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Exploring The Factors Influencing Artificial Intelligence (AI) Governance in South Africa

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ABSTRACT

Artificial Intelligence (AI) is swiftly revolutionizing industries across the globe, influencing economic growth, public services, and decision-making processes. The ethical, legal, and socio-economic issues linked to AI demand robust governance frameworks to promote responsible development and implementation. While many countries have established AI governance frameworks, South Africa lacks a structured regulatory approach, raising concerns with regards to bias, data privacy, transparency, and equal opportunities or access to AI benefits. This study investigates the factors influencing AI governance in South Africa and proposes a strategic framework to guide national policymakers in addressing these challenges.

Using a qualitative research approach, this study collected data through semi-structured interviews with 11 participants including policymakers, industry experts, and academics. The findings reveal key governance challenges, including regulatory fragmentation, digital infrastructure gaps, skill shortages, and limited stakeholder engagement. Additionally, the study identifies the need for a governance model that balances innovation with ethical principles, ensuring AI technologies contribute positively to South Africa's socio-economic development.

This research contributes to AI policy discourse by proposing a governance framework tailored to South Africa's unique context. The framework emphasizes regulatory alignment with global best practices, inclusive stakeholder participation, and adaptive policy mechanisms to keep pace with technological advancements. By addressing critical gaps in AI governance, the study provides actionable recommendations to policymakers, enabling South Africa to harness AI's potential while mitigating risks associated with its implementation.

KEYWORDS

- Artificial Intelligence (AI),
- AI Governance,
- Policy Development,

- Machine Learning (ML),
- Ethics,
- Regulatory Framework, South Africa.

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CHAPTER 1. INTRODUCTION

1.1 Introduction

Today, the world is experiencing numerous innovations and technological advancements, such as generative pre-trained transformers, self-driving cars, predictive analytics, recommender platforms, automated grading systems, AI tutors, and many others. These technologies are made possible by artificial intelligence. Artificial Intelligence (AI) refers to the simulation of human intelligence in machines programmed to think and learn like humans. These machines can perform tasks that typically require human intelligence, such as recognizing speech, making decisions, solving problems, understanding language, and more. AI can be categorized into narrow AI, which is designed for specific tasks, and general AI, which possesses the capability to perform any intellectual task that a human can (Schwab, 2017).

In his book, The Fourth Industrial Revolution, Klaus Schwab describes AI as a key driver of the Fourth Industrial Revolution, highlighting its potential to transform industries and society through advancements in computational power, algorithms, and big data (Schwab, 2017).

Sekwena (2019) and Husain (2023) define artificial intelligence as the technology that enables machines to perform human-like tasks, learn from experience, and adjust to new inputs. The impact and transformation of AI are evident in business, politics, homes, and various fields, which is why it is sometimes referred to as an all-purpose or generic focus technology.

Sekwena (2019) further explains that AI comprises technologies such as machine learning, natural language processing, computer vision, and neural networks. Examples of their uses include: machine learning that can help predict disease outbreaks, create personalized treatment plans, and analyze medical images. Natural Language Processing that is used in chatbots and virtual assistants.

Computer Vision technology that powers facial recognition systems, surveillance, and self-driving cars. Neural Networks which are used to convert spoken language into text.

According to Marwala (2021), there are three types of artificial intelligence: machine learning, soft computing, and computational intelligence. Machine learning involves building intelligent machines that use statistics and data to improve their functioning automatically, similar to how humans use sensory data to learn. An example is neural networks, collections of algorithms that mimic how the human brain recognizes patterns. Machine learning can be further divided into three categories: Supervised Learning, which involves algorithms learning from labeled data to make predictions and decisions; Unsupervised Learning, where algorithms identify patterns and structures in unlabeled data; and Reinforcement Learning, which relies on algorithms learning through trial and error, penalties or receiving rewards to optimize their actions.

Soft computing brings intelligence to machines using limited data, with fuzzy logic being an example. Fuzzy logic is based on vague, imprecise notions that may be partially true, considering probabilities rather than definitive outcomes. For example, traditional logic might assert that if it is cloudy, it will rain, whereas fuzzy logic suggests it might rain but also acknowledges other possibilities.

Lastly, Marwala (2021) defines computational intelligence as observing how nature works and using this information to build intelligent machines. An example is ant-colony optimization, used in electronic maps to identify the shortest distance between two points.

The Merriam-Webster dictionary defines AI as “[a] branch of computer science dealing with the simulation of intelligent behavior in computers,” or “[t]he capability of a machine to imitate intelligent human behavior” (Merriam-Webster, 2019). The English Oxford Living Dictionary defines AI as “[t]he theory and development of computer systems able to perform tasks normally requiring

human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages" (Oxford University Press, 2019).

Given the examples and definitions above, it is evident that AI has had a positive impact on society, but there have also been instances where AI systems produced poor outcomes. For instance, the first fatal accident involving an autonomous vehicle occurred when a Tesla car in self-driving mode killed a pedestrian in 2016 (Deamer, 2016). Similarly, in 2017, Microsoft's chatbot Tay had to be shut down after 16 hours because it became racist, sexist, and denied the Holocaust (Perez, 2016).

The utilization of artificial intelligence (AI) applications has experienced tremendous growth in recent years globally, bringing forth numerous benefits and conveniences. However, this expansion has also provoked ethical concerns, such as privacy breaches, algorithmic discrimination, security and reliability issues, transparency, and other unintended consequences. (Corrêa et al., 2023)

Globally, countries and organizations are establishing frameworks to ensure AI development and deployment align with human rights, fairness, and transparency (Jobin, Ienca, & Vayena, 2019). In South Africa, AI governance is still evolving, with efforts underway to develop policies that balance innovation with ethical considerations. South Africa's Presidential Commission on the Fourth Industrial Revolution (4IR) has been instrumental in shaping AI policy, emphasizing the need for regulatory frameworks that foster growth while protecting societal interests (Presidential Commission on the Fourth Industrial Revolution, 2020). Despite these advancements, challenges remain, including addressing biases in AI systems and ensuring equitable access to AI benefits across different socio-economic groups (Fourie, 2021).

It is for reasons outlined above that this research will focus on AI governance in South Africa from a national government perspective, aimed at policymakers.

1.2 Statement of purpose

This research employs qualitative methods to investigate the factors influencing artificial intelligence (AI) governance in South Africa from a national government perspective and develop a comprehensive governance framework that provides strategic guidance and actionable recommendations for policymakers to accelerate the legislative process.

1.3 Background of the study

Artificial Intelligence (AI) has its roots in the mid-20th century when pioneers such as Alan Turing and John McCarthy began to explore the concept of machines that could mimic human intelligence. Turing's 1950 paper, "Computing Machinery and Intelligence," posed the question, "Can machines think?" This marked the beginning of AI as a field of study (Turing, 1950). The 1956 Dartmouth Conference, organized by McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude Shannon, is often considered the birth of AI as a formal discipline (McCarthy et al., 2006). Early AI research focused on symbolic reasoning and problem-solving, leading to the development of expert systems in the 1980s (Russell & Norvig, 2016).

Advancements in machine learning, particularly the development of neural networks and deep learning algorithms in the late 20th and early 21st centuries, have significantly enhanced AI capabilities. Today, AI technologies encompass a wide range of applications, including natural language processing, computer vision, robotics, and autonomous systems. AI's ability to analyze large datasets, identify patterns, and make decisions has made it a transformative force across different sectors, from transportation and finance to healthcare and entertainment.

As AI technologies have evolved, so too has the recognition of the need for effectivegovernance frameworks to ensure their ethical and responsible use. The global AI governance landscape has experienced significant developments,

particularly in the post-COVID-19 era, with numerous countries and international organizations establishing comprehensive frameworks to address the ethical, legal, and societal implications of AI (Musoni, 2024).

The European Union (EU) has been at the forefront of AI regulation, with the landmark AI Act coming into force in 2024, creating the world's first comprehensive legal framework for AI regulation based on risk categorization (European Commission, 2024). This builds upon earlier initiatives such as the "Ethics Guidelines for Trustworthy AI" published in 2019, which emphasized principles of human autonomy, harm prevention, fairness, and explicability (European Commission, 2019).

In the United States, the Biden administration issued Executive Order 14110 on Safe, Secure, and Trustworthy AI in October 2023, establishing new standards for AI safety and security (White House, 2023). The National Institute of Standards and Technology (NIST) has continued to refine its AI Risk Management Framework, with updated guidance released in 2024 focusing on fostering trustworthy AI systems through enhanced practices for fairness, transparency, and accountability (NIST, 2024).

Recent developments in 2024 have seen countries like Japan, Canada, and Singapore updating their national AI strategies to address emerging challenges such as generative AI governance, algorithmic transparency, and cross-border AI cooperation (Government of Japan, 2024; Government of Canada, 2024). These frameworks increasingly prioritize ethical considerations, data privacy, human rights, and the balance between innovation and public interest protection.

Current South African Context

Despite these global advancements in AI governance, South Africa currently faces a significant regulatory gap. The transformation and impact of AI in daily life are undeniable, yet South Africa lacks comprehensive legislation, regulation, or official policy that dictates or guides the ethical use of AI, with limited legal

literature available on this subject (Adams, 2021; Brand, 2022; Snail Ka Mtuze & Morige, 2024).

Recognizing this gap, the Department of Communications and Digital Technologies (DCDT) initiated the South African AI planning discussion in April 2024, which aims to outline the development and adoption of a national AI policy framework (Werksmans Attorneys, 2024). This initiative represents a crucial step toward addressing the regulatory vacuum that currently exists in the country.

The implementation of AI in government services requires large datasets, underscoring the critical need for effective regulation relating to data protection and privacy, as well as the design and use of AI systems (Brand, 2022). Currently, there is no specific legislation addressing artificial intelligence in South Africa, creating challenges for ethical and responsible AI deployment (Snail Ka Mtuze & Morige, 2024).

Unique South African Considerations

South Africa faces distinctive challenges that necessitate customized AI governance policies across various sectors. The country's socio-economic disparities, encompassing diverse economic structures, social challenges, and varying development levels, require tailored approaches to address local issues such as unemployment, inequality, and economic growth (Waghid & Waghid, 2021).

Additionally, South Africa's rich cultural diversity and ethical values significantly influence perceptions of privacy, data protection, and fairness, making it essential for AI policies to reflect these cultural norms for successful integration and public acceptance (Floridi & Cowls, 2019). The nation's unique legal and governance structures, rooted in its constitutional democracy and transformation agenda, demand specific AI regulations that align with constitutional principles and human rights frameworks.

