while awaiting signatures or email authorisations, even when communities are already affected. Such bureaucratic bottlenecks erode efficiency and compromise a municipality's ability to deliver swift interventions.

These findings confirm that administrative inertia in M Municipality undermines institutional responsiveness and public confidence. Rahman and Djalante (2024) argued that administrative

agility, underpinned by streamlined processes and empowered decision-making, is vital in fast-moving emergencies. Likewise, UNDRR (2023) stresses that reducing bureaucratic barriers strengthens municipalities' ability to respond to sudden-onset disasters such as floods. Therefore, improving approval workflow, decentralising authority, and digitising communication channels are essential for enhancing municipal responsiveness and resilience.

- **Documentation and Data Administration**

Efficient data management and documentation form the backbone of institutional accountability and learning. E Municipality maintains a centralised digital archive where all disaster-related information reports, financial records, and relief logs is systematically stored and easily retrievable. Respondents confirmed that data from the past five years could be accessed instantly, complete with audit trails to ensure transparency and traceability. This system supports evidence-based planning and facilitates the longitudinal analysis of recurring hazards.

However, M Municipality continues to rely on handwritten logs, dispersed spreadsheets, and fragmented filing systems. The respondents acknowledged that poor record-keeping leads to disputes during audits, weak accountability, and miscommunication during emergencies. Without consistent data flow, municipalities struggle to evaluate previous interventions or plan future actions. The absence of centralised documentation prevents cumulative learning and perpetuates ad hoc responses to disasters.

The UNDRR (2022) emphasises that robust data continuity enables adaptive governance by linking past experiences with current decision-making. Rahman and Djalante (2024)) further argue that digital data management enhances cross-sector collaboration and fosters resilience through transparent information-sharing. The comparison underscores that E Municipality's digital infrastructure contributes to institutional memory and adaptive learning, whereas M Municipality's paper-based methods inhibit reflective practices. For sustainable improvement, municipalities must invest in integrated data systems that combine digital storage, audit functionality, and real-time analytics to support long-term disaster risk reduction.

- **Policy and Institutional Consistency**

Policy coherence and institutional consistency are vital for translating disaster management frameworks into operational practices. E Municipality exhibits a strong alignment between

administrative actions and formal policy directives. Respondents explained that every administrative decision must correspond to an existing policy and be subject to internal audit verification. This alignment with the IDP, Service Delivery and Budget Implementation Plan (SDBIP) ensure traceability, accountability, and compliance with the national legislation.

In M Municipality, policy enforcement was inconsistent. Although staff members recognise legal requirements, adherence is undermined by inadequate personnel, tight deadlines, and competing priorities. The respondents admitted that urgent operational demands supersede procedural compliance, creating a gap between policy intent and practice. This inconsistency reflects deeper structural governance weaknesses, as highlighted by Van Niekerk (2023), who observed that compliance frameworks fail when operational support and enforcement mechanisms are lacking.

The UNDRR (2023) notes that many local governments struggle to implement national disaster risk reduction (DRR) policies effectively because of limited capacity, fragmented operations, and insufficient oversight. Similarly ,Van Niekerk (2023) emphasise that policy success depends on trained personnel, allocated budgets, and practical implementation frameworks. E Municipality's rigorous auditing and vertical coordination therefore represent best practices, while M Municipality's reactive compliance limits progress. Addressing this requires a whole-of-government approach that couples policy directives with tangible resource allocation, continuous capacity building, and clear accountability systems.

- **Administrative Capacity and Institutional Competence**

Administrative adequacy is determined not only by policies but also by the capacity of individuals and teams to operationalise them. Respondents from M Municipality described being overwhelmed by excessive workload and staff shortages. One participant stated that administrators performed duties meant for several employees, leading to fatigue, delays, and errors during emergencies. These capacity deficits severely constrain a municipality's ability to maintain efficient communication, documentation, and coordination under pressure.

In contrast, staff from E Municipality expressed confidence in their administrative systems and emphasised the importance of a well-supported, competent workforce. Respondents observed that robust administrative structures expedited decision making, strengthened coordination,

and enhanced community protection. These findings reinforce that human resource adequacy and organisational design are decisive for effective disaster governance.

Van Niekerk (2023) and Rahman and Djalante (2024) concur that skilled administrators are pivotal to bridging the gap between policy and implementation. Without qualified and adequately staffed teams, the most comprehensive disaster management plans may fail. Continuous investment in professional development, workload management, and performance monitoring is indispensable for maintaining administrative adequacy and institutional resilience.

- **Reflections on Overall Adequacy**

The comparison between the two municipalities highlights a "two-speed" system of local governance, like that identified by the South African Cities Network (2021). E Municipality, which benefits from greater resources and institutional maturity, demonstrates operational efficiency and adherence to global standards. However, M Municipality faces structural constraints that impede effective disaster management. Limited financial resources, inconsistent policy enforcement, and insufficient integration of disaster risk reduction within the IDP collectively reduce administrative adequacy.

Respondents in M Municipality acknowledged that many plans remain theoretical and lack specific budgets, implementation timelines, or monitoring frameworks. Consequently, well-intentioned policies fail to translate into tangible outcomes. Conversely, E Municipality integrates resilience planning into its daily operations, supported by interdepartmental collaboration and ongoing stakeholder engagement. Nevertheless, even E Municipality experiences challenges, such as competition for resources and political turnover, which occasionally disrupt continuity.

UNDRR (2023) warns that resilience measures that lack consistent execution and accountability risk become symbolic rather than transformative. The findings of this study confirm that administrative adequacy depends not only on policy presence but also on the institutional capacity to execute, monitor, and refine policies in practice. The persistence of funding constraints and reactive governance cultures continues to limit progress, especially in smaller, under resourced municipalities.

To strengthen adequacy, municipalities must prioritise three strategic actions. First, digital systems are embedded in reporting and monitoring to ensure timeliness and transparency. Second, institutionalising regular training and audits reinforces compliance and professional competence. Third, disaster management planning should be integrated into broader municipal frameworks to ensure that the resilience objectives receive sustained political and financial support.

- **Conclusion on the Adequacy of Administrative Practices**

The assessment of administrative adequacy reveals significant disparities between E and M Municipalities. E Municipality demonstrates that well-resourced, data-driven, and policy-aligned administrative systems foster effective disaster preparedness and response. Its rapid reporting, digital record-keeping, and routine policy audits reflect institutional maturity and adaptive governance. However, M Municipality remains constrained by procedural delays, fragmented documentation, and chronic understaffing, which collectively hinder its capacity to manage disasters effectively.

These contrasts highlight that administrative adequacy is inseparable from broader governance quality. As Boin and Lodge (2023) argued, resilient governance emerges when institutions combine agility, accountability, and learning. Achieving such a balance in the KZN municipalities requires a deliberate shift from compliance-driven administration to performance-based, learning-oriented governance. Only through sustained investment in administrative systems, digital innovation, and human capital can municipalities ensure that disaster risk management frameworks translate into real, measurable resilience outcomes.

6.3 Comparative Insights on Institutional Resilience Across Municipal Contexts

A comparative reading of the findings from E Municipality and M Municipality highlights important contextual differences in how institutional resilience is operationalised within municipal disaster risk management systems. While both municipalities operate within the same legislative and policy environment, their administrative practices, coordination mechanisms, and resource capacities shape how resilience strategies are implemented in practice.

In E Municipality, respondents emphasised stronger coordination mechanisms and relatively

more structured disaster risk management routines, although challenges related to resource constraints and interdepartmental collaboration remained evident. In contrast, respondents from M Municipality highlighted greater difficulties in sustaining coordination, managing resource limitations, and embedding monitoring and learning systems within administrative processes. These differences illustrate how institutional resilience is not determined solely by policy frameworks, but by the capacity of municipal institutions to translate formal governance structures into effective administrative practice.

From a broader KwaZulu-Natal perspective, these findings suggest that institutional resilience within municipal disaster risk management systems is shaped by variations in governance capacity, coordination practices, and resource alignment. Strengthening resilience therefore requires not only compliance with national disaster management legislation but also the development of adaptive administrative capabilities within municipal governance systems.

The comparison between a metropolitan and a local municipality in KwaZulu-Natal demonstrates that institutional resilience in the province is uneven and highly dependent on fiscal capacity, technical expertise, and governance maturity. This suggests that provincial-level support mechanisms may need to be differentiated, providing targeted capacity-building interventions for smaller municipalities while consolidating advanced adaptive governance practices in metropolitan contexts.

6.4 Implications for Municipal Governance and Administrative Practice

The findings of this study carry important implications for senior municipal decision-makers responsible for strengthening disaster risk governance. First, the results indicate that institutional resilience requires stronger coordination mechanisms across municipal departments. Disaster risk management cannot function effectively when departments operate in isolation; rather, integrated governance structures and clearly defined coordination routines are required to support collective decision-making and operational alignment.