Furthermore, the digital divide, driven by infrastructure challenges and unequal access to technology, underscores the need for AI policies focused on building digital infrastructure and skills development, contrasting with the requirements of nations with more advanced digital ecosystems (Van Dijk, 2020; Tuomi, 2021). Recent studies highlight that while South Africa leads AI adoption in Africa, the governance frameworks remain fragmented and underdeveloped compared to global standards (Musoni, 2024).

A comprehensive and uniquely South African AI governance framework is essential to maximize the benefits of AI technologies while mitigating ethical concerns and risks. Such a framework would ensure alignment with national priorities, constitutional values, and socio-economic development goals, facilitating responsible AI adoption that benefits all citizens while addressing the country's specific challenges and opportunities.

1.4 Research objectives

The study aimed to achieve the following research objectives:

- Explore the factors that influence the governance of AI technology in South Africa from national government perspective.
- Identify key elements from global AI governance frameworks that can be adapted and integrated into the South African context.
- Propose an AI governance framework for South African government policymakers.

1.5 Rationale

This study contributed to the academic discourse about artificial intelligence governance in South Africa. According to Musoni (2024), 2024 was identified as a critical year for African governments to implement continental commitments around data, data protection, continental free trade and cybersecurity.

Recognizing the urgent need for African countries to commit to the governance of AI and address the ethical concerns that accompany AI technologies, this research brought value to the AI field by exploring and developing a comprehensive framework that addressed artificial intelligence governance in South Africa.

This research benefited multiple stakeholders within the South African context:

- National Government Policymakers - evidence-based insights and practical framework
- South African Citizens - enhanced protection and maximized AI benefits
- Private Sector Entities - regulatory clarity and reduced uncertainty
- Academic Institutions - new knowledge and research foundation
- Civil Society Organizations - advocacy tools and policy engagement support
- Regional Partners - governance model reference for African countries

1.6 Delimitations of the study

This research focused exclusively on South Africa, taking into account its unique socio-economic conditions, legal frameworks, infrastructural challenges, and cultural norms. It did not extend to other countries, although it referenced global governance frameworks for comparative analysis and contextual adaptation.

The study concentrated on legislative and governance aspects of artificial intelligence. It did not address deep technical aspects of AI development or specific AI applications, as the primary focus was on policy and regulatory frameworks rather than technological implementation.

The primary stakeholders considered in this research were national government policymakers. While the study acknowledged the roles of other stakeholders, such as private sector entities, academic institutions, and civil society organizations, the primary focus was on providing actionable recommendations

for government policymakers who hold the authority to establish and implement AI governance frameworks.

The research recognized the interconnected nature of AI governance with other policy domains such as data protection, cybersecurity, and digital inclusion. However, it maintained a specific focus on AI governance to provide depth rather than breadth, while acknowledging these important intersections where relevant to the South African context.

By establishing these delimitations, the research maintained a focused approach that allowed for in-depth analysis of AI governance factors specific to South Africa's national government context, while acknowledging the broader ecosystem of stakeholders who would be affected by and could contribute to effective AI governance in the country.

1.7 Assumptions

The research assumes that sufficient data and literature are available to analyze the factors influencing AI governance and to develop a comprehensive governance framework. This includes access to relevant policy documents, expert opinions, and case studies.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This literature review explored the global and regional frameworks of AI governance, the unique challenges in Africa, particularly South Africa, and the various factors influencing AI governance. By examining these aspects, this review aimed to provide a comprehensive understanding of the current state of AI governance and identify the critical elements that need to be addressed in developing robust governance frameworks for the South African government.

2.2 Global Context of AI Governance

The global landscape of AI governance is characterized by diverse approaches, reflecting the varying priorities and capacities of different nations and regions.

2.2.1 European Union

The European Union (EU) has been at the forefront of developing comprehensive AI policies. The "Ethics Guidelines for Trustworthy AI," published by the High-Level Expert Group on AI in 2019, emphasize principles such as respect for human autonomy, prevention of harm, fairness, and explicability (European Commission, 2019). These guidelines are part of the broader effort to create a legal framework for AI, as seen in the proposed AI Act, which aims to regulate AI applications based on their associated risks (European Commission, 2021). The EU's proactive stance reflects its commitment to ensuring that AI technologies align with European values and fundamental rights.

2.2.2 Canada

Canada has implemented the Pan-Canadian AI Strategy, which focuses on promoting research excellence and developing AI talent while addressing the ethical implications of AI. The Directive on Automated Decision Making, issued in 2019, sets out clear guidelines for the responsible use of AI in public services, emphasizing transparency, accountability, and fairness (Kuziemski & Misuraca, 2020).

2.2.3 United States

In the United States, the National Institute of Standards and Technology (NIST) has developed the AI Risk Management Framework, which aims to foster trustworthy AI systems. This framework emphasizes the importance of addressing both technical and ethical dimensions of AI development and deployment, ensuring that AI systems are fair, transparent, and accountable (NIST, 2021).

2.2.4 Japan and Canada

Both Japan and Canada have established national AI strategies that prioritize ethical considerations, data privacy, and human rights. These strategies aim to balance innovation with the protection of public interests, highlighting the importance of a human-centric approach to AI governance (Gwagwa et al., 2022; Kuziemski & Misuraca, 2020).

2.3 AI Governance in Africa

Africa presents unique challenges and opportunities for AI governance. South Africa, in particular, recognizes the transformative potential of AI but currently lacks a comprehensive legislative or regulatory framework to guide its ethical use.

2.3.1 South African Initiatives

The Department of Communications and Digital Technologies (DCDT) initiated the South African AI planning discussion in 2024, aiming to develop a national AI policy (Brand, 2022). This initiative reflects the growing recognition of the need for a structured approach to AI governance in South Africa.

2.3.2 Regional Efforts

African nations face socio-economic disparities, infrastructure challenges, and distinct cultural and ethical values that influence their approach to AI governance. Effective frameworks must address these contextual factors to ensure equitable development and mitigate risks (ECDPM, 2024). Regional efforts, such as the African Union's Continental Strategy on AI, aim to provide a unified vision for AI governance across the continent, addressing issues like data sovereignty and the ethical use of AI (Musoni, 2024).

2.4 Factors Influencing AI Governance

Several factors influence the governance of AI technology, which are critical to developing effective and comprehensive governance frameworks:

2.4.1 Technological Complexity

The intrinsic properties of AI, such as vast computing power, learning capabilities, and data dependence, pose significant governance challenges. Effective AI governance must consider the technical characteristics of Artificial Intelligence systems, including algorithmic transparency, data governance and the potential for unintended consequences (Morley et al., 2020; Buiten, 2019). The complexity of AI

technologies requires specialized regulatory frameworks that can adapt to the evolving nature of these systems.

2.4.2 Ethical and Social Values

Ethical considerations are central to AI governance. Frameworks must address issues of fairness, accountability, transparency, and bias in AI systems. Aligning AI technologies with societal values and ensuring that they promote social good are crucial (Floridi et al., 2020). Ethical principles and value-based frameworks contributes heavily to Artificial Intelligence governance policies (Cave et al., 2019). The integration of ethical guidelines into Artifcial Intelligence development and deployment helps mitigate risks and build public trust in Artificial Intelligence systems.

2.4.3 Regulatory and Policy Frameworks

The establishment of robust regulatory and policy frameworks is essential for AI governance. These frameworks should include clear guidelines, standards, and regulations to manage AI's development and deployment responsibly. International cooperation and harmonization of policies can help address the global nature of AI technologies and ensure consistent governance practices across jurisdictions (European Commission, 2021; SpringerLink, 2020). The development of adaptive regulatory frameworks that can respond to technological advancements is critical for effective AI governance.

2.4.4 Stakeholder Involvement

Inclusive governance frameworks require the involvement of multiple stakeholders, including governments, private sector entities, academia, and civil society. Collaborative efforts can enhance the legitimacy and effectiveness of AI governance by incorporating diverse perspectives and

expertise (Gwagwa et al., 2022; ECDPM, 2024). Stakeholder engagement ensures that AI governance frameworks are comprehensive and address the concerns and needs of different groups within society.

2.4.5 Socio-Economic Context

The socio-economic context significantly influences AI governance. Factors such as economic development, infrastructure availability, and cultural values shape how AI technologies are adopted and governed. Tailoring governance frameworks to local contexts is essential to address specific needs and challenges (Taeihagh, 2021; Veale & Brass, 2019). Socio-economic considerations play a crucial role in ensuring that AI technologies contribute to sustainable development and do not exacerbate existing inequalities.

2.5 Challenges and Gaps in AI Governance

The governance of Artificial Intelligence presents numerous challenges and gaps, largely due to the rapid pace of technological advancement, the complexity of AI systems, and the diverse socio-economic contexts within which AI is being deployed. This section dives deeper into the gaps and challenges that hinder the effective governance of AI technologies.

2.5.1 Rapid Technological Advancement

A key obstacle in Artificial Intelligence governance is the rapid pace at which AI technologies are evolving. This swift progression often outpaces the development and implementation of regulatory frameworks, leading to a reactive rather than proactive approach to governance (Morley et al., 2020). AI systems, particularly those employing machine learning and neural networks, can evolve and improve themselves in ways that are not

always predictable, making it difficult for existing regulatory structures to keep up (Buiten, 2019).

2.5.2 Opacity and Complexity of AI Systems

The inherent complexity and opacity of AI algorithms, often referred to as "black box" systems, pose significant challenges for transparency and accountability (Floridi et al., 2020). Many AI systems, especially those based on deep learning, operate in ways that are not easily interpretable even by their developers. This lack of transparency makes it difficult to understand how decisions are made, to identify biases, and to hold entities accountable for outcomes (Veale & Brass, 2019).

2.5.3 Fragmented Regulatory Landscape

Globally, the regulatory landscape for AI is highly fragmented. Different countries and regions have developed their own sets of guidelines and regulations, leading to a lack of harmonization (European Commission, 2021). For instance, while the EU has developed comprehensive guidelines and is working towards implementing the AI Act, other regions may have more fragmented or less stringent regulations. This inconsistency can create challenges for international cooperation and for companies operating across multiple jurisdictions (Roberts et al., 2024).

2.5.4 Ethical and Social Concerns

AI technologies raise significant ethical and social concerns, including issues of fairness, bias, privacy, and the potential for misuse. These concerns are amplified by the use of AI in sensitive areas such as criminal justice, healthcare, and employment, where biased algorithms can lead to unfair treatment or discrimination (Cave et al., 2019). Additionally, there are significant concerns about the ethical use of AI in surveillance and

military applications, which can have profound implications for privacy and human rights (Taddeo & Floridi, 2020).

2.5.5 Socio-Economic Inequalities

AI has the potential to exacerbate existing socio-economic inequalities, both within and between countries. Wealthier nations and corporations often have greater access to the resources needed to develop and deploy advanced AI technologies, potentially widening the gap between the global north and south (ECDPM, 2024). AI can disproportionately impact low-income communities and marginalized groups, who may be more vulnerable to the negative consequences of automated decision-making systems (Gwagwa et al., 2022).

2.5.6 Lack of Public Awareness and Engagement

There is often a significant gap in public awareness and understanding of AI technologies. This lack of awareness can hinder effective governance, as public engagement and informed discourse are crucial for developing regulations that align with societal values and priorities (Binns, 2018). Engaging the public in discussions about AI is essential for building trust and ensuring that AI technologies are developed and deployed in ways that benefit society as a whole (Floridi et al., 2020).

2.5.7 Institutional and Geopolitical Barriers

Institutional inertia and geopolitical tensions can also pose barriers to effective AI governance. International cooperation is essential for addressing the global nature of AI technologies, but geopolitical rivalries and differing national interests can impede collaborative efforts. For example, the competitive dynamics between the United States and China

in AI development have created challenges for establishing common regulatory standards and frameworks (Roberts et al., 2024).

2.5.8 Ethical Standards and Enforcement Mechanisms

While many international bodies and organizations have proposed ethical guidelines for AI, enforcement remains a significant challenge. Voluntary guidelines often lack the necessary enforcement mechanisms to ensure compliance, leading to variations in how ethical principles are implemented and adhered to (Jobin et al., 2019). Strengthening these guidelines and developing robust enforcement mechanisms is crucial for ensuring that AI technologies are used responsibly (GPAI, 2020).

2.6 Theoretical Framework

In developing the theoretical framework for analyzing AI governance, regulation, and ethics in South Africa, this review drawn on a range of international AI strategies and policies. These include: Industrial Strategy White Paper (United Kingdom), Recommendations for an AI Strategy in Switzerland (Switzerland,2020), Założenia do strategii AI w Polsce - raport (Poland,2020), New Zealand AI Strategy (New Zealand ,2020), Netherlands AI Strategy (Netherlands, 2019), Malta: The Ultimate AI Launchpad (Malta ,2019), Finland's AI Strategy (Finland), Estonia's National AI Strategy (Estonia), NAIS: National Artificial Intelligence Strategy (Norway, 2020), AI Annual Report 2019 (United Kingdom), Austria's *Artificial Intelligence Mission Austria 2030* (Austria, 2020) , An Overview of National AI Strategies and Policies (OECD, 2020).

These documents provided a comprehensive understanding of the global approaches to AI governance, regulation, and ethics, offering valuable insights that are applicable to the South African context.

2.7 Analytical Framework

This study adopted an analytical framework specifically designed to address

the research objectives of exploring AI governance factors in South Africa, identifying adaptable global elements, and proposing a governance framework for policymakers. The framework is grounded in Governance Theory and Comparative Policy Analysis (Black & Murray, 2019), providing a structured approach to investigate the factors influencing AI governance from a national government perspective.

Framework Structure and Theoretical Foundation

The analytical framework consists of three interconnected components that directly correspond to the study's research objectives. The first component focuses on analyzing AI governance factors within South Africa, the second examines global frameworks for comparative analysis, and the third develops and adapts these insights into a practical governance framework (Taeihagh, 2021). This structure ensures that each element of the framework serves a specific purpose in achieving the study's overall goals while maintaining theoretical coherence and practical applicability.

Theoretical Underpinning

Governance Theory serves as the primary theoretical foundation for this study (Roberts et al., 2021). This theory provides the lens through which the study examined how institutions, processes, and stakeholder interactions shape AI governance in South Africa. Governance Theory is particularly relevant because it focuses on the mechanisms through which collective decisions are made and implemented, which directly aligns with the study's objective of exploring governance factors from a national government perspective (Veale & Brass, 2019). The theory helps understand how power is distributed, how decisions are coordinated, and how various actors influence policy outcomes in the AI governance context.

Comparative Policy Analysis provides the methodological approach for examining global AI governance frameworks and identifying transferable elements to the South African context (Black & Murray, 2019). This approach

enables systematic comparison of different governance models to determine their applicability and adaptability to South Africa's unique circumstances (Morley et al., 2020). Through comparative analysis, the study can identify best practices, understand implementation challenges, and assess the feasibility of adapting international approaches to local conditions while considering cultural and institutional differences.

Framework Components

Component 1: AI Governance Factors Analysis

This component directly addresses the first research objective by examining the key factors that influence AI governance in South Africa. Using Governance Theory, the study investigated the institutional factors that shape AI governance, including existing government structures, regulatory bodies, and decision-making processes (Roberts et al., 2021). These institutional arrangements determine how AI governance decisions are made, who has authority over different aspects of AI policy, and how coordination occurs across different government levels and departments (Veale & Brass, 2019).

The analysis also examined policy factors that influence AI governance effectiveness. This includes current policies that touch on AI-related issues, existing legislation gaps that create regulatory uncertainty, and the various regulatory approaches being considered or implemented (Brand, 2022). Understanding these policy factors helps identify where strengthening is needed and where existing frameworks can be leveraged for AI governance purposes, particularly in the context of South Africa's evolving digital policy landscape (Snail Ka Mtuze & Morige, 2024).

Stakeholder factors represent another crucial dimension of the analysis. The study explored the roles and influence of various actors in AI governance decisions, including different government departments, private sector entities, academic institutions, and civil society organizations (Taeihagh, 2021). This examination reveals how different stakeholders contribute to AI governance

discussions, where power imbalances exist, and how more inclusive governance processes might be developed to ensure comprehensive representation in AI policy development (Gwagwa et al., 2022).

Finally, the component considered contextual factors unique to South Africa that impact AI governance approaches. These include the country's socio-economic circumstances, legal framework characteristics, cultural considerations, and historical context that shape how AI governance is perceived and implemented (Floridi & Cowls, 2019). Understanding these contextual factors ensures that any proposed governance framework is realistic and appropriate for the South African environment, taking into account the digital divide and infrastructure challenges that characterize the country's technological landscape (Waghid & Waghid, 2021).

Component 2: Global Framework Comparative Analysis

This component addresses the second research objective through systematic analysis of international AI governance frameworks. The study examined the core components, principles, and mechanisms used in global AI governance models to understand how different countries approach AI regulation and oversight (European Commission, 2019; NIST, 2021). This analysis reveals common elements across different frameworks as well as unique approaches that might be particularly relevant to South Africa's circumstances, drawing from established international practices and emerging governance models.

The component also investigated how different countries structure and operationalize their AI governance frameworks. This includes examining institutional arrangements, coordination mechanisms, enforcement approaches, and stakeholder engagement processes used in various international contexts (Government of Canada, 2019; Government of Japan, 2019). Understanding these implementation approaches helps identify practical strategies that could be adapted for the South African context while considering the country's institutional capacity and regulatory environment.

A critical aspect of this component involved evaluating which global elements can be effectively integrated into the South African context (Floridi et al., 2018). This assessment considered factors such as institutional capacity, legal system compatibility, resource requirements, and cultural appropriateness. The analysis helps distinguish between governance elements that can be directly adopted and those that require significant adaptation or may not be suitable for South Africa, ensuring that recommendations are both aspirational and achievable (Morley et al., 2020).

The component concluded by identifying proven governance strategies from international experience that align with South African needs and capabilities (Cave et al., 2019). This involves synthesizing lessons learned from different countries' experiences, understanding what has worked well in similar contexts, and identifying approaches that address challenges comparable to those faced by South Africa in its pursuit of effective AI governance.

Component 3: Framework Development and Adaptation

This component addresses the third research objective by synthesizing findings from the previous two components to develop a tailored governance framework. The framework design process involved structuring governance mechanisms that specifically address the factors identified as influential in the South African context (Taeihagh, 2021). This ensures that the proposed framework is responsive to local conditions and challenges rather than simply importing international models without consideration of contextual appropriateness.

The component focused on integrating adaptable international best practices into the proposed framework while ensuring they are modified to suit South African circumstances (Black & Murray, 2019). This integration process required careful consideration of how global elements could be implemented within existing institutional structures and legal frameworks. The goal was to leverage international experience while maintaining relevance to the local context,

ensuring that the framework builds upon existing governance structures rather than requiring wholesale institutional reform (Brand, 2022).

Contextual adaptation represented a crucial aspect of framework development. The study ensured that the proposed framework aligns with South African institutional arrangements, legal requirements, and socio-economic realities (Gwagwa et al., 2022). This adaptation process involved modifying international approaches to work within existing constraints while maximizing their effectiveness in addressing local AI governance challenges, particularly considering the country's constitutional framework and commitment to human rights (Floridi & Cowls, 2019).

The component concluded by providing implementation guidance for policymakers. This guidance translates the theoretical framework into practical recommendations that government officials can use to advance AI governance in South Africa (Veale & Brass, 2019). The implementation guidance considers resource requirements, sequencing of activities, stakeholder engagement strategies, and potential obstacles that might arise during implementation, ensuring that the framework provides actionable direction for policy development.

Framework Application

This analytical framework guided the study's investigation by providing a systematic approach to explore the specific factors influencing AI governance in South Africa through the first component. The second component enabled the identification and evaluation of global governance elements for potential adaptation to the South African context (Morley et al., 2020). The third component facilitated the development of a contextually appropriate governance framework specifically designed for South African policymakers.

The framework ensures that the study maintained focus on its core objectives while providing a coherent structure for data collection, analysis, and framework development (Roberts et al., 2021). By grounding the analysis in established

theoretical foundations and organizing the investigation around clear components, the framework enabled systematic exploration of AI governance factors and development of practical recommendations that directly serve the needs of national government policymakers in South Africa (Taeihagh, 2021).

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology adopted for this study, focusing on the procedures and rationale behind the chosen methods. The methodology is tailored to address the research objectives derived from the literature review, providing a systematic approach to exploring AI governance and to propose a robust governance framework for policy makers in South Africa. The population and ethical consideration of the study is also established in this chapter.

3.2 Research Paradigm

The study is framed within a interpretivist paradigm, acknowledging that knowledge and understanding are constructed subjectively. This paradigm is chosen for its relevance to exploring complex and subjective matters such as policy-making and governance, which rely heavily on individual and collective interpretations (Creswell & Poth, 2018).

3.3 Research Approach

This research is exploratory in nature and therefore adopted a qualitative approach to provide an understanding of factors that influence AI governance in South Africa, governance framework and experiences of policymakers. This method is well suited for our research because it lets us thoroughly examined this complex issue of developing AI policies. It helped us explore how different stakeholders view and respond to AI governance, fitting well with our belief that people construct their own realities and that context matters. This approach is particularly useful for understanding the subtle details of AI governance, considering that people from different backgrounds and cultures may see things differently.