Secondly, the study highlights the need for improved resource alignment and capability development within municipal disaster risk management units. Limited staffing constrained financial resources, and uneven technical capacity can undermine the implementation of resilience strategies. Municipal leadership therefore plays a critical role in ensuring that disaster risk management functions are adequately supported within broader municipal planning and

budgeting processes.

Thirdly, the findings underscore the importance of embedding monitoring, learning, and adaptive governance practices within municipal systems. Institutional resilience is strengthened when municipalities can systematically review disaster events, capture lessons learned, and integrate these insights into future planning and coordination mechanisms. Collectively, these governance adjustments can enhance the ability of municipalities to respond proactively to disaster risks and build more adaptive and resilient administrative systems within the KwaZulu-Natal context.

6.5 Summary of the chapter

This chapter critically examines empirical data from the larger literature on disaster risk reduction, institutional resilience and public administration. The research shows that, while KZN municipalities have made significant progress in developing disaster management frameworks, substantial impediments remain. Financial under-resourcing, insufficient technical and human skills, leadership turnover and fragmented program coordination all work against the goal of building resilient municipalities. Community engagement, a key component of adaptive resilience, is poorly institutionalised, undermining the social foundations of disaster risk management. To improve resilience, disaster risk reduction must be intentionally integrated into everyday governance processes by tying policy to proper funding, empowering qualified individuals and encouraging inter-agency collaboration. Enhancing community participation is also critical to foster trust and enable the co-production of resilience plans. Alignment with global and national frameworks, such as the Sendai Framework for Disaster Risk Reduction 2015–2030, the SDG 11: Sustainable Cities and Communities and SDG 13: Climate Action, as well as South Africa's National Development Plan 2030, is critical for driving coherent and comprehensive resilience-building initiatives. This alignment ensures that municipalities contribute effectively to broader goals of sustainable, inclusive and disaster-resilient development, thereby strengthening the protection of vulnerable populations against future risks.

The following chapter discusses the conclusions from this research and presents recommendations for the South African municipalities and for future research.

CHAPTER SEVEN
CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter synthesises the key findings of the study in relation to institutional resilience and administrative practices in disaster risk management within South African municipalities. It consolidates theoretical and empirical insights, outlines the study's contributions, and presents strategic recommendations to strengthen municipal disaster governance.

7.2 Synthesis of Findings and Contribution to Knowledge

This study set out to examine institutional resilience strategies within municipal disaster risk management systems in KwaZulu-Natal, with a particular focus on how administrative practices, governance relationships, and institutional arrangements shape disaster risk governance at local government level.

- **Research Gaps Addressed**

The literature review identified several important gaps in existing scholarship. While disaster risk management frameworks and legislative structures are well established in South Africa, limited empirical research has examined how institutional resilience strategies are operationalised within municipal administrative systems. Existing studies often focus on community resilience or disaster response capacity, with less attention given to the internal governance dynamics, coordination mechanisms, and institutional practices that influence disaster risk management within local government structures.

- **What Existing Theory Suggested**

The theoretical frameworks guiding this study, the Institutional Analysis and Development (IAD) framework and Social Capital Theory suggest that institutional resilience is shaped by the interaction of formal governance rules, coordination arrangements, resource structures, and relational networks within organisations. From this perspective, effective disaster risk governance depends not only on policy frameworks but also on the capacity of institutional actors to collaborate, build trust, and adapt administrative routines in response to evolving risks.

- **What the Empirical Findings Reveal**

The findings from E Municipality and M Municipality demonstrate that institutional resilience within municipal disaster risk management systems is strongly influenced by variations in administrative coordination, resource availability, and governance practices. While both municipalities operate within the same legislative framework, differences in interdepartmental coordination, communication practices, and monitoring systems affect the effectiveness of resilience strategies in practice. The data further highlight the importance of informal networks and relational trust in enabling coordination across municipal departments, reinforcing the relevance of Social Capital Theory in understanding governance dynamics.

- **Advancing Understanding of Disaster Risk Governance in Africa**

This study contributes to the broader understanding of disaster risk governance in African contexts by demonstrating that institutional resilience cannot be understood solely through formal policy frameworks or organisational mandates. Instead, resilience emerges through the interaction of institutional structures, administrative practices, and relational networks that shape how governance systems function in practice. In many African municipal contexts, where resource constraints and administrative complexity are common, strengthening institutional resilience requires attention to coordination systems, monitoring mechanisms, and organisational learning processes.

- **What This Study Reveals About KwaZulu-Natal**

Within the KwaZulu-Natal context, the findings indicate that disaster risk management systems face persistent challenges related to coordination, resource alignment, and institutional capacity. However, the findings also demonstrate that resilience can be strengthened through improved governance practices, stronger monitoring systems, and the development of trust-based coordination networks within municipal institutions. These insights provide a clearer understanding of the governance conditions necessary for strengthening municipal disaster risk management systems in disaster-prone regions of South Africa.

7.3 Contribution to Knowledge and Practice in African Disaster Risk Governance

This study makes both theoretical and practical contributions to the evolving field of disaster risk governance in Africa, with specific reference to municipal systems in KwaZulu-Natal.

7.3.1 Theoretical Contribution

First, the study advances institutional resilience scholarship by operationalising resilience within the administrative and governance structures of local government in a developing country context. While resilience is frequently conceptualised at community or systems levels, this research demonstrates how resilience is enacted through institutional rules, coordination mechanisms, monitoring systems, and adaptive governance practices within municipal bureaucracies.

Second, by integrating Social Capital Theory and the Institutional Analysis and Development framework into the analysis of municipal disaster risk management, the study extends these theoretical lenses into the African public administration context. This integration provides a governance-centred model of resilience that moves beyond hazard response toward institutional adaptability.

Third, the proposed integrated and adaptive strategic framework contributes a context-sensitive model tailored to sub-national governance systems in Africa. It illustrates how monitoring, learning, administrative practice, and resource alignment interact dynamically to strengthen institutional resilience in disaster-prone environments.

7.3.2 Contribution to Practice

Practically, the study provides actionable insights for municipal decision-makers operating in resource-constrained and risk-intensive environments. The findings demonstrate that strengthening disaster risk governance in African municipalities requires:

- Institutionalising monitoring and feedback mechanisms
- Embedding adaptive governance principles in administrative routines
- Aligning disaster risk management with broader municipal planning systems
- Strengthening interdepartmental coordination and accountability structures

The proposed framework offers a structured guide that municipalities can utilise to assess and reform their institutional arrangements. Importantly, the study shifts the focus from reactive disaster response to proactive governance adaptation, thereby supporting long-term resilience building.

7.3.3 Relevance to African Disaster Risk Governance

In many African contexts, disaster risk management is constrained by limited institutional capacity, fragmented governance arrangements, and uneven resource distribution. By examining institutional resilience at municipal level in KwaZulu-Natal, this study provides empirically grounded insights applicable to similar decentralised governance systems across the continent.

The study therefore contributes to African disaster risk governance scholarship by demonstrating that resilience is not solely a function of external funding or infrastructure investment, but of institutional coherence, adaptive leadership, and embedded learning processes within local government systems. By grounding institutional resilience within the lived administrative realities of municipal governance, this study contributes to a more contextually informed and practically actionable model of disaster risk governance in Africa

7.4 Summary of Findings from the Empirical Study

This section synthesises the key findings of the empirical investigation in line with the four objectives presented in Chapter One. It consolidates the major results from Chapter Six, linking them to the theoretical foundations which was presented in Chapters Two and Three, CAS, DRM, SCT and IAD framework. Together, these perspectives illuminate how KZN municipalities construct, apply, and sustain institutional resilience in the face of evolving disaster risks.

7.4.1 Objective 1: Institutional Resilience Strategies

This objective examined the institutional resilience strategies adopted by the selected municipalities in KZN to manage disaster risks. The results revealed contrasting resilience orientations: E Municipality's data-driven, learning-oriented system versus M Municipality's reactive, resource-constrained, and politically influential approach. The following subsections summarise the empirical and theoretical implications.

- **Approaches to Identifying Disaster Risks**

E Municipality demonstrates a systematic and evidence-based method for identifying risks through GIS mapping, climate modelling, and ward-level vulnerability profiling. This approach reflects institutional foresight and aligns with the risk identification phase of the DRM model,

which stresses anticipatory governance. By embedding these tools into the IDP,E Municipality operationalises the CAS principle of continuous feedback and learning. Conversely, M Municipality depends on councillor reports and historical incidents, a reactive pattern that weakens adaptive capacity and supports the IAD observation that fragmented institutional rules produce inconsistent outcomes. The absence of digital systems and formal training illustrates a deficit in structural and cognitive capital, limiting the self-organisation and learning envisaged by CAS and SCT.