3.4 Research Design

This study employed a basic qualitative research design with an exploratory and interpretive approach. The design focused on understanding the factors influencing AI governance in South Africa from the perspectives of key stakeholders involved in policy development and implementation. This straightforward qualitative design was appropriate for investigating complex governance phenomena where multiple perspectives and contextual factors needed to be explored and understood (Merriam & Tisdell, 2016).

The exploratory nature of the design allowed for in-depth investigation of a contemporary phenomenon within its real-life context, which is crucial for a topic as dynamic and context-dependent as AI governance. The interpretive aspect facilitated detailed examination of the processes and challenges involved in policy formulation and provided insights into the practical implications of theoretical frameworks. This design supported the exploration of complex variables involved in AI governance while allowing for flexibility in data collection and analysis.

3.5 Data Collection Methods

Data was collected through two primary methods: semi-structured interviews and secondary data analysis. Semi-structured interviews were conducted with key stakeholders in the AI governance landscape, including policymakers, industry experts, and academics. This method was chosen because it allows for flexibility in probing complex topics and gathering rich, qualitative data (Braun & Clarke, 2013).

Secondary data analysis complemented the interviews by providing systematic review and analysis of existing policies, legislative documents, official communications, and published reports related to AI governance in South Africa. This secondary data analysis involved examining government documents, policy papers, white papers, and official statements to understand the current state of

AI governance initiatives and policy directions. The secondary data was analyzed at the initial stage of the research to inform the interview guide development and was later integrated during the data analysis phase to triangulate findings from the primary interviews.

This dual approach ensured comprehensive data collection, reflecting both the declared policy intentions through secondary sources and the operational realities and stakeholder perspectives through primary interviews.

3.6 Population and Sample

Population

The population for this study included individuals directly involved in or influencing AI governance policy development in South Africa. This population comprised policymakers from national government departments, AI and technology experts from industry and academia, and researchers specializing in AI governance and policy development within the South African context.

Sampling Strategy and Criteria

A purposive sampling method was employed to select participants with specific expertise and involvement in AI governance at the national level. The sampling strategy was designed to ensure representation across different stakeholder groups while maintaining focus on individuals with direct influence on or knowledge of AI governance policy development.

Inclusion Criteria:

Participants were included in the study if they met several key criteria that ensured their relevance to the research objectives. Eligible participants were required to have a minimum of one year of experience in AI-related fields, policy development, or governance roles, ensuring they possessed sufficient background knowledge to provide meaningful insights. Additionally, participants

needed to demonstrate current or recent involvement in AI governance discussions, policy development, or implementation activities within South Africa, ensuring their perspectives reflected contemporary developments in the field.

Professional eligibility required participants to hold roles in government departments, academic institutions, or private sector organizations with specific AI governance responsibilities, ensuring their insights were grounded in practical experience. Participants were also required to demonstrate knowledge of AI technologies and their governance implications, enabling them to provide informed perspectives on complex governance challenges. Finally, participants needed to express willingness to participate in interviews and share their insights about AI governance, ensuring their voluntary and engaged participation in the research process.

Exclusion Criteria:

Several exclusion criteria were applied to ensure the quality and relevance of participant contributions. Individuals without direct experience or involvement in AI governance or policy development were excluded from the study, as they would be unable to provide the specialized insights required for the research objectives. Participants who were unable to provide informed perspectives on national-level AI governance issues were also excluded, ensuring that all contributions addressed the study's focus on national government perspectives.

The study excluded individuals who were not currently active in the South African AI governance landscape, as their perspectives might not reflect current challenges and developments in the field. Additionally, participants who were unwilling to consent to interview recording and transcription were excluded, as these processes were essential for accurate data capture and analysis. These exclusion criteria ensured that all participants could contribute meaningfully to the research objectives while meeting the methodological requirements of the study

Sample Size Justification

The sample consisted of 11 participants, which aligns with established guidelines for qualitative research sample sizes. According to Creswell and Poth (2018), qualitative studies typically require between 5-25 participants, with the specific number depending on the research design and objectives. Palinkas et al. (2015) recommend 10-15 participants for purposive sampling in qualitative studies to achieve adequate representation while maintaining depth of analysis.

The sample size of 11 participants was determined to be sufficient based on the principle of data saturation, where additional data collection ceases to provide new insights relevant to the research objectives (Springer & Dworkin, 2016). Douglas (2022) supports the use of smaller sample sizes in qualitative research when participants possess specialized knowledge and expertise, as was the case in this study. The sample size allowed for in-depth exploration of diverse perspectives while remaining manageable for comprehensive analysis.

Sample Composition

Participants were identified and recruited through professional networks including LinkedIn, Facebook, and the Presidential 4IR Committee member database. The final sample included representatives from government departments involved in AI policy development, academic researchers specializing in AI governance, and industry experts with experience in AI implementation and regulation. This composition ensured a comprehensive view of the AI governance landscape from multiple stakeholder perspectives.

3.7 The Research Instrument

The interview guide was structured into distinct sections, each designed to address specific aspects of the research inquiry.

Interview Guide Structure

Section 1: Demographic and Background Information This section collected essential information about participants' professional backgrounds, current roles,

years of experience in AI-related fields, and organizational affiliations. This information provided context for interpreting participants' responses and ensured appropriate representation across different stakeholder groups.

Section 2: AI Governance Factors This section directly addressed the first research objective by exploring participants' perspectives on the key factors that influence AI governance in South Africa. Questions focused on institutional, policy, stakeholder, and contextual factors that shape AI governance decisions and implementation. This section was designed to elicit detailed insights into the complex dynamics affecting AI governance from a national government perspective.

Section 3: Global Framework Analysis This section addressed the second research objective by examining participants' knowledge and opinions about international AI governance frameworks and their potential applicability to South Africa. Questions explored which global elements participants considered most relevant and adaptable to the South African context, supporting the comparative analysis component of the study.

Section 4: Framework Development Insights This section contributed to the third research objective by gathering participants' recommendations and suggestions for developing an effective AI governance framework for South Africa. Questions focused on essential components, implementation strategies, and potential challenges in framework development and adoption.

Section 5: Contextual Considerations This final section explored South Africa-specific factors that should be considered in AI governance framework development, including socio-economic disparities, cultural values, infrastructure challenges, and regulatory environment characteristics.

The semi-structured format allowed for flexibility in question sequencing and the inclusion of follow-up questions based on participants' responses, while ensuring comprehensive coverage of all research-relevant topics. Each section included

both broad, open-ended questions to encourage detailed responses and specific probing questions to clarify key points and explore emerging themes.

3.8 Procedure for Data Collection

Interviews were arranged at times convenient to the participants and conducted in person or via video conferencing, depending on their preference and availability. This flexibility helped increase participation rates and the richness of the data collected.

The researcher maintained a detailed record that included the date, time, location, participant's name, and interview number to monitor the data collection process. This log, along with notes, recordings, and documents, was securely stored in an accessible yet protected location.

Conducting interviews is a labor-intensive process, particularly when participants are busy professionals and organizational leaders with limited availability. To respect their time constraints, the researcher clearly outlined the anticipated duration of the interviews in the initial request. Throughout the process, the researcher remained mindful of time, ensuring efficient management to prevent unnecessary delays (Jong & Jung, 2015). This involved maintaining control over the interview flow, notifying participants as the session neared its conclusion, and allowing them sufficient opportunity to reflect and derive meaning from their responses.

Data Analysis Strategy and Interpretation

Data from interviews and documents was analyzed thematically, which is appropriate for identifying, analyzing, and reporting patterns within data. This method will allow for the construction of meaningful themes directly related to the research objectives (Braun & Clarke, 2013).

Thematic Analysis Process

The thematic analysis followed the six-phase process outlined by Braun and Clarke (2013): Familiarization with the data , generating initial codes , searching for themes , defining and naming themes and producing the report.

Secondary Data Integration

Secondary data analysis was conducted in two phases. Initially, secondary data was analyzed to inform the development of the interview guide and provide contextual background for the study. This preliminary analysis involved systematic review of government documents, policy papers, and official communications related to AI governance in South Africa.

During the main analysis phase, secondary data was integrated with interview findings through triangulation. Secondary data sources were coded using the same thematic framework developed for interview data, allowing for comparison and validation of findings. Discrepancies between secondary data and interview findings were noted and explored to provide comprehensive understanding of AI governance factors.

The integration of secondary data occurred during Phase 4 of the thematic analysis process, where themes were reviewed and refined based on both primary and secondary data sources. This approach ensured that findings reflected both policy intentions documented in official sources and stakeholder experiences and perspectives gathered through interviews.

3.9 Quality Assurance (Trustworthiness)

Quality assurance in this qualitative study was ensured through the four criteria of trustworthiness: transferability, dependability, credibility, and confirmability (Lincoln & Guba, 1985).

Transferability

Transferability refers to the extent to which findings can be applied to other contexts or settings. To enhance transferability, the study provided thick descriptions of the research context, participants, and settings. Detailed information about the South African AI governance landscape, participant selection criteria, and data collection procedures was documented to enable readers to assess the applicability of findings to their own contexts.

The study clearly described the unique characteristics of South Africa's socio-economic, political, and technological environment that influence AI governance. This contextual information allows other researchers to determine the relevance of findings to different geographical or institutional settings. Additionally, the purposive sampling strategy and participant characteristics were thoroughly documented to facilitate assessment of transferability to similar stakeholder groups in other contexts.

Dependability

Dependability refers to the consistency and reliability of the research process and findings. To ensure dependability, an audit trail was maintained throughout the research process, documenting all research decisions, methodological choices, data collection procedures, and analytical processes. This comprehensive documentation included interview schedules, coding decisions, theme development processes, and analytical memos.

A code-recode strategy was employed where a subset of data was coded at different time points to assess consistency in coding decisions (Lincoln & Guba, 1985). Any inconsistencies identified were resolved through careful review of the coding framework and refinement of code definitions. The thematic analysis process was systematically documented to ensure that analytical decisions could be traced and evaluated.

Credibility

Credibility refers to the accuracy and believability of the findings. Multiple strategies were employed to enhance credibility. Member checking was conducted where participants were provided with interview transcripts and preliminary findings to verify accuracy and provide feedback on interpretations. This process allowed participants to clarify any misunderstandings and confirm that their perspectives were accurately represented.

Triangulation was employed through the use of multiple data sources (interviews and secondary data analysis) and multiple participant perspectives (government, academia, and industry stakeholders). This triangulation approach allowed for cross-validation of findings and enhanced confidence in the accuracy of results (Denzin, 1978). Additionally, prolonged engagement with the data through multiple readings and iterative analysis enhanced understanding and credibility of interpretations.

Confirmability

Confirmability refers to the objectivity of the findings and the extent to which they are shaped by participants rather than researcher bias. To enhance confirmability, reflexivity was practiced throughout the research process. The researcher maintained a reflexive journal documenting personal biases, assumptions, and reactions to the data collection and analysis process (Berger, 2015).

The audit trail mentioned under dependability also contributed to confirmability by providing transparent documentation of how findings were derived from the data. Raw data, coding decisions, and analytical processes were preserved to allow for external review and verification of findings. The systematic thematic analysis process with clearly defined phases helped ensure that themes emerged from the data rather than being imposed by researcher preconceptions.

This comprehensive approach to trustworthiness ensured that the findings are credible, transferable, dependable, and confirmable, allowing the study to be evaluated and potentially replicated by future researchers.

3.10 Ethical Considerations

The researcher respected the rights, opinions, needs, values, principles, and desires of the participants. Before collecting any sensitive information during interviews, the researcher obtained consent from the participants. To protect their rights, several measures are in place. The goals of the research are clearly explained to the participants, both verbally and in writing. Participants provide their written consent to proceed with the study. They are informed about all the methods and tools used for collecting data. Participants have their interview transcripts checked and validated by them to ensure accuracy. They have the option to remain anonymous if they choose. Finally, the participants' rights and preferences are prioritized, especially in how the data is reported.

CHAPTER 4. RESEARCH FINDINGS

4.1 Introduction

This chapter presents the research findings based on the analysis of semi-structured interviews conducted with 11 participants representing diverse stakeholder groups in South Africa's AI governance landscape. The findings are organized around the key themes that emerged from the data analysis. The demographics of the research participants are provided in the appendix section of this paper. The focus of this research was to investigate the factors influencing the governance of artificial intelligence (AI) in South Africa from a national government perspective and to develop a comprehensive governance framework designed for national government policymakers.

4.2 Findings

The analysis revealed four main themes that address the research objectives: Governance, Ethical considerations, International Collaboration and Policy Coherence, and Responsive Regulation. Each theme encompasses multiple sub-findings that collectively provide insights into the factors influencing AI governance in South Africa.

4.2.1 *Theme: Governance*

The governance theme emerged as a central finding, encompassing diverse stakeholder experiences, educational initiatives, regulatory challenges, and multi-stakeholder approaches to AI governance.

Diverse Sectoral Applications and Experiences

Participants demonstrated the wide-ranging application of AI across various sectors in South Africa. In the telecommunications sector, findings revealed eight years of experience in managing IoT and AI solutions, emphasizing the

integration of AI and IoT as key to transforming communication systems and enhancing efficiency and connectivity. The manufacturing sector showed one year of experience integrating AI into master data processes, focusing on predictive maintenance and inventory management to streamline production processes and prevent operational disruptions.

Government involvement was evidenced through three years of experience as a 4IR commissioner in South Africa's presidency, focusing on fostering AI-driven innovation through strategic initiatives such as establishing regional hubs and shaping national policies. This work demonstrated alignment of AI technologies with South Africa's developmental goals, emphasizing the role of policy and infrastructure in enabling equitable access to AI benefits.

In human resources, findings showed the utilization of AI tools to revolutionize HR practices through talent acquisition, workforce analytics, and performance management. The financial sector revealed 15 years of experience overseeing IT transformation projects that integrate AI into banking systems, focusing on enhancing data security, ensuring regulatory compliance, and improving operational efficiency.

Automation and diagnostics specialists demonstrated AI applications in streamlining workflows within electronics and manufacturing, highlighting practical applications in identifying inefficiencies, diagnosing issues, and optimizing processes within industrial settings.

Educational Initiatives and AI Literacy

Findings revealed significant emphasis on improving AI literacy and awareness through multiple educational approaches. The integration of AI education into school and university curricula emerged as a priority for building foundational knowledge from an early age. Participant 3 on the interviewed stressed that “We have to make sure that kids are exposed to AI from an early age using different campaign”. This was supported by participant 1 who said “there should be educational campaigns targeting rural areas in South Africa ,ensuring that

underserved communities have access to the knowledge needed to engage with AI technologies".

Vocational training programs were highlighted as crucial for bridging the gap between theoretical knowledge and real-world applications, making AI more accessible across sectors. The flexibility of online courses was emphasized as a means of ensuring inclusive participation in AI education, accommodating learners from various backgrounds and geographic locations.

Regulatory Challenges

Three primary regulatory challenges emerged from the findings. Paticipant 3 is quoted saying: "The digital divide is a significant barrier, with infrastructure disparities, particularly in rural areas, hindering equitable AI access". This shows us further that l imited access to digital tools in rural areas creates substantial barriers to equitable AI adoption and benefit-sharing.

Skills gaps represented another critical challenge, with findings indicating that many South Africans lack the foundational knowledge needed to engage with AI technologies. This skills deficit extends across various sectors and affects the ability to participate effectively in the AI economy.

Cybersecurity risks emerged as a third major challenge, particularly concerning AI's integration into sensitive systems. Data breaches and identity theft were identified as significant risks requiring robust regulatory measures and comprehensive security frameworks.

Multi-Stakeholder Approaches

Findings emphasized the necessity of inclusive stakeholder engagement in AI governance. The creation of multi-stakeholder forums bringing together government, academia, and the private sector was identified as essential for ensuring that AI governance frameworks reflect diverse societal needs and interests.

The inclusion of marginalized groups, particularly rural communities and small businesses, in the governance process was highlighted as crucial for addressing unique challenges such as limited infrastructure and resources. Industry representation through labor unions and consumer advocacy organizations was deemed essential for ensuring that AI policies address concerns about job displacement, fair labor practices, and consumer protection.

4.2.2 *Theme: Ethical Considerations*

The ethical theme encompassed public awareness disparities, ethical guidelines for AI systems, and the fundamental role of ethics in AI governance.

Public Awareness Disparities

Findings revealed significant disparities in public understanding of AI, particularly between urban and rural areas. Urban areas demonstrated generally higher awareness of AI, benefiting from better infrastructure such as reliable internet and exposure to modern technologies. Daily encounters with AI through digital assistants and automated banking systems contributed to growing understanding in urban centers.

Rural areas faced significant barriers including limited access to technology and poor internet connectivity, which hindered engagement with AI technologies. These geographic disparities created unequal opportunities for AI awareness and adoption across different communities.

Misconceptions and Educational Needs

Widespread misconceptions about AI were identified even in urban centers where awareness levels were higher. Common misconceptions included fears about AI replacing jobs, violating privacy, or operating without human oversight, alongside overestimation of AI capabilities. These misunderstandings were found to create resistance to AI adoption and hinder effective integration into society and businesses.

The need for public education campaigns aimed at dispelling myths and providing clear, accessible information about AI's practical applications and limitations was identified as critical. Multi-language and multi-format delivery was emphasized to ensure information reaches diverse communities, including rural areas often excluded from mainstream educational efforts.

Ethical Guidelines and Principles

Fairness emerged as a critical ethical concern, with findings emphasizing the need to address algorithmic biases to ensure equitable outcomes, particularly for underserved communities. AI systems were identified as requiring design approaches that benefit all populations, especially marginalized groups.

Transparency in AI systems was highlighted as essential, with findings indicating that AI systems must be understandable to users and regulators, with decision-making processes that are transparent and open to scrutiny. Accountability mechanisms were identified as crucial for ensuring developers and operators remain responsible for AI outcomes.

Sector-specific ethical priorities were revealed, including robust privacy and data protection measures in financial services to maintain public trust and regulatory compliance. In human resources, fairness in recruitment and workforce analytics was emphasized to enhance diversity and inclusion rather than reinforcing existing biases.

Ethics as Foundation for Trust and Innovation

Findings consistently demonstrated that ethical AI use is essential for building trust among users, which serves as the foundation for widespread AI adoption. The mitigation of biases in AI systems was identified as both a moral necessity and a practical requirement for preventing harm to marginalized populations.

Ethical governance was found to support sustainable innovation by preventing unintended consequences that could erode public confidence in AI. The

establishment of strong ethical frameworks was identified as crucial for ensuring that rapid AI development does not lead to challenges that hinder progress or undermine public trust.

4.2.3 *Theme: International Collaboration and Policy Coherence*

This theme addressed the importance of existing regulatory frameworks and the integration of international standards in developing AI governance for South Africa.

Existing Regulatory Foundations

The Protection of Personal Information Act (POPIA) emerged as a robust starting point for AI governance, providing a solid framework for safeguarding data privacy and ensuring regulatory compliance. Findings indicated that POPIA sets a strong precedent for protecting personal data, with principles that can be extended to address AI-specific concerns such as ethical data use in algorithmic decision-making and bias mitigation in AI systems.

Building on POPIA was identified as an opportunity to create a governance structure that protects personal information while addressing the complexities introduced by AI technologies. The existing regulatory framework provides a foundation that can be expanded rather than requiring entirely new regulatory structures.

Integration of International Standards

Findings emphasized the importance of incorporating international standards and drawing from global best practices in AI governance, particularly those that have successfully addressed ethical and operational challenges. However, adaptation to South Africa's unique socio-economic and infrastructural context was identified as essential.

The need for policies that prioritize accessibility and inclusivity was highlighted, ensuring AI benefits reach underserved communities despite significant infrastructural and digital divides. This localized approach would enable alignment with international norms while addressing specific developmental priorities.

Hybrid Governance Approach

A hybrid approach to AI governance emerged as the preferred strategy, combining the strengths of existing frameworks like POPIA with international best practices. This approach was identified as enabling the development of a governance model that is both globally informed and locally relevant.

The dual strategy was found to ensure that AI technologies are implemented ethically, inclusively, and effectively while addressing the nation's unique challenges and maintaining alignment with global regulatory trends.

4.2.4 *Theme: Responsive Regulation*

This theme focused on the adaptive nature of regulatory frameworks needed to address South Africa's specific context and challenges.

Contextual Adaptation Requirements

Findings emphasized the importance of adapting regulatory frameworks to South Africa's unique socio-economic and infrastructural context. The significant infrastructural and digital divides in the country require policies that prioritize accessibility and inclusivity, ensuring AI benefits reach underserved communities.

The need for governance frameworks that address South Africa's specific developmental priorities while maintaining alignment with global standards was identified as crucial for effective AI governance implementation.

Regulatory Flexibility and Responsiveness

The requirement for responsive regulation that can adapt to rapidly evolving AI technologies was highlighted in the findings. Traditional regulatory approaches were identified as potentially inadequate for addressing the dynamic nature of AI development and deployment.

Flexible regulatory mechanisms that can evolve with technological advancement while maintaining core protective principles were identified as essential for effective AI governance in the South African context.