- **Role of Past Events in Informing Strategy**

E Municipality institutionalises post-event learning through structured debriefings, simulations, and documented reviews that inform future planning. This cyclical process mirrors the CAS feedback loops and DRM continuum of preparedness, response, and recovery. Through formal reflection, the municipality embeds institutional memory, supporting Ostrom's IAD view that enduring rules encourages collective adaptation. In contrast, M Municipality's informal, undocumented reflections led to repetitive mistakes and diminished accountability. The lack of codified learning inhibits trust and collaborative improvement, contravening the SCT's emphasis on shared norms and reciprocity. Hence, organisational learning emerges as a decisive differentiator between adaptive and stagnant institutions.

- **Tools and Practices Used for Risk Assessment**

The adoption of digital tools, mobile alert platforms, real-time dashboards, and GIS overlays positions E Municipality at an advanced stage of technological maturity. These tools facilitate cross-departmental data sharing, promoting the CAS traits of interdependence and self-organisation. Their use also exemplifies the DRM principle of integrating technology with mitigation and preparedness. M Municipality's reliance on manual spreadsheets and

fragmented communication channels confirm the structural inertia of its administrative system. This technological inequality constrains coordination and validates the IAD assertion that poorly aligned institutional arrangements weaken performance. From an SCT perspective, limited communication infrastructure erodes trust and collective engagement, reinforcing hierarchical rather than networked governance.

- **Selection and Implementation of Mitigation Strategies**

E Municipality's evidence-based scoring system for prioritising mitigation measures reflects an institutional culture of transparency and rationality. This aligns with the DRM's risk-mitigation phase and demonstrates CAS-driven adaptability by allowing resources to be redirected based on feedback from risk analyses. In contrast, M Municipality's politically influenced prioritisation and reactive spending typify what IAD describes as "rule-in-form but not in use". The absence of a clear evaluation criteria undermines equity and accountability. These findings show that institutional resilience depends not only on available resources but also on governance cultures that incentivise learning and depoliticized decision-making conditions sustained by social trust and reciprocity under SCT.

- **Success Metrics for Institutional Planning**

E Municipality measures resilience outcomes through quantitative indicators such as emergency response times, service restoration rates, and household displacement statistics. Data-driven monitoring institutionalises learning and supports CAS's adaptive-cycle logic. It also aligns with DRM's requirement of DRM for continuous evaluation. In contrast, M Municipality lacks formal monitoring mechanisms and substitutes anecdotal satisfaction for performance evidence. The absence of evaluation structures exemplifies weak "action arenas" in IAD terms and inhibits trust in administrative accountability, as described by SCT. This contrast highlights how measurable feedback transforms resilience from compliance exercises into evolving governance practices.

- **Conclusion on Institutional Resilience Strategies**

Overall, E Municipality embodies an adaptive, data-driven, and learning-centred model, consistent with the integrated application of CAS and DRM. Its structured risk identification, formal learning processes, and technological integration illustrate a mature system of self-organisation. Conversely, M Municipality remains reactive and fragmented, reflecting the

institutional misalignment captured in IAD and the weak social capital networks described by SCT. Comparative evidence confirms that municipal resilience is generated through feedback, collaboration, and trust, rather than compliance alone. Therefore, advancing disaster governance in KZN requires embedding adaptive learning systems, participatory frameworks, and evidence-based decision-making across all municipalities to translate policies into sustainable institutional resilience.

- **Overall Conclusions to Objective 1**

Both municipalities exhibited institutional resilience strategies; however, the efficacy of these initiatives was contingent upon institutionalisation, financial investment, and leadership support. E Municipality implemented proactive, institutionalised solutions, employing governance frameworks to integrate resilience. The fragmented and reactive procedures of M Municipality compromised its capacity to effectively address disaster risks. The literature underscores that resilience must be built into governance frameworks, bolstered by resources, expertise, and interdepartmental collaboration to effectively implement policies (De Jonckheere et al., 2023).

7.4.2 Objective 2: Factors Influencing the Application of Institutional Resilience Strategies

This objective examined the factors influencing the implementation of institutional resilience strategies in KZN municipalities. The findings confirm that successful application depends on the interplay of institutional knowledge, resource capacity, leadership stability, community participation, and interdepartmental coordination. The discussion below consolidates these results and links them explicitly to the theoretical foundations of the study.

- **Absence of Knowledge and Awareness**

Knowledge and awareness determine how effectively municipal actors interpret and execute resilience strategies. E Municipality demonstrates institutionalised learning through structured training, simulation exercises, and partnerships with universities and provincial centres. This reflects the CAS principle of feedback-driven adaptation, where organisational competence grows through continual interaction and reflection. It also resonates with the DRM preparedness phase, emphasising skill enhancement for a proactive response. However, M Municipality exhibits sporadic, donor-dependent training that excludes many junior officials.

Such uneven learning undermines self-organisation and aligns with IAD's description of asymmetrical "rules-in-use", which impedes coordinated outcomes. From an SCT lens, limited mentoring weakens networks of trust and shared competence, leaving resilience practices reactive rather than anticipatory.

- **Resource Allocation and Utilisation**

Resource availability and financial, human, and technological resources emerged as decisive determinants of resilience. The pattern of post-disaster spending rather than prevention in M Municipality illustrates what DRM theory defines as reactive governance. This "cycle of reactive spending" traps institutions in short-term recovery at the expense of long-term mitigation. E Municipality, though better resourced, still faces competition among departments for budget priority, revealing the systemic tension between service delivery and resilience investment. These patterns exemplify the CAS notion of nonlinear interdependencies, where decisions in one subsystem influence others. The results also corroborate the IAD principles: without stable financial rules and incentive structures, collective action toward resilience weakens. Both municipalities demonstrate that sustainable resilience requires multi-year financing, cross-departmental budgeting, and leadership advocacy, which links funding cycles to the DRM continuum.

- **Resource Limitations and Operational Challenges**

Operational barriers compound financial shortages and expose the "policy–practice gap" identified by Few et al. (2022). M Municipality's disaster frameworks exist, but remain detached from the IDP and municipal budget, creating symbolic compliance without implementation. This fragmentation reflects the IAD's observation that institutional rules lose efficacy when not embedded in operational arenas. E Municipality integrates national and provincial frameworks more coherently but faces administrative overlap among sectors such as housing and the environment, demonstrating CAS complexity where multiple agents pursue divergent goals. Rigid national prescriptions also restrict local adaptation, contravening the DRM's call for context-specific flexibility. These findings affirm that adaptive governance requires aligning strategic intent with operational mechanisms, ensuring that learning loops inform policy revision and budget execution.

- **Leadership Commitment and Advocacy**

Leadership stability and vision underpin the durability of resilience initiatives. E Municipality's consistent management ensures institutional memory, accountability, and internalisation of resilience norms. Such continuity embodies the CAS trait of emergent order, where stable leadership enables self-organising teams to innovate within defined parameters. It also resonates with the IAD framework, which recognises leadership as a catalyst for rule enforcement and incentive alignment. In contrast, M Municipality's frequent managerial turnover and politically motivated appointments disrupted organisational learning and delayed project continuity. This reflects weak institutional capital under SCT: trust diminishes when leadership priorities shift with political cycles. The DRM model stresses long-term planning beyond electoral horizons; thus, E Municipality's leadership illustrates adaptive foresight, while M Municipality's instability perpetuates fragmented resilience trajectories.

- **Stakeholder Engagement and Collaboration**

Stakeholder engagement has emerged as both a structural and relational factor. E Municipality's quarterly inter-agency meetings and shared planning forums enhance horizontal integration, reflecting the CAS's emphasis on network interdependence and feedback communication. Such institutionalised coordination fulfils the IAD's requirement for multiple actors interacting under clear rules and shared incentives. M Municipality's grassroots engagement through ward committees and civic groups demonstrates bottom-up participation, which strengthens bonding social capital under SCT. However, the informality and inconsistency of this approach limit collective learning and institutional continuity. These patterns confirm the DRM's participatory governance principle that resilience requires inclusive coordination between technical experts and communities. Without balanced vertical and horizontal collaboration, knowledge flows remain uneven, reducing municipalities' capacities for systemic adaptation.

- **Communication and Coordination Across Departments**

E Municipality's cross-departmental coordination through digital platforms, joint task teams, and routine meetings strengthens institutional coherence. This configuration mirrors the CAS vision of interconnected agents, exchanging real-time information and adjusting behaviour dynamically. Such integrative mechanisms also satisfy DRM's emphasis on interphase coordination and preparedness. Conversely, M Municipality's siloed departments operate with

minimal data sharing, reflecting institutional fragmentation consistent with the IAD's depiction of poorly defined action arenas. Territorialism and limited transparency erode relational trust, undermining the SCT's cooperative foundation. The results highlight that resilient governance depends on continuous communication loops and shared digital systems that institutionalise collaboration and prevent redundancy across municipal units.