4.3 Summary

The research findings reveal that AI governance in South Africa requires a comprehensive approach that addresses diverse sectoral applications, ethical considerations, international collaboration, and responsive regulation. The findings emphasize the need for inclusive stakeholder engagement, educational initiatives to address skills gaps and misconceptions, and adaptive regulatory frameworks that build on existing legislation while incorporating international best practices. The complexity of AI governance challenges in South Africa necessitates multi-faceted solutions that consider the country's unique socio-economic context while ensuring equitable access to AI benefits across all communities.

CHAPTER 5. DISCUSSION OF THE FINDINGS

5.1 Introduction

This chapter discusses and interprets the research findings within the context of existing literature on AI governance, positioning the study's results within the broader academic discourse. The discussion follows the same thematic structure as Chapter 4, examining how the findings align with, extend, or challenge current understanding of AI governance factors. The chapter integrates the study's empirical findings with theoretical frameworks and international experiences to provide a comprehensive analysis of AI governance challenges and opportunities in South Africa.

The discussion is organized around the four main themes identified in the findings: Governance, Ethical considerations, International Collaboration and Policy Coherence, and Responsive Regulation. Each section examines the findings in relation to existing literature, highlighting contributions to knowledge and implications for AI governance theory and practice.

5.2 Discussion

5.2.1 *Theme: Governance*

The governance findings reveal the complexity of AI governance implementation across diverse sectors, aligning with Taeihagh's (2021) assertion that AI governance requires multi-dimensional approaches that address technological, institutional, and social factors. The diverse sectoral applications identified in this study support Veale and Brass's (2019) argument that AI governance cannot be approached through one-size-fits-all solutions, but must consider sector-specific requirements and challenges.

Sectoral Diversity and Governance Complexity

The wide-ranging applications of AI across telecommunications, manufacturing, government, human resources, financial services, and automation sectors identified in this study reflect the pervasive nature of AI technologies described by Floridi et al. (2018). This sectoral diversity supports Morley et al.'s (2020) contention that AI governance frameworks must be flexible enough to address varying risk profiles and regulatory requirements across different industries.

The eight years of experience in telecommunications and 15 years in financial services demonstrate the maturation of AI applications in these sectors, consistent with Cave et al.'s (2019) observation that early AI adopters in regulated industries have developed sophisticated governance practices. However, the one-year experience in manufacturing suggests that AI governance maturity varies significantly across sectors, supporting Winfield and Jirotka's (2018) argument for differentiated governance approaches based on sectoral readiness and risk profiles.

The government involvement through the 4IR commission aligns with international trends toward national AI strategies documented by Dutton (2018) and reflects South Africa's commitment to strategic AI governance as outlined in the Presidential Commission on the Fourth Industrial Revolution (2020). This government leadership role supports Cath et al.'s (2018) emphasis on the importance of public sector engagement in AI governance development.

Educational Initiatives and Capacity Building

The emphasis on AI literacy and educational initiatives identified in the findings aligns with UNESCO's (2021) recommendations for AI education as a foundation for responsible AI adoption. The focus on integrating AI education into formal curricula supports Tuomi's (2021) argument that educational systems must evolve to prepare citizens for AI-driven societies.

The identification of localized educational campaigns for rural areas reflects the contextual adaptation approach advocated by Gwagwa et al. (2022) for African AI governance. This finding extends Raji et al.'s (2020) work on inclusive AI by

highlighting the specific educational needs of geographically marginalized communities in developing countries.

The emphasis on vocational training programs aligns with the World Economic Forum's (2018) predictions about the need for reskilling in the AI era. However, the specific focus on bridging theoretical knowledge with practical applications extends existing literature by highlighting the importance of experiential learning in AI governance capacity building.

Regulatory Challenges and Infrastructure

The identification of the digital divide as a primary regulatory challenge supports Van Dijk's (2020) analysis of digital inequalities and their impact on technology governance. The specific focus on rural infrastructure disparities aligns with Waghid and Waghid's (2021) examination of AI challenges in African contexts, extending their work by demonstrating how infrastructure limitations directly impact governance effectiveness.

The skills gap findings support Schmid et al.'s (2020) analysis of AI education needs but extend this work by showing how skills deficits affect not only AI adoption but also the capacity for effective governance. This connection between skills and governance capacity represents a novel contribution to the literature, which typically treats these as separate issues.

The cybersecurity risks identified in the findings align with Barocas et al.'s (2019) analysis of AI security challenges but extend this work by demonstrating how security concerns specifically impact governance framework design in developing country contexts. The emphasis on data breaches and identity theft reflects the particular vulnerabilities highlighted by Brand (2022) in the South African context.

Multi-Stakeholder Engagement

The emphasis on multi-stakeholder approaches identified in the findings strongly supports Jobin et al.'s (2019) analysis of inclusive AI governance models. The

specific inclusion of marginalized groups, rural communities, and small businesses extends Raji et al.'s (2020) work on participatory AI by demonstrating practical approaches to inclusive governance in developing countries.

The identification of labor unions and consumer advocacy groups as essential stakeholders aligns with Winner's (2017) analysis of democratic technology governance but extends this work by showing how traditional advocacy organizations can contribute to AI governance. This finding contributes to the literature by demonstrating how existing civil society structures can be leveraged for AI governance rather than requiring entirely new institutional arrangements.

5.2.2 *Theme: Ethical Considerations*

The ethical findings align with the extensive literature on AI ethics while revealing specific challenges related to the South African context. The emphasis on fairness, transparency, and accountability reflects the core principles identified in major AI ethics frameworks (Floridi et al., 2018; Jobin et al., 2019), but the specific focus on addressing historical inequalities extends existing literature by demonstrating how AI ethics must be contextualized within national social justice frameworks.

Public Awareness and Digital Divides

The identification of significant urban-rural disparities in AI awareness supports Van Dijk's (2020) analysis of digital divides but extends this work by demonstrating how awareness gaps specifically impact AI governance effectiveness. The finding that misconceptions persist even in urban areas with higher awareness levels contributes new insights to the literature on public understanding of AI (Cave et al., 2019).

The emphasis on multi-language and culturally appropriate educational campaigns aligns with UNESCO's (2021) recommendations for inclusive AI education but extends this work by demonstrating specific strategies for

addressing linguistic and cultural diversity in AI governance communication. This finding contributes to the limited literature on AI governance in multilingual societies.

Algorithmic Bias and Fairness

The emphasis on addressing algorithmic bias to ensure equitable outcomes strongly supports the extensive literature on AI fairness (Barocas et al., 2019; Raji et al., 2020). However, the specific focus on underserved communities and historical inequalities extends this work by demonstrating how AI fairness principles must be adapted to address specific national contexts of inequality.

The sector-specific ethical priorities identified in the findings, particularly in financial services and human resources, align with domain-specific AI ethics literature (O'Neil, 2016; Dastin, 2018) but contribute new insights by showing how sectoral ethical requirements interact with national governance frameworks.

Trust and Sustainable Innovation

The identification of trust as foundational for AI adoption supports extensive literature on technology acceptance (Glikson & Woolley, 2020) but extends this work by demonstrating how trust-building specifically relates to governance framework design. The connection between ethical governance and sustainable innovation aligns with Floridi and Cowls's (2019) analysis of AI for social good but contributes new insights by showing how sustainability considerations can be integrated into governance frameworks.

5.2.3 *Theme: International Collaboration and Policy Coherence*

The findings on international collaboration and policy coherence align with the growing literature on global AI governance while highlighting specific challenges and opportunities for developing countries. The emphasis on adapting international standards to local contexts supports Morley et al.'s (2020) argument

for contextual AI governance but extends this work by demonstrating practical approaches to adaptation.

Building on Existing Regulatory Frameworks

The identification of POPIA as a foundation for AI governance supports the literature on leveraging existing data protection frameworks for AI governance (Veale & Brass, 2019; Edwards & Veale, 2017). However, the specific analysis of how data protection principles can be extended to address AI-specific concerns contributes new insights to the literature on regulatory adaptation.

The emphasis on building governance structures that address AI complexities while maintaining existing protections aligns with Selbst et al.'s (2019) analysis of the challenges of applying existing legal frameworks to AI. The finding that existing frameworks can be expanded rather than replaced contributes to debates about regulatory innovation versus adaptation.

Global Standards and Local Adaptation

The emphasis on incorporating international standards while adapting to local contexts strongly supports the literature on global AI governance convergence (Cath et al., 2018; Dutton, 2018). However, the specific focus on addressing infrastructural and digital divides extends this work by demonstrating how global standards must be modified to address developing country challenges.

The identification of accessibility and inclusivity as priorities for international standard adaptation contributes new insights to the literature on AI governance in developing countries, which has received limited attention compared to governance in developed economies (Gwagwa et al., 2022).

Hybrid Governance Models

The preference for hybrid governance approaches combining existing frameworks with international best practices aligns with the literature on regulatory hybridization (Black & Murray, 2019) but extends this work by

demonstrating specific strategies for combining domestic and international elements in AI governance.

The emphasis on maintaining global alignment while addressing local challenges contributes to the limited literature on AI governance in middle-income countries, which face unique challenges in balancing international integration with domestic priorities.

5.2.4 *Theme: Responsive Regulation*

The findings on responsive regulation align with the literature on adaptive governance for emerging technologies while highlighting specific requirements for AI governance in developing countries. The emphasis on regulatory flexibility and contextual adaptation supports Baldwin and Black's (2008) analysis of responsive regulation but extends this work to the specific challenges of AI governance.

Contextual Adaptation and Developmental Priorities

The emphasis on adapting regulatory frameworks to address infrastructural and digital divides supports the literature on technology governance in developing countries (Cozzens & Kaplinsky, 2009) but extends this work by demonstrating specific strategies for AI governance adaptation. The connection between AI governance and developmental priorities aligns with the literature on technology for development but contributes new insights by showing how governance frameworks can actively support development goals.

Regulatory Flexibility and Technological Change

The identification of the need for adaptive regulatory mechanisms that can evolve with technological advancement supports the extensive literature on technology regulation (Moses, 2013; Marchant et al., 2011). However, the specific focus on maintaining core protective principles while enabling adaptation contributes new insights to debates about regulatory stability versus flexibility in AI governance.

The emphasis on responsive regulation that addresses the dynamic nature of AI development aligns with Taeihagh's (2021) analysis of AI governance challenges but extends this work by demonstrating practical approaches to regulatory adaptation in resource-constrained environments.

5.3 Synthesis and Theoretical Contributions

The findings contribute to AI governance literature in several important ways. First, they demonstrate how AI governance challenges manifest differently in developing country contexts, extending the predominantly Western-focused literature to include African perspectives. Second, they show how existing regulatory frameworks can be leveraged and adapted for AI governance rather than requiring entirely new institutional arrangements.

Third, the findings contribute to understanding of how social justice considerations can be integrated into AI governance frameworks, extending the literature on AI ethics by demonstrating practical approaches to addressing historical inequalities through governance design. Fourth, they provide insights into multi-stakeholder engagement strategies that include marginalized communities, contributing to the limited literature on inclusive AI governance.

The study's emphasis on the interconnections between infrastructure, education, and governance effectiveness contributes to understanding of the systemic nature of AI governance challenges. The findings demonstrate that effective AI governance requires addressing not only regulatory and ethical issues but also fundamental questions of access, capacity, and social equity.

5.4 Implications for Policy and Practice

The findings have significant implications for AI governance policy and practice in South Africa and other developing countries. The emphasis on building on existing frameworks suggests that policymakers should focus on adaptation and extension rather than wholesale regulatory innovation. The identification of

education and capacity building as foundational requirements indicates that governance frameworks must be accompanied by substantial investment in human capital development.

The multi-stakeholder engagement findings suggest that governance processes must be designed to actively include marginalized voices rather than relying on traditional consultation mechanisms. The emphasis on addressing infrastructure and access challenges indicates that AI governance cannot be separated from broader development policy.

5.5 Conclusion

The discussion reveals that AI governance in South Africa requires a comprehensive approach that addresses the interconnected challenges of technology regulation, social equity, and development priorities. The findings extend existing literature by demonstrating how AI governance challenges manifest in developing country contexts and by providing insights into practical strategies for addressing these challenges.

The study contributes to theoretical understanding of AI governance by showing how contextual factors shape governance requirements and by demonstrating the importance of adaptive, inclusive approaches to governance framework design. The findings have important implications for policy and practice, suggesting that effective AI governance requires sustained attention to capacity building, stakeholder engagement, and social equity alongside traditional regulatory concerns.

CHAPTER 6. RECOMMENDATIONS ON FINDINGS

6.1 Factors that Influence AI Governance in South Africa

The governance of artificial intelligence (AI) in South Africa is shaped by various interrelated factors, including regulatory challenges, ethical considerations, digital literacy, infrastructure limitations, and stakeholder engagement. The study reveals that while AI is being integrated into diverse industries such as telecommunications, manufacturing, financial services, and human resources, significant disparities exist in accessibility, policy alignment, and public understanding.

One of the primary challenges is the digital divide, particularly between urban and rural areas, where inadequate infrastructure limits equitable AI adoption. Furthermore, regulatory gaps exist, as current legal frameworks such as the Protection of Personal Information Act (POPIA) provide a strong foundation but lack AI-specific guidelines. Ethical concerns, particularly transparency, data security, and algorithmic bias, were also identified as key issues that need to be addressed in AI governance.

Additionally, multi-stakeholder engagement emerged as a crucial factor in ensuring inclusive governance. Collaboration between government, industry, academia, and civil society is necessary to develop policies that balance technological advancement with public interest. Without an inclusive and adaptive governance approach, the risks associated with AI—such as job displacement, unfair decision-making, and cybersecurity threats—could hinder its potential benefits.

6.2 Global AI Governance Frameworks and Assessing Their Relevance to South Africa

AI governance strategies vary significantly across countries, reflecting differences in economic priorities, regulatory environments, and ethical considerations. The study found that global AI governance frameworks, such as the OECD AI Principles, UNESCO AI Ethics Guidelines, and the European Union's AI Act, offer valuable insights for South Africa. However, a direct adoption of these frameworks is not feasible due to the country's unique socio-economic landscape.

South Africa requires a governance model that aligns with global best practices while addressing local challenges such as infrastructure disparities, limited AI expertise, and policy fragmentation. The African Union's AI Strategy provides a more regionally relevant approach but requires greater commitment from national governments to implement AI governance policies effectively. A hybrid approach, integrating international standards with localized governance mechanisms, would ensure that South Africa remains competitive while maintaining ethical and sustainable AI development.

6.3 Proposed AI Governance Framework for South African Government Policymakers

The study underscores the need for a structured AI governance framework that is comprehensive, adaptable, and inclusive. This framework should be built on four core pillars: Regulatory and Legal Foundations, Ethical and Responsible AI, Public Awareness and Skills Development, and Multi-Stakeholder Collaboration.

Regulatory and Legal Foundations:

To succeed in the regulatory and legal foundation , South African policy makers should extend the POPIA regulations to encompass AI-specific guidelines, which will ensure responsible data usage and actively prevent biases in algorithmic

decision-making. Secondly,they should introduce mandatory AI impact assessments for high-risk AI applications. These assessments would rigorously evaluate the ethical, social, and economic implications before deployment, promoting transparency and accountability. Finally, they should align AI policies with international governance standards, ensuring South Africa remains competitive and ethically sound, while also maintaining the flexibility to adapt to the nation's unique socio-economic realities. This comprehensive approach will pave the way for a future where AI benefits all South Africans.

Ethical and Responsible AI:

To ensure ethical and responsible AI deployment, it is crucial to establish an AI ethics oversight body. This body would be tasked with monitoring and ensuring fairness, transparency, and accountability in the development and implementation of AI technologies. By having a dedicated oversight mechanism, the government can address potential biases, ensure compliance with ethical standards, and promote the responsible use of AI across various sectors. This would help build public confidence in AI systems and ensure that they are used in ways that benefit society as a whole.

In addition to oversight, it is essential to mandate transparency and explainability in AI decision-making systems. AI systems often operate as "black boxes," making decisions that are difficult for humans to understand. By requiring that AI systems provide clear explanations for their decisions, policymakers can foster greater public trust and understanding. Transparent AI systems allow users to comprehend how decisions are made, which is particularly important in critical areas such as healthcare, criminal justice, and finance. This transparency ensures that AI systems are used responsibly and that their outcomes can be scrutinized and validated.

Furthermore, implementing strict cybersecurity measures is vital to protect AI-driven systems from data breaches and malicious attacks. As AI systems increasingly rely on vast amounts of data, they become attractive targets for

cybercriminals. Robust cybersecurity protocols must be put in place to safeguard sensitive information and ensure the integrity of AI systems. This includes regular security audits, encryption of data, and the development of resilient systems that can withstand cyber threats. By prioritizing cybersecurity, the government can reduce risks and make sure that Artificial Intelligence technologies are used safely and securely.

Together, these measures—establishing an AI ethics oversight body, mandating explainability and transparency, and implementing strict cybersecurity measures—form a comprehensive framework for the ethical and responsible use of AI. This framework not only addresses the technical and ethical challenges associated with AI but also ensures that AI technologies are deployed in a manner that is fair, transparent, and secure, ultimately benefiting society as a whole.

Public Awareness and Skills Development:

To prepare the workforce for the future and ensure widespread understanding of AI, it is essential to integrate AI education into school curricula and higher education institutions. By introducing AI concepts and applications at an early stage, students can develop a foundational understanding of this transformative technology. Higher education institutions should offer specialized courses and programs that equip students with advanced AI skills, enabling them to contribute to innovation and economic growth. This educational integration will create a pipeline of talent that is well-prepared to meet the demands of an AI-driven world, fostering a future-ready workforce capable of leveraging AI for societal and economic benefits.

In addition to formal education, launching public awareness campaigns is crucial to address misconceptions and build trust in AI, particularly in rural and underserved areas. Many people, especially in these regions, may have limited exposure to AI and harbor fears or misunderstandings about its implications. Public awareness initiatives can demystify AI, explain its potential benefits, and

address concerns about job displacement and ethical considerations. By engaging communities through workshops, media campaigns, and local outreach programs, the government can ensure that all citizens, regardless of their location, are informed and empowered to participate in the AI-driven economy.

Furthermore, providing vocational and upskilling programs is vital to bridge the AI skills gap across industries. As AI continues to transform various sectors, many workers may find their current skills becoming obsolete. Vocational training programs tailored to specific industries can help workers adapt to new technologies and roles, while upskilling initiatives can enhance the capabilities of professionals already in the workforce. These programs should focus on practical, hands-on learning to ensure that participants can immediately apply their new skills in real-world scenarios. By investing in continuous learning and development, the government can ensure that the workforce remains competitive and capable of thriving in an AI-driven economy.

Together, these efforts—integrating AI education, launching public awareness campaigns, and providing vocational and upskilling programs—create a comprehensive approach to public awareness and skills development. This approach not only prepares individuals for the future of work but also ensures that the benefits of Artificial Intelligence are for everyone, fostering inclusivity and equitable growth across society.

Multi-Stakeholder Collaboration:

To advance a collaborative and inclusive approach to AI governance, it is essential to set up an AI policy advisory council that includes representatives from government, industry, academia, and civil society. This council would function as a hub for diverse stakeholders to share knowledge, tackle challenges, and jointly craft policies that reflect the priorities and perspectives of all sectors. By combining expertise from multiple fields, the council can ensure that AI policies are well-rounded, feasible, and aligned with societal values. This multi-

stakeholder partnership will help balance innovation with ethical accountability, ensuring that AI development serves the broader public good.

In addition to the advisory council, developing public-private partnerships is crucial to drive AI innovation and ensure its responsible deployment. Collaboration between the government and private sector can accelerate the development of cutting-edge AI technologies while maintaining a focus on ethical standards and public interest. These partnerships can facilitate the sharing of resources, expertise, and best practices, enabling the creation of AI solutions that address real-world challenges. By working together, the public and private sectors can ensure that AI is deployed in ways that are both innovative and socially responsible, promoting trust and reliability in AI technologies.

Furthermore, engaging marginalized communities, labor unions, and consumer advocacy groups in AI policy discussions is vital to ensure inclusivity and equity. These groups often represent voices that are overlooked in technological advancements, yet they are directly impacted by the societal changes brought about by AI. By involving them in policy discussions, the government can address concerns related to job displacement, bias, and accessibility, ensuring that AI benefits are distributed fairly. This inclusive approach not only promotes social justice but also strengthens the legitimacy and acceptance of AI policies, as they are shaped by the input of those most affected.

Together, these efforts—establishing an AI policy advisory council, developing public-private partnerships, and engaging marginalized communities—create a robust framework for multi-stakeholder collaboration. This framework ensures that AI policies are inclusive, equitable, and reflective of the diverse needs of society, paving the way for responsible and sustainable AI development.

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6.4 Recommendations for the national policy makers

To operationalize this governance framework, the following actionable recommendations are proposed:

6.4.1 *Strengthen Legal and Regulatory Frameworks for AI*

- Expand existing regulations (such as POPIA) to incorporate AI governance principles.
- Develop national AI policies that align with African Union and global governance frameworks.
- Introduce legislation requiring transparency in AI-driven decision-making, particularly in high-risk sectors such as finance, healthcare, and law enforcement.