- **Community Awareness and Stakeholder Involvement**

Community awareness represents a social dimension of resilience. E Municipality's inclusive outreach, school drills, public campaigns, and multilingual alerts, exemplifies SCT's bonding and bridging capital, where trust networks enable cooperative response. This structured engagement also reflects the DRM preparedness stage, promoting anticipatory action, and shared accountability. The M Municipality's reliance on councillor-led communication creates dependence on individual initiatives rather than institutional systems. This ad hoc arrangement diminishes self-organisation and perpetuates uneven preparedness across wards. From a CAS viewpoint, a limited diversity of communication channels reduces the adaptive capacity of the system. The findings reaffirm that community awareness must be institutionalised rather than personality-driven, linking civic participation to municipal planning through sustained partnerships and feedback mechanisms.

- **Monitoring, Evaluation, and Learning from Past Disasters**

Monitoring and evaluation serve as feedback nodes within the adaptive cycle of the CAS and learning loop of the DRM. E Municipality's structured performance indicators, response time, service restoration, and coordination efficiency, embed iterative learning and accountability. By translating evidence into revised SOPs, the municipality demonstrates the IAD's operational rule enforcement and promotes continuous improvement. The informal, undocumented reviews of M Municipality illustrate weak institutional learning and fragmented social capital networks. The absence of measurable indicators prevents reflective adaptation and maintains a reactive posture. These findings affirm that systematic M and E processes transform resilience from event-driven reactions to a continuous institutional evolution. Without documented feedback, organisations cannot recalibrate their rules-in-use, leaving resilience efforts unsustainable.

- **Conclusion on Factors Influencing the Application of Resilience Strategies**

Evidence confirms that institutional resilience is co-produced through interconnected factors: knowledge, resources, leadership, collaboration, communication, and community participation. E Municipality exemplifies the synergistic operation of these elements, consistent with the CAS view that resilience emerges from dynamic interactions rather than linear control. Its integration of training, funding discipline, leadership continuity, and systematic evaluation aligns with the cyclical process of the DRM model and IAD framework's rule coherence. By contrast, M Municipality's resource scarcity, political instability, and weak learning mechanisms reflect disrupted feedback loops and low social capital density. Hence, advancing municipal resilience in KZN demands institutional designs that strengthen feedback, transparency, and trust, transforming reactive governance into adaptive, self-organising systems capable of sustained disaster risk mitigation.

7.4.3 Objective 3: Administrative Practices for Adaptation to Disaster Risks

This objective examined the administrative systems and practices adopted by the KZN municipalities to adapt to disaster risks. The findings reveal that although both E and M Municipalities possess formal structures to manage disasters, their levels of institutionalisation, coordination, and accountability differ sharply. E Municipality demonstrates adaptive, data-driven administration consistent with integrated governance systems, while M Municipality operates reactively under resource and procedural constraints.

- **Risk Assessments**

E Municipality's risk-assessment process is proactive and technologically grounded, integrating GIS mapping, vulnerability profiling and field verification. This approach exemplifies the DRM cycle's risk identification and mitigation stages, where decisions emerge from empirical data rather than from crisis reactions. It also reflects the CAS principle of feedback learning-risk data that continuously refines planning through system interaction. M Municipality's dependence on provincial data illustrates a compliance-driven culture lacking self-organisation, which, under the IAD lens, indicates weak operational rules and inadequate resource incentives. The limited local validation erodes relational trust with communities, restricting the SCT's cooperative dimension. The contrast confirms that locally generated risk intelligence fosters adaptive behaviour, whereas external dependency sustains vulnerability.

- **Internal Correspondence and Escalation Systems**

Administrative communication determines the response coherence. E Municipality's SOPs provide structured reporting templates and escalation procedures that align departments into a unified operational rhythm. This procedural clarity manifests the IAD's rule-in-use principle and enhances CAS-based coordination through predictable feedback flows. Conversely, M Municipality depends on informal relationships and personal discretion, illustrating how weak institutional formalisation undermines system reliability. Such reliance on networks detached from formal authority diminishes institutional equity and violates DRM's coordination principle. From the SCT perspective, inconsistent communication weakens horizontal trust and hampers collective action. Documentation of drills and incident reports in E Municipality further consolidates institutional memory, transforming experience into organisational learning, an essential attribute of adaptive governance.

- **Performance Measurement and Key Performance Indicators**

Performance systems translate policy objectives into measurable outcomes. E Municipality employs quantitative KPIs, such as response time, resource utilisation, and coordination efficiency, embedding a culture of accountability consistent with DRM's evaluation stage. These metrics also activate feedback cycles within the CAS, enabling the continual recalibration of strategies. M Municipality's narrow focus on logistical indicators neglects the participatory and communicative aspects of resilience. Such reductionism exemplifies the IAD's observation that incomplete metrics distort incentives and weaken compliance. The absence of relational and community-based indicators constrains the SCT's social trust dimension. Expanding KPIs to include interdepartmental cooperation and community engagement would institutionalise holistic resilience evaluation.

- **Policy Alignment and Institutional Guidelines**

E Municipality's tri-annual policy reviews, benchmarking against the Disaster Management Act and UNDRR standards, demonstrate adaptive alignment and policy learning. This process mirrors CAS evolution, in which institutions adjust internal rules through external feedback. It also satisfies IAD's call for iterative rule evaluation to maintain institutional coherence. M Municipality's ad hoc policy updates, which are triggered by external audits, embody reactive governance typical of DRM's post-event correction, rather than continuous prevention. The lack of scheduled reviews limits cross-sectoral communication and undermines SCT's

collaborative ethos. Thus, regular benchmarking emerges as a procedural and relational necessity for sustained resilience.

- **Disaster Planning and Preparedness**

Comprehensive planning is a strategic framework for resilience. E Municipality's plan delineates the roles and timelines across mitigation, preparedness, response, and recovery, exemplifying the complete DRM cycle. Its clarity enhances accountability and fosters decentralised decision-making consistent with CAS adaptive networks. M Municipality's plan, although compliant in form, suffers from implementation gaps due to limited budgets and staff shortages. This divergence illustrates the IAD's differentiation between formal rules and actual practices. The findings reveal that documents alone do not create resilience; operational capacity and commitment translate plans into actions. Continuous simulation and resource alignment are, therefore, vital for transforming strategic intent into tangible preparedness.

- **Staff Preparedness and Training**

Staff capability is the human engine of adaptation. E Municipality institutionalises professional development through refresher courses and simulations, embedding a culture of continuous learning that mirrors CAS's self-organising behaviour and DRM's preparedness principles. Training reinforces social capital by building a shared understanding and interdepartmental trust. The irregular, reactive training regime of M Municipality perpetuates uncertainty and reduces confidence during crises. This gap demonstrates the IAD's warning that rules that are unsupported by incentives or capacity lose legitimacy. Institutionalising training cycles, mentorship, and peer learning networks would strengthen both human capital and relational trust, enabling municipalities to evolve through disruption rather than succumb to it.

- **Early Warning Systems and Administrative Support**

E Municipality's multilingual early warning system, combining SMS, community radio, and digital alerts, illustrates integrative communication consistent with DRM's early warning component and CAS's interconnectivity. These redundant channels reflect diversity, which is a key resilience principle that ensures no single point of failure. The dependence of M Municipality on councillor announcements represents a fragile, centralised system prone to information loss. This weakens the relational bridges essential under SCT and limits the autonomous responsiveness envisioned by CAS. Effective early warning demands not only

technology but also coordinated administrative protocols, where trained staff manage dissemination and feedback, reinforcing trust between the government and citizens.

- **Documentation, Evaluation and Organisational Learning**

Learning from past events closes the adaptive loop. E Municipality's structured post-event evaluations transform findings into actionable improvement plans, exemplifying DRM's recovery-and-review phase and CAS's iterative learning cycle. By documenting lessons and assigning responsibility, the municipality enforces IAD operational accountability while expanding its institutional memory. M Municipality's informal debriefings without written records interrupt feedback loops and weaken intergenerational knowledge transfers. This deficiency erodes social capital and institutional continuity. Embedding formal evaluation protocols and digital repositories would institutionalise reflective learning, ensuring that experiences become catalysts for innovation rather than repetitive failures.

- **Conclusion on Administrative Practices**

Administrative practices constitute the operational backbone of municipal resilience. E Municipality's structured risk assessments, performance monitoring, staff training, and documentation reflect adaptive governance aligned with CAS dynamism, DRM cyclicality, SCT cooperation, and IAD rule coherence. M Municipality's fragmented communication, limited training, and weak documentation typify reactive governance, constrained by institutional inertia. The synthesis confirms that resilience is not achieved through policy rhetoric but through administrative systems that embed learning, coordination, and accountability. Strengthening these mechanisms will enable municipalities to evolve from reactive adaptation toward proactive, self-organising resilience capable of sustaining long-term disaster risk reduction.

7.4.4 Objective 4: Adequacy of Administrative Practices

This objective assessed the adequacy of the administrative practices employed by the KZN municipalities to adapt to disaster risks. The analysis drew on five indicators: timeliness and responsiveness, documentation and data administration, policy and institutional consistency, administrative capacity and overall adequacy. These dimensions reflect the operational manifestation of resilience, connecting directly to the CAS notion of feedback and learning, DRM cycle of preparedness and response, IAD principle of rule coherence, and SCT's

emphasis on collective trust. The comparison between E and M Municipalities exposes the divergent pathways of administrative evolution, revealing that resilience adequacy depends on the integration of digital systems, policy alignment, and institutional competence.

- **Timeliness and Responsiveness**

E Municipality exhibits high operational agility through automated dashboards and real-time incident tracking, reducing the response lag to under thirty minutes. These systems institutionalise CAS feedback loops, where continuous data flow enables adaptive decision-making and immediate coordination. By embedding digital alerts into routine operations, E Municipality embodies the DRM principle of early response and continuous situational awareness. Conversely, M Municipality's reliance on manual reports and hierarchical approval chains delays interventions, illustrating IAD's "rule congestion," where excessive procedural layers impede timely action. From the SCT viewpoint, delayed responses erode public trust and weaken cooperative networks during emergencies. The findings confirm that digitised communication and decentralised authority are not merely efficiency tools, but structural enablers of institutional resilience.

- **Documentation and Data Administration**

Documentation is the anchor of organisational learning and accountability. E Municipality's centralised digital repository ensures that all disaster-related information is stored with audit trails, supporting longitudinal analysis and compliance with the DRM's monitoring and evaluation phase. This system reflects the CAS's emphasis on information exchange as a mechanism for systemic learning Municipality's fragmented, paper-based records reveal a breakdown in institutional memory and violate the IAD's requirements for stable information rules. Without structured documentation, iterative learning becomes impossible, perpetuate reactive governance. The SCT framework underscores that transparent data systems reinforce relational trust among officials and communities, whereas opaque record-keeping invites blame shifting and erodes legitimacy. Therefore, institutionalising digital data management is indispensable for transforming experiences into adaptive policy reforms.

- **Policy and Institutional Consistency**

Policy alignment determines whether an administrative intent translates into coordinated action. E Municipality's practice of synchronising administrative procedures with the IDP and

SDBIP illustrates coherence across institutional scales, satisfying IAD's rule alignment principle and DRM's governance integration standard. Periodic audits ensure accountability, reinforcing CAS's interdependence of CAS among subsystems. In contrast, M Municipality's inconsistent policy application, where urgent operational demands override procedural compliance, demonstrates what CAS identifies as systemic incoherence, where feedback signals are ignored or distorted. These inconsistencies reduce institutional predictability and weaken confidence in a community. SCT explains this as a trust deficit arising from the perceived arbitrariness in rule enforcement. Thus, achieving policy adequacy requires embedding compliance into routine workflows and linking policy objectives to tangible performance incentives and budgets.

- **Administrative Capacity and Institutional Competence**

Administrative adequacy is inseparable from human resources. E Municipality's well-resourced administrative units and continuous training foster both technical and relational competence. This configuration mirrors CASs distributed-capability model, where multiple agents contribute to adaptive functioning. It also illustrates DRM's preparedness principle, which links staff proficiency to reduced vulnerability. M Municipality's overstretched personnel and role duplication highlight structural fragility and correspond with the IAD's depiction of weak institutional arenas lacking sufficient actors. Fatigue and high workload diminish innovation and responsiveness, eroding the social cohesion that SCT identifies as critical for collective problem-solving. This evidence reinforces that resilience requires balanced human capacity, supported by mentorship, workload management, and professional development embedded within institutional systems.

- **Reflections on Overall Adequacy**

This comparison reveals a dual-speed governance system. E Municipality's digitally enabled administration, policy coherence, and skilled workforce represent an adaptive organisation capable of absorbing and evolving through disruption, precisely defined as emergent resilience. Its operations align with DRM's integrated cycle of mitigation, preparedness, response, and recovery. However, M Municipality demonstrates fragmented learning and resource dependency that sustain a reactive posture. The uneven integration of DRR within the IDP and the absence of systematic audits illustrates an incomplete feedback system, a condition IAD associated with institutional drift. SCT further explains that, without participatory trust and

shared accountability, formal frameworks remain symbolic. To strengthen adequacy, municipalities must (a) digitise workflows for transparency and rapid coordination, (b) institutionalise recurrent training and auditing to maintain procedural discipline, and (c) integrate disaster management fully into municipal planning and budgeting to ensure sustainable political and financial support.

- **Conclusion on the Adequacy of Administrative Practices**

The assessment confirmed that administrative adequacy is the foundation for resilient governance. E Municipality demonstrates that agile systems, coherent policies, and competent staff collectively create a self-organising, learning-oriented institution. Its administrative responsiveness, digital record-keeping, and periodic policy reviews exemplify CAS's adaptive cycles and DRM's continuous improvement loop. The M Municipality's bureaucratic rigidity, limited data infrastructure, and chronic understaffing represent structural weaknesses that confine it to reactive management. This synthesis supports Boin and Lodge's (2016) argument that genuine resilience emerges when agility, accountability, and learning coalesce. For KZN municipalities, advancing from compliance-based administration to performance-driven adaptive governance requires sustained investment in digital transformation, institutional learning frameworks, and human capital development. Only through such a systemic alignment can municipalities achieve operational adequacy that translates policy frameworks into measurable, enduring resilience outcomes.

7.4.5 Objective 5: Proposed Integrated and Adaptive Strategic Framework for Disaster Risk Mitigation

This objective presents an integrated and adaptive strategic framework designed to strengthen institutional resilience and guide KZN municipalities toward proactive and coordinated disaster risk mitigation. This framework emerges from the synthesis of empirical findings and theoretical perspectives on disaster governance, adaptive management, and institutional learning. It assumes a six-pillar configuration that represents the essential foundations of resilient municipal systems: strategic planning and preparedness; resource mobilisation and capacity development; governance and leadership commitment; stakeholder and community engagement; implementation and coordination; and monitoring, learning, and adaptive governance.

Consistent with the cooperative governance principles enshrined in Chapter 3 of the Constitution (Republic of South Africa, 1996) and the Disaster Management Act 57 of 2002, this framework situates disaster management within a system of interdependent actors, levels, and processes. Each pillar contributes to a cyclical continuum of planning, execution, reflection, and reform, embodying the CAS ideal of feedback-driven evolution and the iterative risk-reduction cycle of the DRM model.

- **Strategic Planning and Preparedness**

Proactive planning is the cornerstone of institutional resilience. Municipalities must integrate disaster-risk considerations within an IDP, SDF, and sectoral strategies. Activities such as hazard mapping, vulnerability assessment, and scenario modelling operationalise the DRM stages of risk identification and mitigation. From a CAS perspective, such planning enables anticipatory adaptation; systems respond to emerging threats through data-driven foresight rather than crisis reactions.

The IAD framework reinforces this by situating planning within clearly defined "action arenas" that align incentives and responsibilities across departments. Likewise, SCT emphasises participatory planning that mobilises community trust and local knowledge, ensuring that municipal strategies are both context-specific and socially legitimate. The empirical findings showed that E Municipality's risk-based planning achieved superior readiness, illustrating how embedding foresight into statutory instruments transformed governance from reactive compliance to adaptive stewardship.

- **Resource Mobilisation and Capacity Development**

Resilience depends on adequate and sustained human, financial, and technological resources. This pillar focuses on developing institutional capacity through predictable budget allocations, professional training, and access to modern analytical and ICT tools such as GIS mapping and early warning technologies.

The CAS framework interprets resources as dynamic system inputs that must circulate fluidly between subsystems to maintain a balance. The DRM model views resource mobilisation as part of the preparedness and response phases, requiring dedicated funding streams rather than ad hoc disbursements. Under the IAD lens, transparent budgeting rules and equitable incentives create institutional stability, whereas SCT highlights those collaborative partnerships with

universities, provincial agencies, and private actors expand the social and technical resource base.

Empirically, E Municipality's integration of external partnerships and ongoing staff training exemplifies these principles, whereas M Municipality's reactive post-disaster funding reinforced vulnerability. Sustainable capacity development thus requires embedding financial continuity, human capital pipelines, and technological upgrades into municipal planning cycles.

- **Governance and Leadership Commitment**

Leadership vision and governance coherence are anchors of resilient institutions. This pillar recognises that adaptive governance arises from accountable decision-making, interdepartmental coordination, and the continuity of leadership beyond political cycles.

Within the CAS paradigm, leaders function as stabilising agents that maintain feedback equilibrium by promoting information flow and adaptive experimentation. The DRM model situates leadership within the coordination and response phases, where authority must be decentralised to enable swift action. IAD highlights the importance of enforceable rules, oversight committees, and performance-linked accountability, while SCT underscores the relational dimension: leaders must cultivate trust, fairness, and participation.

Findings from E Municipality demonstrated that stable, visionary leadership institutionalised preparedness norms and ensured vertical accountability, whereas M Municipality's political influence on turnover disrupted institutional learning. Effective leadership, therefore, entails embedding resilience objectives in organisational culture through transparent governance, cross-departmental forums, and periodic performance audits.

- **Stakeholder and Community Engagement**

No resilience strategy can succeed without inclusive stakeholder participation. This pillar emphasises multilevel collaboration among municipal departments, civil society, business sectors, traditional leaders, and communities. Such engagement embodies the CAS notion of diversity and interdependence, in which heterogeneous actors collectively enhance system adaptability.

The DRM model's participatory approach aligns with this, emphasising the preparedness and recovery stages that integrate local knowledge into decision-making. SCT provides a social rationale: bonding, bridging, and linking social capital fosters mutual accountability and accelerates collective action. The IAD framework further formalises these interactions through institutionalised platforms, such as ward-based disaster forums and inter-sectoral coordination committees, which convert informal collaboration into rule-bound governance processes.

Empirical evidence from E Municipality confirmed that structured engagement enhanced coordination and local ownership, while M Municipality's reliance on councillor-driven communication yielded inconsistent participation. Institutionalising dialogue mechanisms transform social participation from discretionary outreach into a permanent governance function.

- **Implementation, Coordination, and Early Warning Systems**

This operational pillar translates strategic intent into a coordinated action. Implementation adequacy depends on clear Standard Operating Procedures (SOPs), functional communication systems, and incident-command protocols that facilitate coherent responses across administrative units.

Within the CAS framework, coordination represents network synchronisation, where distributed agents align their responses through real-time feedback. DRM theory directly supports this through its response and recovery stages, emphasising early warning dissemination and multi-agency collaboration. The IAD framework highlights that successful implementation requires well-defined roles, resource channels, and enforcement rules, whereas SCT stresses that trust and information sharing determine how effectively warnings translate into public action.

E Municipality's use of multilingual digital alerts and cross-departmental coordination demonstrated adaptive integration, whereas M Municipality's manual communication exposed the fragility of its information ecosystem. Municipalities must therefore institutionalise ICT-based early warning infrastructures and ensure that interdepartmental collaboration becomes routine rather than situational.

- **Monitoring, Learning, and Adaptive Governance**

Continuous learning transforms municipalities from reactive entities into adaptive organisations. This pillar emphasises monitoring, evaluation, and feedback as cyclical mechanisms that sustain improvement. E Municipality's post-event reviews and data analytics represent this adaptive loop in practice.

CAS theory interprets such loops as self-organising adaptation, in which new knowledge reshapes system behaviour. The DRM model's review and revision stage operationalises this feedback, ensuring that lessons inform future risk reduction. IAD situates learning within institutional reform processes, linking evidence to rule modification, whereas SCT underscores the social trust generated through transparent feedback and knowledge sharing.

Adaptive governance thus requires municipalities to institutionalise evaluation frameworks, maintain digital repositories of lessons learned, and encourage inter-municipal peer learning. By embedding reflective mechanisms, municipalities ensure that resilience is not static, but continuously evolving in response to new knowledge, technologies, and risks.

7.5 Theoretical Implications of the Study

This study provides theoretical insights into how institutional resilience for disaster risk mitigation evolves within the municipal governance systems in South Africa. Guided by four complementary frameworks, CAS, DRM, IAD, and SCT, this study advances the integrative understanding of resilience as both an institutional and adaptive process. The findings show that resilience arises not only from policy compliance but also from the dynamic interaction between system adaptability, rule coherence, and social collaboration.

- **Advancement of CAS**

This study extends CAS by illustrating that municipal resilience depends on adaptive self-organisation achieved through continuous learning, decentralised leadership, and digital integration. This study contextualises CAS in developing-country local government settings, where adaptation is constrained by political and resource asymmetries. The integrated framework operationalises the CAS principles by linking feedback, interdependence, and emergent learning to practical governance processes.

- **Refinement of DRM**

The DRM model was refined by challenging its traditional linear interpretation of mitigation, preparedness, response, and recovery. Evidence shows that these phases occur simultaneously and recursively within local governance systems. This re-conceptualisation advances DRM by positioning it as an iterative governance mechanism rather than a sequential emergency protocol. This study demonstrates that effective DRM requires embedded coordination, anticipatory planning, and institutional learning. By integrating DRM with CAS, the study frames disaster management as an evolving adaptive cycle, transforming municipalities into systems that learn and adjust rather than simply respond.

- **Extension of IAD**

This study contributes to IAD research by empirically showing how institutional rules, incentive structures, and accountability systems determine the implementation of resilience strategies. The findings of the study extend IAD by introducing adaptive feedback as a central process of institutional evolution. Rules are not fixed; they evolve through learning and practising. This study demonstrates how aligning institutional design with CAS principles (continuous feedback, flexible boundaries, and iterative learning) enables dynamic institutional governance. Thus, the synthesis of IAD and CAS produces a more fluid model of institutional change that is applicable to complex governance environments.

- **Reinforcement of SCT**

The findings of the study reinforce SCT by confirming that trust, participation, and collaboration are indispensable to institutional resilience. This study extends SCT by demonstrating that social capital must be institutionalised through formal governance structures such as ward forums, interdepartmental committees, and participatory audits. This shows that relational trust operates as both a catalyst and an outcome of resilience, where cooperative governance generates social cohesion, which in turn sustains collective resilience. The integration of SCT into formal governance frameworks transforms participation from voluntary involvement into a structured adaptive governance mechanism.

7.6 Practical Recommendations

Constructed on the findings and analyses presented in the previous sections, practical recommendations are suggested to improve disaster risk management and institutional resilience in KZN municipalities. These recommendations are intended to support actionable guidance for municipal authorities. This focuses on strengthening administrative practices, improving resource consumption, fostering stakeholder engagement and embedding continuous learning within municipal systems.

7.6.1 Strengthening Preparedness and Planning

From an operational viewpoint, including interactive risk assessments, hazard mapping, and climate modelling into municipal IDPs offer effective strategies for enhancing disaster readiness. coordinating disaster management plans to specific budget lines and setting up clear monitoring indicators are important to make sure that resources are used wisely and that the whole planning process at the municipal level becomes better.

7.6.2 Resource and Capacity Development

The study emphasises the importance of establishing sustainable funding structures, such as allocated municipal grants specifically for disaster risk reduction. Prioritising continuous staff training in Geographic Information Systems (GIS), early warning systems and climate risk adaptation procedures will build critical capacity, enabling municipalities to better anticipate and respond to disaster risks.

7.6.3 Governance and Leadership

Encouraging leadership stability is necessary to maintaining institutional memory and avoiding interruptions caused by frequent leadership changes. Incorporating accountability procedures into municipal leadership performance evaluations will ensure that resilience remains a key priority within governance structures, thereby strengthening municipal commitment to disaster risk reduction.

7.6.4 Stakeholder and Community Engagement

Sanctifying ward-based disaster committees and presenting them with small, dedicated budgets can sustain and enable community participation. Additionally, establishment of partnerships with academic institutions, non-governmental organisations (NGOs) and businesses will enhance information exchange and resource deployment, fostering a collaborative approach to resilience building.

7.6.5 Implementation and Operational Systems

Enforcing SOPs can be enhanced through routine scenario-based exercises and interdepartmental drills, which reinforce active readiness. Developing shared data programs will reduce information silos and improve coordination across departments, increasing overall disaster response effectiveness.

7.6.6 Monitoring, Learning and Adaptation

Institutionalising after-action reviews and determining digital knowledge sources for disaster events are essential for continuous learning. Integrating scenario planning and insight analysis will enable municipalities to predict emerging risks and adapt their strategies proactively, ensuring dynamic and resilient disaster management frameworks.

7.7 Limitations of the Study

Even though the present study provides relevant insights into the concepts of institutional resilience and disaster risk mitigation in the context of municipal governance, it is important to acknowledge that it has several limitations. First, the research was conducted only in municipalities in KZN which restricts the generalisability of the results to other provinces or nations of interest. The institutional, political, and socio-economic forces vary within municipalities, and the findings might not entirely capture the realities that are variegated among the local governments in South Africa. Second, the qualitative design, though appropriate for the exploration of complex institutional and behavioural phenomena, used interviews and document reviews as the major tools. Such a method can have been subjective, and they introduce an element of bias to interpretation because the answers are based on what the participants think and are not objective. This limitation was minimised in the study through triangulation and validation, although the lack of quantitative information limits the ability to

statistically evaluate causal relationships or general trends. Third, there was a lack of time and resources to engage the field extensively and conduct a more in-depth longitudinal analysis. The research obtained a picture of what institutions practice in resilience, but not long-term behavioural or structural shifts. A longitudinal method would have presented more robust results for institutional learning and adaptation transformations over time. Finally, bureaucratic and political sensitivities also limited access to internal documents of the company as well as access to senior officials. This constrained the number of checks for certain institutional assertions. Irrespective of these limitations, this study offers a credible and contextually legitimate input to theory and practice, providing a foundation for subsequent studies on adaptive governance and disaster resilience in the public sector.

7.8 Suggestions for Further Research

Future researchers are recommended to do comparative studies across several municipalities in South Africa to identify patterns and inconsistencies in resilience plans. Through the analysis of many municipal contexts, researchers might discover similarities that facilitate successful disaster risk management, alongside context-specific obstacles necessitating customised strategies.

This study primarily used a qualitative approach. It is recommended that future research adopt mixed methods to study municipal resilience strategies. By merging qualitative insights with quantitative measurements, such as the frequency of disaster events or response times, researchers can provide a more wide-ranging understanding of resilience practices and their effectiveness across different municipalities.

Further research should examine the enduring and long-term impacts of community-based involvement in disaster risk governance. Longitudinal studies may provide valuable insights into the durability of community involvement in fostering resilience over time and the influence of municipal policies in promoting or hindering continued engagement.

It is further recommended that theoretical integration be enhanced by examining the interaction between CAS and IAD frameworks in shaping municipal resilience. This study could result in a more sophisticated understanding of the processes, feedback loops, and institutional

dynamics that influence disaster-prone adaptation and inform the creation of more robust resilience solutions.

7.9 Summary of the Chapter

This chapter provided conclusions, implications and recommendations resulting from the study objectives. The findings highlighted key institutional resilience strategies used by the selected KZN municipalities, as well as the enabling and constraining factors that influence their application. The study additional examined the adequacy of administrative practices performed by the municipalities and presented a layered framework designed to guide disaster risk mitigation and enhance institutional resilience.

Internal elements influencing resilience including leadership commitment, resource availability, staff capacity, communication effectiveness, and institutional culture about disaster preparedness. External elements encompass assistance from additional government agencies, cooperation with stakeholders, and community involvement strategies. Optimal strategies for fostering resilience include inclusive preparation planning, focused capacity development, robust governance frameworks, active stakeholder engagement, efficient operational systems, and ongoing monitoring, learning, and adaptation.

The chapter underscored the importance of systemic integration throughout all tiers of municipal operations, continuous resource allocation, and constant leadership engagement to guarantee the effectiveness and long-term viability of resilience initiatives. Moreover, encouraging continuous community engagement emerged as a critical component in strengthening adaptive capacities and enhancing disaster risk management outcomes. In the end, the study underscores that resilience in KZN municipalities is a multifaceted endeavour necessitating coordinated efforts across institutional, operational and social dimensions, with a focus on long-term sustainability, proactive risk management and responsive governance.

In conclusion, this study contributes to a deeper understanding of how institutional resilience strategies and administrative practices shape disaster risk governance within municipal systems in KwaZulu-Natal. By examining governance relationships, coordination mechanisms, and institutional arrangements within two municipalities, the research highlights the critical role that administrative capacity, relational networks, and adaptive governance practices play in strengthening disaster risk management systems. The findings demonstrate that effective

disaster risk governance extends beyond formal policy frameworks and requires institutional learning, coordinated decision-making, and sustained organisational commitment. In the context of increasingly complex climate and disaster risks across Africa, strengthening institutional resilience within municipal governance systems will remain essential for building adaptive, responsive, and sustainable disaster risk management practices

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APPENDIX A

LETTER OF INFORMATION

LETTER OF INFORMATION

Date: 2023-08-13
Title of Research Project: Institutional resilience strategies, administrative practices, and disaster risk management by municipalities in KwaZulu-Natal
Principal Researcher: Nelisiwe Mary-Anne Mchunu

Supervisor/s: Dr CJ Nyide (Main) and Dr CK Dongwe (Co-supervisor)

Brief Introduction and Purpose of the Study:

This study seeks to investigate Institutional resilience strategies, administrative practices, and disaster risk management by municipalities in KwaZulu-Natal. The aim will be achieved by determining the following objectives:

- To examine institutional resilience strategies adopted by selected municipalities in KZN to manage disaster risks.
- To determine factors influencing the application of institutional resilience strategies utilised by municipalities in KZN to manage disaster.
- To identify administrative practices performed by selected KZN municipalities for adaption to disaster risks.
- To evaluate the adequacy of administrative practices performed by municipalities to adapt to disaster risks.
- To formulate an integrated and adaptive strategic framework that strengthens institutional resilience and guides municipalities in South Africa towards proactive and coordinated disaster risk mitigation.

Outline of the Procedures: this study will employ qualitative method. Instrument for data collection will include in-depth interviews, documents from 2019 and 2023 obtained from the website and literature review. However, census sampling will be used where all 17 individuals involved in disaster risk management in the selected

municipalities will form part of this study. This study will respect the privacy and identities of the participants. In addition, participants will be requested to participate voluntarily, and they can withdraw from participation at any time. The study is only conducted for research purposes, and it will comply with DUT guidelines and SASSA requirements/ policy relating to research. Therefore, the truth and honesty will be considered during data collection, analysis and report writing.

Risk to the Participant: This study does not intend to harm any participants.

Benefits: The findings of this study are expected to contribute significantly to the field of disaster risk management and community resilience. By identifying successful strategies and highlighting areas that require attention, the study aims to inform policy recommendations and practical interventions that can enhance the disaster preparedness and response capabilities of municipalities in KwaZulu-Natal

Right to Withdraw: Participant may decide to withdraw from the study at any time by advising the researcher, regardless of the possible effects on the results.

Remuneration: No

Costs of the study: No

Confidentiality: All information provided will be considered completely confidential; the name will not be included or in any other way associated, with the data collected in the study. Furthermore, because the interest of this study is in the average responses of the entire group of participants, participants will not be identified individually in any way in any written reports of this research.

Data collected during this study will be retained indefinitely, in a locked office and locked filing cabinet to which only researchers associated with this study have access. There are no known or anticipated risks associated to participation in this study.

If you have any comments or concerns resulting from your participation in this study, please contact the following: The researcher: (0725556701), my supervisors: Dr CJ Nyide (033 845 8804) and Dr CK Dongwe (033 845 8898)

Thank you for your assistance in this project.

APPENDIX B

CONSENT FORM

CONSENT

Full Title of the Study: Institutional resilience strategies, administrative practices, and disaster risk management by municipalities in KwaZulu-Natal

Names of Researcher/s: Nelisiwe Mchunu

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nelisiwe Mchunu, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: 139/24
- 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 computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participate in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declared myself prepared to participate in the study.
- I understand that significant new findings developed during this research which may relate to my participation will be made available to me.

Full Name of Participant	Date	Time	Signature / Right Thumbprint

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

Full Name of Researcher	Date
Nelisiwe Mary-Anne Mchunu	03/05/2024

Full Name of Witness (If applicable)	Date	Signature

Full Name of Legal Guardian (If applicable)	Date	Signature

APPENDIX C

INTERVIEW SCHEDULE

Institutional resilience strategies, administrative practices, and disaster risk management by municipalities in KwaZulu-Natal

SECTION A: DEMOGRAPHIC INFORMATION

Please only cross-out one answer (X)

1. Please select the municipality you work for

Msunduzi	eThekwini
1	2

2. Please select your gender

Male	Female
1	2

3. Please indicate your age group

18 – 25	26 – 33	34 – 41	42 – 49	50 r over
2	3	4	5	6

4. Please indicate your highest level of education

No Matric Certificate	Matric Certificate	Diploma	Honour's Degree	Master's Degree	PhD Degree
1	2	3	4	5	6

5. Please state your occupation in the municipality:

1.6.1

SECTION B: INSTITUTIONAL STRATEGIES ADOPTED BY MUNICIPALITIES (OBJECTIVE 1)

1. How does your municipality identify and evaluate potential disasters and risks within the surrounding community?
2. Please provide examples of past disasters the municipality has experienced and describe the role that risk assessment and planning played in managing these situations.
3. What specific tools or procedures does the municipality use to conduct risk assessments?
4. How are mitigation efforts selected regarding the risks that have been identified? Are there any challenges completing these priorities?
5. How do you measure the success of risk assessment and planning efforts in terms of disaster reduction and community resilience?

SECTION C: FACTORS INFLUENCING THE APPLICATION OF INSTITUTIONAL RESILIENCE STRATEGIES (OBJECTIVE 2)

C1: Lack of awareness and knowledge

C1.1. How does your municipality ensure that relevant staff members are knowledgeable and aware of institutional resilience strategies?

C2: The availability of resources

C2.1What resources (financial, human, technological) are available to support the application of institutional resilience strategies within your municipality? and how are they implemented?

C2.2What are resource constraints or limitations that affect the implementation of these strategies? Please elaborate.

C3: The political environment and leadership

C3.1Describe how leadership within your municipality demonstrate commitment to the application of institutional resilience strategies?

C3.2To what extent does leadership provide support, resources, and guidance for the implementation of these strategies?

C4: The level of collaboration and coordination

C4.1 Explain how your municipality engage with stakeholders (internal and external) in the application of institutional resilience strategies?

C4.2 What mechanisms or processes are in place to involve stakeholders in decision-making and implementation?

C4.3 How does your municipality collaborate and coordinate with other departments, agencies, or organizations in the application of institutional resilience strategies?

C4.4 How does your municipality engage with local communities in the application of institutional resilience strategies

C5: The level of risk perception and the history of disasters

C5.1 Describe how your municipality monitor and evaluate the effectiveness of the applied institutional resilience strategies?

C5.2 Are there any mechanisms to learn from past experiences and adapt strategies accordingly?

SECTION D: ADMINISTRATIVE PRACTICES PERFORMED BY MUNICIPALITIES FOR ADAPTION TO DISASTER RISKS (OBJECTIVE 3 AND 4)

D1: Risk assessments (Practices and adequacy of these practices)

D1.1. explain how your municipality conduct thorough risk assessments to identify potential hazards and vulnerabilities?

D1.2 Do you think your municipality has clear and measurable criteria that administrative practices should meet? Do you think these criteria should align with international standards, best practices, and the municipality's specific disaster risk context? Please elaborate.

D1.3Has your municipality developed key performance indicators (KPIs) to measure the effectiveness of administrative practices? If yes, do these include response time, coordination efficiency, community engagement levels and resource utilization? Please elaborate

D1.4 Explain how your municipality evaluate the alignment of existing policies, procedures, and guidelines with best practices in disaster risk management.

D2: Preparedness planning

D2.1 Does your municipality have a disaster risk management plan? If yes, does the disaster risk management plan outlines strategies, actions, and responsibilities for various phases of disaster management?

D2.2 explain how your municipality ensure that the administrative staff are adequately prepared to respond to disasters?

D2.3 Has your municipality implemented early warning systems for various hazards, such as floods, earthquakes, and storms? If yes, how does the municipality ensure that these systems are integrated with communication channels that can reach the vulnerable population in a timely manner?

D2.4 describe how your municipality ensure that the administrative staff are adequately prepared to respond to disasters?

D2.5 Describe how your municipality use the evaluation findings to develop an action plan for addressing identified gaps and improving administrative practices over time?

D3: Coordination and Communication among stakeholders

D3.1 How does your municipality engage the local community in disaster risk reduction efforts?

D3.2 How does the municipality work with outside partners, such as other government agencies, non-governmental organizations, or private sector organizations, to get more resources and expertise in times of crisis or need?

D3.3 How does your municipality establish clear lines of communication and coordination among different departments, agencies, and organizations involved in disaster management?

D3. 4 Explain how your municipality engage with community members, local organizations, and other stakeholders to gather feedback on their perceptions of the municipality's disaster risk management efforts.

D4: Efforts to support post-disaster recovery and reconstruction

D4.1 Does the municipality have appropriate legal and policy framework in place to support disaster risk management efforts? If yes, please describe.

D4.2 How does your municipality ensure that mechanisms for regular reporting and monitoring of administrative practices' effectiveness are established?

D4.3 Explain how your municipality evaluate the alignment of existing policies, procedures, and guidelines with best practices in disaster risk management

==========The End/ Thank you==========

APPENDIX D

ETHICAL CLEARANCE

Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

19 November 2024

Ms N M-A Mchunu
||20345
Mpande Location

Dear Ms Mchunu

Institutional resilience strategies, administrative practices, and disaster risk management by municipalities in KwaZulu-Natal
Ethical Clearance number IREC 139/24

The DUT-Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letter.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the DUT-IREC according to the DUT-IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the DUT-IREC as outlined in the DUT-IREC SOP's.

It is compulsory for a student or researcher to apply for recertification on an annual basis. The failure to do so will result in withdrawal of ethics clearance. It is the responsibility of the researcher and the supervisor to apply for recertification.

Please note that you are required to submit a Notification of Completion of Study form together with an abstract to the DUT-IREC office on completion of your study.

Yours Sincerely

_____
Professor P Mashau
Chairperson: DUT-IREC

APPENDIX E

GATEKEEPER LETTER (ETHEKWINI MUNICIPALITY)

POD 7, GROUND FLOOR, INTUTHUKO JUNCTION, 750 MARY THIPHE STREET, UMKHUMBANE, CATO MANOR, DURBAN 4001
TEL: 031 322 4513, FAX: 031 261 3405, FAX TO EMAIL: 086 265 7160, EMAIL: MILE@DURBAN.GOV.ZA, WEBSITE: WWW.MILE.ORG.ZA

For attention:
Chair of Research Ethics Committee
Durban University of Technology
Department Finance and Information Management
Faculty Accounting Informatics
Durban
4001

23 July 2024

RE: LETTER OF SUPPORT TO N.M MCHUNU STUDENT NO: 21031956- GRANTING PERMISSION TO USE ETHEKWINI MUNICIPALITY AS A STUDY SITE

The eThekwini Emergency Control Services/Disaster Management and Municipal Institute of Learning **(MILE)** in eThekwini Municipality, have considered a request from **Nelisiwe Mary-Anne Mchunu** (Ms) to use eThekwini Municipality as a research study site for the purposes of undertaking a research study entitled" **Institutional resilience strategies, administrative practices, and disaster risk management by municipalities in KwaZulu-Natal** - leading to the awarding of a **Master of Management Science**

We wish to inform you of the acceptance of her request and hereby assure her of our utmost cooperation towards achieving her academic goals; the outcome which we believe may help this municipality improve its evidence-base on risk management. The student is reminded of the ethical considerations and regulations when conducting this research. The student must take all necessary measures to ensure her personal safety during the research period as eThekwini Municipality indemnifies itself from any incidental claims that may arise. **In return, we stipulate as mandatory that the student contacts sthabile.mbongwa@durban.gov.za to present the preliminary results and recommendations of this study to the related unit/s.**

Wishing the student all the best in her studies.

Mr. Vincent Ngubane
Head: Disaster management
eThekwini Municipality

.....
Dr. Collin Pillay
Program Manager: MILE
eThekwini Municipality

I Nelisiwe Mary-Anne Mchunu hereby accept as mandatory that I will comply fully as per the conditions stipulated above.

Signed: ..... Date: 23/07/2024

APPENDIX F

GATEKEEPER LETTER (MSUNDUZI MUNICIPALITY)

The Msunduzi Municipality

Telephone / uCingo: 033 392 28822
Facsimile/iFekisi: 086 770 2408

Private Bag / Isikhwama: X 321
Pietermaritzburg/ePietermaritzburg 3201

Enquires: M Wankra | E-mail: Madeleine.Wankra@msunduzi.gov.za | Tel: 033 392 2882

Nelisiwe Mary-Anne Mchunu
Student No. 21031956

120345 Mpande Location

14 October 2024

Per Email: NelisiweM1@dut.ac.za

GATEKEEPER'S LETTER – "INSTITUTIONAL RESILIENCE STRATEGIES, ADMINISTRATIVE PRACTICES, AND DISASTER RISK MANAGEMENT BY MUNICIPALITIES IN KWAZULU-NATAL."

The above matter has reference.

In the first instance, I wish to advise you that the previous gatekeeper's letter dated 14 November 2023 is thereby withdrawn.

I am pleased to advise you that you are hereby granted permission to conduct your research with the amended date, within Msunduzi Municipality.

This permission is subject to the following conditions:

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

(ii) Where applicable, you liaise with the relevant Ward Councillor in order to gain access to the community.

(iii) You will forward a copy of the completed research report to the Office of the Municipal Manager, c/o Ms. Madeleine Wankra 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. or any coordination thereof.

APPENDIX G

LETTER FROM THE LAGUAGE EDITOR

The Dissertation Design Master

Phone: +27780248617
Email: mketiwae@yahoo.com
Email: saniphetinvestments@gmail.com
Web: https://thesis-reports-proof-reading-and-editing.business.site/

Date: 30 October 2025

Dear Sir / Madam

This is to confirm that this thesis entitled:

INSTITUTIONAL RESILIENCE STRATEGIES, ADMINISTRATIVE PRACTICES, AND DISASTER RISK MANAGEMENT BY

KWAZULU-NATAL MUNICIPALITIES

has been edited as detailed in the invoice below, according to the agreement with Durban University of Technology.

Authored by

NELISIWE MARY-ANNE MCHUNU
Student Number: 21031956

APPENDIX H

TURNITIN REPORT

ORIGINALITY REPORT

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