6.4.2 *Enhance Public AI Literacy and Digital Skills Development*

- Incorporate AI education into school, university, and vocational training programs.
- Conduct nationwide AI awareness campaigns to bridge the urban-rural digital divide.
- Establish AI research and innovation hubs to develop local expertise and innovation in AI governance.

6.4.3 *Promote Inclusive and Ethical AI Adoption*

- Establish an independent AI ethics committee to ensure AI systems comply with ethical, transparent, and fair principles.
- Encourage responsible AI adoption by implementing bias audits and explainability standards in AI applications.
- Develop industry-specific AI ethical guidelines, particularly in financial services, healthcare, and public administration.

6.4.4 *Close the Digital Divide to Ensure Equitable AI Access*

- Invest in digital infrastructure, particularly in underserved rural areas, to facilitate AI adoption.
- Provide financial incentives for small businesses and startups adopting AI-driven solutions.
- Develop policies that encourage local AI development and innovation, reducing dependence on foreign AI solutions.

6.4.5 *. Foster Regional and International AI Collaboration*

- Strengthen South Africa's participation in global AI governance discussions, such as the OECD AI Policy Observatory and UNESCO AI Ethics initiatives.
- Collaborate with other African nations through the African Union's AI Strategy to create harmonized regional policies.
- Facilitate knowledge-sharing initiatives between South African universities and global AI research institutions to enhance AI capabilities and policy insights.

CHAPTER 7. CONCLUSION

In conclusion, this research underscores that for South Africa to fully harness the transformative potential of artificial intelligence, its governance framework must be proactive, inclusive, and adaptable. The study demonstrates that integrating global best practices with localized strategies can create a model of AI governance that is not only ethical and transparent but also highly responsive to the unique societal, cultural, and economic needs of the nation. By aligning robust regulatory measures with ethical safeguards and fostering a climate of public engagement and regional collaboration, South Africa can position itself as a leader in responsible AI governance. Such an approach is vital to ensure that AI-driven technologies contribute meaningfully to national development, stimulate economic growth, and promote societal well-being without compromising the rights or interests of its citizens.

The research has revealed that a comprehensive AI governance framework must strike a delicate balance between encouraging innovation and safeguarding public interest. On one hand, fostering an environment where new technologies can flourish is essential for driving progress in sectors as diverse as healthcare, finance, manufacturing, and telecommunications. On the other, robust regulatory mechanisms and ethical oversight are critical to mitigating risks such as data privacy breaches, algorithmic biases, and cybersecurity threats. By adopting a governance model that is simultaneously forward-looking and cautious, policymakers can ensure that the benefits of AI are widely shared across society while potential adverse effects are minimized.

Limitations of the research

Despite these valuable insights, the study is not without its limitations. The research primarily relied on a qualitative methodology, drawing on in-depth interviews with a purposively selected sample of 11 participants, predominantly national government policymakers. While this approach allowed for a nuanced

exploration of the factors influencing AI governance in South Africa, it also constrained the breadth of perspectives captured. The limited sample size and the focus on a single context mean that the findings may not be entirely generalizable to other regions or stakeholder groups, such as industry experts, academic researchers, or representatives from civil society and grassroots communities. Moreover, the use of a single-case study design, although effective in providing detailed context-specific insights, inherently restricts the ability to conduct comparative analyses with other jurisdictions that might offer alternative approaches to AI governance.

Recommendations for Future Research

Given these limitations, it is clear that further research is necessary to build upon the current findings and to provide a more holistic understanding of AI governance. Future studies should consider expanding the sample size and incorporating a more diverse range of stakeholders to capture a broader spectrum of experiences and opinions. This could include engaging with private sector leaders, technology innovators, and community organizations, whose insights might reveal additional challenges and opportunities not fully explored in the present study. Additionally, employing mixed-methods research that integrates both qualitative and quantitative approaches would strengthen the robustness of the findings, enabling researchers to validate insights through statistical analysis and to assess the wider impact of governance frameworks on societal outcomes.

Moreover, future research would benefit from a comparative approach that examines AI governance models across different regions or countries. By identifying best practices from diverse contexts and analyzing how these strategies can be adapted to suit the unique conditions in South Africa, researchers can offer more comprehensive recommendations. Longitudinal studies are also recommended, as they would provide valuable insights into how AI governance evolves over time in response to rapid technological advancements and shifting socio-economic conditions. Such research could

track the implementation of policy changes and their long-term effects on both innovation and public trust, thereby offering a dynamic perspective that static, cross-sectional studies cannot capture.

The implications of this research extend beyond academic inquiry; they provide a strategic roadmap for policymakers aiming to balance innovation with accountability in the rapidly evolving landscape of artificial intelligence. A balanced approach to AI governance—one that embraces the benefits of technological advancement while rigorously addressing its potential pitfalls—is essential for ensuring sustainable and inclusive development. By strengthening legal frameworks, establishing clear ethical guidelines, and fostering robust stakeholder engagement, South Africa can develop a governance model that is both resilient and flexible, capable of adapting to new challenges as they arise.

Ultimately, the pursuit of effective AI governance in South Africa is a multifaceted endeavor that requires not only sound policy but also a deep commitment to inclusivity and transparency. The recommendations put forth in this study—ranging from expanding regulatory frameworks to promoting educational initiatives and enhancing public dialogue—are intended to serve as a foundation upon which a more comprehensive and adaptive governance model can be built. By addressing the limitations identified and pursuing further research in this field, future scholars and policymakers can contribute to a more nuanced understanding of AI governance. Such efforts will be instrumental in ensuring that the rapid pace of technological change does not outstrip the regulatory and ethical measures necessary to protect public welfare.

Summary

In summary, this research highlights both the promise and the challenges of AI governance in South Africa. While the current framework shows potential for fostering an environment where AI can drive substantial socio-economic benefits, there remain significant hurdles in terms of regulatory scope, stakeholder diversity, and methodological breadth. Addressing these issues through

expanded, comparative, and longitudinal research will not only enhance our understanding of AI governance but also help shape a more balanced and forward-thinking approach that safeguards the interests of all citizens. By integrating these insights with ongoing policy development, South Africa can achieve a governance model that is truly inclusive, sustainable, and capable of navigating the complexities of an AI-driven future.

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APPENDIX A: INTERVIEW QUESTIONS

Framework Artefact	**Research Objective**	**<u>Interview Questions</u>**
Demographic Questions	Knowing the participant and their credentials	What is your current position in your organization?
		In which industry do you currently work?
		How many years of experience do you have in your current role?
		How many years of experience do you have in the AI field/policy?
Governance	Explore the factors that influence the governance of AI technology	What elements would you consider relevant in the South African context to govern AI?
		How important is ethical use in the governance of AI?
Ethical Guidelines	Evaluate the role of ethical principles in AI policy development	What ethical principles and guidelines should be prioritized in the development of AI governance frameworks?
Stakeholder Involvement	Assess the role and impact of various stakeholders in AI governance	How can we ensure diverse and inclusive stakeholder engagement in AI governance?

Regulatory and Policy Frameworks	Analyze existing regulatory frameworks and propose a tailored AI governance framework for South Africa	What existing regulatory and policy frameworks could inform South Africa's AI governance model?
		What challenges do you anticipate in developing and implementing AI regulations in South Africa?
Public Awareness and Education	Investigate the level of public awareness and the role of education in AI governance	What educational initiatives could enhance public understanding/public awareness and trust in AI technologies?
		How aware is the general public about AI and its implications?
Socio-Economic Context	Understand the impact of socio-economic factors on AI governance	How do socio-economic disparities in South Africa influence AI governance?
		What measures can be implemented to ensure equitable access to AI benefits across all communities?

APPENDIX B: RESEARCH CANDIDATES DEMOGRAPHICS

CANDIDATE	OCCUPATION	NO OF YEARS	GENDER
Participant 1	AI and Iot solutions manager	8	Female
Participant 2	AI Master data processes	1	Female
Participant 3	4IR presidential committee member	4	Male
Participant 4	Electronics and AI technician	1	Male
Participant 5	PHd Candidate in Information Systems	3	Male
Participant 6	4IR presidential committee member	10	Male
Participant 7	Data Analyst	6	Female
Participant 8	Programme manager	15	Male
Participant 9	Human Resources	10	Female
Participant 10	Systems developer	5	Female

Participant 11	RPA Developer	5	Female

APPENDIX C: TURNIT IN REPORT SUMMARY

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ORIGINALITY REPORT

7%	5%	8%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	eprints.gouni.edu.ng Internet Source	1%
2	Koshanam, Venkat Ramanathan. "Facilitating Ethical Adoption of Artificial Intelligence Technologies in the Public Sector", University of Maryland University College, 2024 Publication	1%
3	wiredspace.wits.ac.za Internet Source	1%
4	Tarnveer Singh. "Artificial Intelligence and Ethics - A Field Guide for Stakeholders", CRC Press, 2024 Publication	1%
5	Chopra, Karneet. "Shaping the Future: AI Governance and its Dynamic Effect on India's AI Competitiveness.", Universidade Catolica Portuguesa (Portugal), 2024 Publication	1%
6	Zahid Ali Ashraf, Nadeem Mustafa. "chapter 14 AI Standards and Regulations", IGI Global, 2024 Publication	1%
7	"Tech Transformation and AI Readiness", Springer Science and Business Media LLC, 2025 Publication	1%
8	Dirk Brand. "Responsible Artificial Intelligence in Government: Development of a Legal	<1%

	Framework for South Africa", JeDEM - eJournal of eDemocracy and Open Government, 2022 Publication	
9	Pawan Whig, Pavika Sharma, Nagender Aneja, Ahmed A. Elngar, Nuno Silva. "Artificial Intelligence and Machine Learning for Sustainable Development - Innovations, Challenges, and Applications", CRC Press, 2024 Publication	<1 %
10	ijrpr.com Internet Source	<1 %
11	Emmanuel K Nartey. "Generative AI in Higher Education: Guiding Principles for Teaching and Learning", CRC Press, 2025 Publication	<1 %
12	conference-w.com Internet Source	<1 %
13	rudyct.com Internet Source	<1 %
14	mmcalumni.ca Internet Source	<1 %

Exclude quotes	On	Exclude matches	< 50 words
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APPENDIX D: ETHICS CLEARANCE CERTIFICATE

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB668370/509
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Exploring the factors influencing artificial intelligence (AI) governance in South Africa
Investigator / Researcher	Mr Thapelo Sekwena
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	24/10/2024
Expiry date	Date of submission of the project / research report
Chairperson	Dr Ayanda Magida ☎ +27 11 717 3953 ✉ ayanda.magida@wits.ac.za

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Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Thapo
Signature

06 November 2024
Date: