

**THE FUTURE PROSPECTS OF AI ADOPTION IN
ANGOLAN SOCIETIES.**

**AFRICA UNIVERSITY
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THE FUTURE PROSPECTS OF AI ADOPTION IN ANGOLAN SOCIETIES.

BY

VICTORINO ALMEIDA

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF BACHELOR'S IN COMPUTER SCIENCE
HONORS TO THE COLLEGE OF ENGINEERING AND APPLIED SCIENCES.

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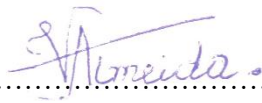
Abstract

The research documentation "The Future Prospects of AI Adoption in Angolan Societies" explores how artificial intelligence (AI) can revolutionize Angola's socioeconomic problems. AI has advanced globally, but Angola's use of the technology is hampered by issues like inadequate infrastructure, a shortage of qualified workers, and ethical dilemmas. Healthcare, agriculture, banking, and education are among the important industries for AI application that the study seeks to discover while assessing the moral ramifications of its incorporation. The study utilizes qualitative techniques, which involves semi-structured interviews with stakeholders, to examine the present usage of AI and suggest ways to optimize advantages while minimizing hazards. The ultimate goal of the research investigation is to educate stakeholders and policymakers on how to promote ethical AI use for Angola's sustainable growth.

Key Words: Artificial Intelligence (AI) Adoption, Angola, Sustainable Development.

Declaration

I, Victorino Cabua Josefo De Almeida, the author, certifies that, with the exception of the places where sources have been acknowledged and credited, this dissertation is entirely original. The work has never before been submitted and never will be to another university for a degree. This was carried out under my supervisor's careful observation.



STUDENT

3/26/2024

DATE



SUPERVISOR

3/26/2024

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2025

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This acknowledgement or appreciation is a consequence of the teamwork, collaborative effort and assistance that enabled this research to be possible and completed. Every contribution, no matter how modest, has been essential to the accomplishment of this successful academic endeavor/pursuit.

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I would like to thank the research participants, whose willingness to share their experiences and ideas has been crucial to the success of this study. Their collaboration and candor have given the findings important new viewpoints. Lastly, I want to express my sincere gratitude to my family and friends for their constant understanding, support, and encouragement during this difficult but worthwhile endeavor. Their tolerance and confidence in my abilities have served as a continual source of inspiration.

Dedication

This research is specially dedicated to the three pillars of my life: my mother, father, and sister. Their unwavering support, love, and encouragement have been the driving force behind my academic journey. I also extend my heartfelt appreciation to every member of my family and friends who have given me a lot of support.

To my mother, whose generosity and altruism have motivated me to work hard and compassionately toward my goals. I will always be appreciative of your attention and direction, which helped me become the person I am today.

To my father, whose insight and tenacity have taught me the importance of diligence and fortitude. I have a great sense of responsibility and ambition because of your influence.

To my sister, whose love and company have always brought me happiness and inspiration. Having you in my life has made every obstacle easier to overcome and every victory more significant.

To my friends and family, for their unending support, tolerance, and understanding throughout the difficult stages of this study. The difficulties have been easier to handle and the victories have gained greater significance thanks to your support and affection.

May this dedication be a little gesture of my sincere gratitude and admiration for the significant influence these people have had on both my academic and personal journey.

List of Acronyms and Abbreviations

AI: Artificial Intelligence

ML: Machine Learning

DL: Deep Learning

NGO: Non-Governmental Organization

STEM: Science, Technology, Engineering, and Mathematics

PPP: Public-Private Partnerships

SDGs: Sustainable Development Goals

Definition of Key Terms

Artificial Intelligence (AI): A branch of computer science focused on creating intelligent machines that can mimic human cognitive functions such as learning, problem-solving, and decision-making. In this study, AI refers specifically to the application of these technologies to address Angolan societal challenges.

Machine Learning: A subset of artificial intelligence that enables systems to learn from data without the need for explicit programming.

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This concept encompasses economic growth, social equity, and environmental protection, as defined by the United Nations Sustainable Development Goals (SDGs).

AI Adoption: The process by which AI technologies are integrated into various sectors of Angolan society, including healthcare, education, agriculture, finance, and governance. This encompasses infrastructure development, skills training, ethical considerations, and policy frameworks.

Ethical Considerations: Principles and values that guide the responsible development and deployment of AI systems, ensuring fairness, transparency, accountability, and respect for human rights. This includes addressing potential biases, protecting data privacy, and mitigating the risk of job displacement.

Challenges to AI Adoption: Obstacles that hinder the successful implementation and widespread use of AI in Angola. Based on the surveys, identified challenges included limited infrastructure, lack of skilled personnel, ethical considerations, data privacy issues and economic diversion.

Economic Diversion: A challenge where AI implementation leads to the favoring of certain economies over others, therefore promoting inequality and the exclusion of the majority to benefit from the implementation.

Stakeholders: Individuals, groups, or organizations that have an interest in or are affected by AI adoption in Angola. This includes government officials, researchers, developers, entrepreneurs, NGOs, and the general public.

Angolan Societies: The community of people and cultures that live within the nation of Angola. This involves the consideration of their perspectives and challenges and how the implementation of AI might solve their problems.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

This research dissertation, submitted to the College of Engineering and Applied Science in partial fulfilment of the requirements for the Bachelor of Computer Science degree, embarks on an in-depth exploration of "The Future Prospects of AI Adoption in Angolan Societies." As Artificial Intelligence (AI) rapidly transforms societies worldwide, Angola finds itself at a critical juncture, possessing the opportunity to leverage these advancements for its own socioeconomic betterment. This chapter serves as a gateway into the exciting possibilities and significant challenges that AI adoption presents for Angola. We will delve into the current landscape of AI within the country, exploring its latent potential to address pressing issues across various sectors. The integration of AI technologies holds the promise of revolutionizing industries and improving the quality of life for Angolan citizens. However, it is crucial to acknowledge the inherent complexities and potential obstacles that must be carefully considered for responsible and effective implementation. This study aims to provide a holistic overview, setting the stage for a comprehensive investigation into AI's transformative power within the unique Angolan context.

Moreover, this research aims to do more than only analyze technological viability. It will examine the ethical, societal, and economic aspects of AI adoption, acknowledging that a multifaceted strategy is necessary for successful integration. This study is motivated by the knowledge that the full potential of AI can only be achieved when its application is governed by ethical responsibility, sustainability, and inclusivity principles. This introduction will also emphasize how urgently researchers, industry leaders, and government agencies must work together to create a future in which artificial intelligence (AI) drives constructive change in Angola.

1.2 Background to the study

Angola, a nation with a vibrant cultural heritage, abundant natural resources, and a rapidly growing population of over 35 million people, stands at a critical juncture in its development. While possessing immense potential, the nation continues to grapple with a unique set of socioeconomic challenges, including persistent poverty, infrastructural deficits, disparities in access to healthcare and education, and vulnerability to the impacts of climate change. In this context, Artificial Intelligence (AI) emerges as a beacon of hope, offering innovative solutions to longstanding problems and the opportunity to accelerate progress towards a more prosperous and equitable future.

Recent advancements in AI, particularly in the fields of machine learning, deep learning, and natural language processing, have unlocked a wide array of applications across sectors critical to Angola's development. In healthcare, AI-powered diagnostic tools can improve access to quality medical care, particularly in remote and underserved areas. In agriculture, AI can optimize crop yields, improve resource management, and enhance food security. In finance, AI-driven solutions can promote financial inclusion, streamline banking processes, and detect fraudulent activities. Moreover, in education, AI can personalize learning experiences, improve student outcomes, and bridge the digital divide. By strategically leveraging AI, Angola can potentially leapfrog traditional development stages, fostering a more resilient, diversified, and prosperous economy for its citizens. This research seeks to explore the pathways through which

Angola can harness the transformative power of AI to drive sustainable development, improve the quality of life for its people, and create a future where technology empowers every Angolan citizen. It further seeks to identify the critical success factors and potential pitfalls that must be navigated to ensure that AI adoption contributes to inclusive growth and reduces inequalities within Angolan society.

1.3 Statement of the problem

Despite the vast potential of AI, its adoption in Angola remains in its early stages. Limited access to technology, infrastructure, and skilled personnel are significant hurdles. Additionally, concerns regarding job displacement, ethical considerations, and the potential for bias in AI algorithms need to be addressed.

This study aims to investigate the prospects of AI adoption in Angolan societies. We will analyze the opportunities and challenges associated with AI integration and propose strategies for maximizing its benefits while mitigating potential risks.

1.4 Research aims and objectives

1.4.1 Research aims

The primary aim of this research accomplishes the following:

1. To explore the potential of AI adoption for sustainable development in Angolan societies.
2. To examine how AI can be harnessed to address critical challenges and promote economic growth across various sectors.

1.4.2 Research objectives

To achieve the research aim, this study will pursue the following objectives:

1. Identify key areas where AI can be applied to address pressing challenges Angolan societies face.
2. Analyze the current state of AI adoption in Angola, including infrastructure, human resources, and existing initiatives.
3. Explore the potential impact of AI on various sectors, such as healthcare, agriculture, finance, and education.
4. Evaluate the ethical considerations associated with AI adoption in Angola and propose strategies for responsible development.
5. Develop recommendations for policymakers and stakeholders to foster a conducive environment for responsible and effective AI adoption.

1.5 Research questions

This research aims to answer the following questions:

- How can AI be effectively adapted to promote sustainable development and address critical challenges in Angolan societies?
- What are the key challenges and opportunities associated with AI adaptation in Angola?
- In which specific sectors can AI have the most significant positive impact?
- What ethical considerations need to be addressed to ensure responsible AI development and deployment in Africa?
- What strategies can be implemented by policymakers and stakeholders to facilitate successful AI adoption across the continent?

1.6 Significance of the study

This study holds significant value for various stakeholders. By providing a comprehensive analysis of AI's potential and challenges in Angola, the research can inform policymakers in developing strategies for responsible AI adoption. Additionally, the findings can guide researchers, developers, and entrepreneurs in directing their efforts toward developing and implementing AI solutions that address Angola's specific needs. Furthermore, the study can raise awareness among the general public about the potential benefits of AI and encourage participation in shaping its development for the betterment of Angolan societies.

This chapter has provided a strong foundation for the research. The following sections will delve deeper into the specific areas mentioned above, providing a detailed analysis and exploring the exciting possibilities that lie ahead for AI adoption in Angola.

1.7 Assumptions of the study

This research assumes the following:

- The Angolan nation has a general willingness to explore and adopt AI technologies;
- There is a growing interest in leveraging AI for solving problems and achieving sustainable development goals;
- The future holds advancements in AI that will further enhance its applicability in various sectors;
- Every research participant will be willing to answer the research questions and provide clear responses.

1.8 Delimitation of the study

This study will focus on Angola, a population of 25,789,024 (estimated 2015); languages, Portuguese (official), and Bantu languages; capital, Luanda, exactly in the Lwei Mansa Musa Brokers neighbourhood due to the region's specific development challenges and potential for AI-driven solutions. However, insights and recommendations might be relevant for other Angolan regions as well. The research will examine AI adoption across various sectors, but may not delve into extreme detail within each sector due to the broad scope.

1.9 Limitations of the study

This research may be limited by the following factors:

- The rapidly evolving nature of AI technology: New developments might emerge during the research timeframe.
- Access to data: The availability of comprehensive and reliable data from the Angolan nation could be limited.

1.10 Dissertation structure

This dissertation will be structured as follows:

- **Chapter One:** Introduction (completed)
- **Chapter Two:** Literature Review: Examining existing research on AI adoption in Angola and related fields.
- **Chapter Three:** Methodology: Describing the research methods used to gather and analyse data.
- **Chapter Four:** Findings and Analysis: Presenting the research results and interpreting their significance.
- **Chapter Five:** Conclusion and Recommendations: Summarize the key takeaways and propose strategies for promoting responsible AI adoption in Angola.

1.11 Chapter Summary

This chapter has introduced the concept of AI adoption in Africa, highlighting its potential to address critical challenges and contribute to sustainable development. The research aims, objectives and key questions have been outlined, providing a roadmap for further exploration. The following chapters will delve deeper into the existing literature, research methodology, and findings, and ultimately provide valuable insights and recommendations for the future of AI in Angola.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2 Literature review

This chapter examines previous research that is pertinent to the goals of the study stated in Chapter One. With a specific focus at Lwei Mansa Musa, the goal is to comprehend the opportunities and difficulties AI brings to Angolan nations. The primary research questions listed in Chapter One will serve as the framework for the literature review.

2.1 Introduction

The research that has been done on the use of artificial intelligence (AI) in Angola is examined in this chapter. First, we look at AI in its larger context, including its definition, subfields (such as machine learning and deep learning), and applications across multiple industries. The literature review then focuses solely on the Angolan nation. We will examine the current literature on the adoption of AI in Angola, emphasizing initiatives, successes, and persistent difficulties. We will specifically focus on Angola's situation, considering its people resources, technology infrastructure, and ongoing AI initiatives.

2.2 Conceptual framework



Figure 2.1 Conceptual Framework

Figure 2.1 provides the Sustainable Development Goals (SDGs) proposed by the United Nations serve as the foundation for this study. According to the framework, AI can play a significant role in helping Africa accomplish these goals by tackling urgent issues in sectors including healthcare, education, poverty, and agriculture.

Central Elements:

- **Scale:** (Blue horizontal bar) - Represents the capacity to expand and grow AI implementation across various sectors.

- **Lead:** (Yellow vertical bar) - Indicates guidance, strategic direction, and leadership in AI adoption.

Corner Elements (Circular Nodes):

- **People:** Refers to the human element, skills, and expertise necessary for AI implementation.
- **Data:** Represents the information resources and datasets used to train and power AI systems.
- **Process:** Denotes the workflows, methodologies, and organizational structures required for AI integration.
- **Technology:** Encompasses the hardware, software, and technological infrastructure needed to support AI applications.

Connecting Elements (Diagonal Bars):

- **Access:** (Purple bar, connecting People and Data) - Signifies the ability to retrieve, utilize, and share data effectively.
- **Secure:** (Red bar, connecting Data and Process) - Represents the measures taken to protect data, ensure privacy, and maintain system integrity.
- **Automate:** (Beige bar, connecting Process and Technology) - Implies the use of AI to streamline tasks, enhance efficiency, and reduce human intervention.
- **Learn:** (Green bar, connecting Technology and People) - Indicates the continuous process of acquiring knowledge, improving skills, and adapting to new AI developments.

2.3 AI for Addressing Critical Challenges in Angola

The literature on applying AI to address important issues facing Angolan societies is reviewed in this section. Among the pertinent fields of study are:

- **Agriculture:** How might AI be applied to enhance agricultural methods like precision farming, disease detection, and crop production prediction? ([research article on AI in Angolan agriculture])
- **Health:** Can artificial intelligence (AI) be used to improve early disease diagnosis, increase access to medical information, and aid in drug discovery in Angola? ([research article on AI in African healthcare])
- **Education:** How can artificial intelligence (AI) help close the educational gap in Angola, personalize learning experiences, and provide intelligent tutoring systems? ([Angolan education literature driven by AI]).

2.4 Potential Impact of AI on various sectors

Building on the observations made in the previous section, this section investigates the potential implications of AI for Angolan industry. This example will look at how the economy, society, and environment are affected by the incorporation of AI.

- **Financial Inclusion:** How might AI support financial inclusion by providing Angolan unbanked communities with access to credit and other financial services? ([Autonomous intelligence paper on financial inclusion in Angola])

The study focuses on artificial intelligence's (AI) potential to support sustainable resource management practices in Angola. It specifically looks at the potential applications of AI in water optimization and environmental monitoring.

2.5 Ethical Considerations for AI in Angola

This section explores the ethical considerations of water optimization and environmental monitoring ions surrounding AI adoption in Angola. Key areas of concern include:

- **Fairness and Bias:** Considering Angola's social and cultural setting, how can we ensure AI algorithms are created and applied fairly and impartially? ([Bad Algorithm Bias in AI])
- **Data Privacy:** Given the continent's data security issues, what steps can be taken to safeguard data privacy in Angola as the use of AI grows? ([African research on AI privacy concerns]).

2.6 Gap in Knowledge Identified

The literature assessment will highlight gaps in our understanding of AI adoption in Africa. This can include:

- Insufficient study on the unique opportunities and constraints of adopting AI in Angola as opposed to other African nations.
- A dearth of empirical research assessing AI's effects on development outcomes in African environments.
- The requirement for more study on moral frameworks for responsible AI development and application in Africa.

2.7 Chapter Summary

The chapter assesses the research on AI adoption in Africa, emphasizing how technology may be used to solve urgent problems and promote sustainable development in a number of fields. In line with important Sustainable Development Goals, this analysis highlights how AI may support environmental sustainability, healthcare advancements, and economic progress.

Significant research topics have been found, especially in relation to the distinct socioeconomic setting of Angola and the ethical issues surrounding AI in Africa. Data privacy, algorithmic bias, and fair access to AI technologies are some of these ethical issues.

The findings from this review of the literature will direct the study strategy and data collection in the next chapters, offering a framework for filling in the gaps and encouraging ethical AI adoption in Africa.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter provides an overview of the research approach utilized to investigate how AI adoption might contribute to Angola's sustainability. It describes in detail the population, sample plan, methodology, design, philosophy, data collection methods, data analysis techniques, and ethical guidelines that were followed throughout the research process.

3.2 Research Approach

The methodology used in this study is qualitative. Qualitative research methods are suitable for in-depth investigation of a phenomenon, comprehension of lived experiences, and acquiring knowledge about the attitudes and perspectives of a certain group. This methodology is especially well-suited for examining the ethical, social, and cultural ramifications of AI adoption in Angola since it provides a sophisticated comprehension of the potential and difficulties brought about by the implementation of this technology.

3.3 Research Philosophy

Constructivism serves as the foundational research philosophy for the present research. Constructivism recognizes that societal and individual interactions are through which information is created. Given that it acknowledges the significance of comprehending participants' subjective experiences and perspectives surrounding the deployment of AI in Angola, it agrees with the qualitative method.

3.4 Research Design

This study uses a case study investigation design. A case study enables an in-depth examination of a particular phenomenon in the context of real-world occurrences. The adoption of AI in Angola will be the subject of this case study, which will also examine the perspectives of various parties involved in the creation and application of AI.

3.5 Population

The people and institutions engaged in AI adoption and development in Angola correspond to the study's population of interest. This includes the following:

- AI researchers and developers working in Angolan universities, research institutions, and private companies.
- Government officials responsible for formulating AI policies and regulations.
- Representatives from non-governmental organizations (NGOs) working on AI-related projects in Angola.
- Potential users of AI technologies in various sectors such as agriculture, healthcare, and education.

3.6 Sample and Sampling

To choose a sample of individuals with in-depth knowledge and experience with AI in Angola, purposeful sampling will be employed. By using this sample strategy, the researcher can find volunteers who will be most helpful in shedding light on the problems being investigated. If data saturation is not reached, additional survey respondents may be recruited beyond the intended number of samples of thirty.

3.7 Research Instruments

The main research instrument for gathering data will be semi-structured interviews. Semi-structured interviews offer an adaptable structure that permits participants to share their own experiences and points of view while also allowing for in-depth discussion of pre-established themes. To guarantee consistency throughout interviews and to allow for flexibility dependent on the subject matter of the discussion, a guide for interviewing will be created.

Advantages of using semi-structured interviews:

- Gain rich and detailed data
- Explore participants' experiences and perspectives in depth
- Allow for flexibility and follow-up questions

Limitations and how they will be mitigated:

- **Potential for interviewer bias:** The interview guide will be piloted to ensure clarity and minimize bias.
- **Social desirability bias:** Participants may provide responses they believe the researcher wants to hear. This will be addressed by creating a comfortable and trusting interview environment.

3.8 Data Collection

Interviews with the selected sample participants in a semi-structured manner will be used to collect data. With permission from the participants, audio recordings of interviews will be made, and the verbatim transcripts will be examined. Additionally, all pertinent records and papers of Angolan AI policy and development will be gathered as well as examined.

3.9 Data Presentation, analysis, and discussion

The main technique for analyzing data will be thematic analysis. Finding, evaluating, and interpreting recurrent themes in the documents and interview transcripts is the process of thematic analysis. A coding method that is in line with the research questions will be used to code the data. The codes will then be categorized into more general themes in order to find trends and connections in the data.

Key findings will be summarized using tables or figures, participant quotes, and narrative summaries of the data. The themes that have been identified concerning the research questions and body of literature on AI adoption in Africa will be examined in the analysis and debate that follows:

Software for data analysis:

- While not mandatory, qualitative data analysis software such as **NVivo or Atlas.ti** can help organize, code, and analyze large amounts of textual data.
-

3.10 Issues of validity and reliability

Members should verify will be used to make sure the research is legitimate. Participants must be given access to interview transcripts in order to guarantee that their viewpoints are accurately reflected. To further improve the reliability of the results, data will be collected as

well from a variety of sources, including documents and interviews. This process is known as triangulation of data sources.

A thorough explanation of the study technique will subsequently be given in order to guarantee the validity of the findings. This makes it possible for other researchers to replicate the study. Furthermore, all study choices and methodologies will be recorded in an audit trail.

3.11 Ethical considerations

All phases of the data collection and analysis in this study were conducted following ethical guidelines. To guarantee informed consent, each participant received a comprehensive information sheet outlining the goals of the study, the methods used to gather data, and their options to continue or end the interview. Participants were also guaranteed anonymity and confidentiality of their answers via the information sheet. Every single interview tape was encrypted and safely kept.

3.12 Chapter Summary

This chapter uses an in-depth methodology to inquire about Angola's adoption of AI for sustainable development. The study employed a case study design, a qualitative methodology based on constructivism, and semi-structured interviews as well as document analysis to gather data. The primary technique for analyzing the data will be thematic analysis. In addition to trying to protect participant data confidentiality, anonymity, and informed consent, ethical considerations were also emphasized. The results and analysis of the investigation will be presented in the next chapter.

CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

The presentation, examination, and interpretation of data gathered about the use of artificial intelligence (AI) in Angolan societies are the main topics of Chapter 4 of the dissertation. This chapter is of vital importance due to how it establishes a link between the actual results produced by the research and the theoretical frameworks described in earlier chapters. In order to improve our comprehension of AI's revolutionary potential and obstacles, chapter 4 attempts to shed light on the ramifications of integrating AI in Angolan contexts. This thorough analysis sets the stage for later chapters that will go into greater depth about these linkages and go over the findings' wider importance in light of the body of previous research and current discussions in the field of artificial intelligence.

4.2 Sample Profile

4.2.1 Response Rate Analysis

Table 4.1 Response Rates

Questionnaire Invitation Summary	
Total Invitation Sent	60
Total Response Received	45
Total Response Unreceived	15
Response Rate	75%

The table 4.1 offers a thorough description of the sample population that is part of the research on artificial intelligence (AI) adoption in Angolan societies. The sample is intended to include a wide variety of viewpoints and experiences about AI, guaranteeing a thorough grasp of both its possibilities and difficulties across industries.

4.2.2 Sample Adequacy, Reliability and Validity

For this survey, 60 respondents were invited to take part. All did not reply, though; 25% of respondents did not take part in the study, while 75% of respondents did.

The researcher created a questionnaire to evaluate the users in order to guarantee the accuracy of our data. It had its foundation on a pre-validated questionnaire created by earlier researchers who had studied wireless network security. He modified questions from pre-existing questionnaires and extended his own survey topics while taking the study's goals and the intended audience into account.

Data validity was validated by combining the results of the questionnaire with interviews with experts in the field.

4.2.3 Sample Demographic Characteristics

4.2.3.1 Respondents distribution by age

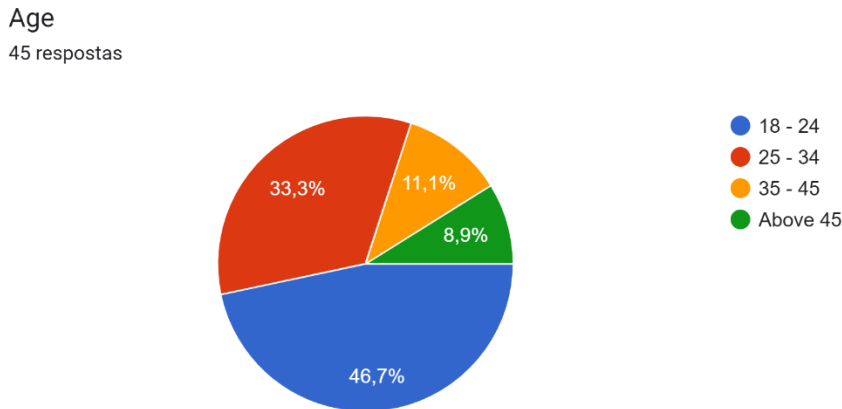


Figure 4.1 Age

Figure 4.1 illustrates the majority of participants, representing 46,7% of the sample, are between the ages of 18-24. This demonstrated that a sizable portion of the research population was younger, with 33,3% of participants falling into the 25-34 age range. 11,1% of the participants belonged to the age group of 35 to 45 years old. Finally, a smaller but significant percentage of the study population, 18% of the respondents were above 45 years old. The majority of younger participants raises the possibility of a bias in favor of younger viewpoints and experience with the subject of the research investigation.

4.2.3.2 Respondents distribution by gender

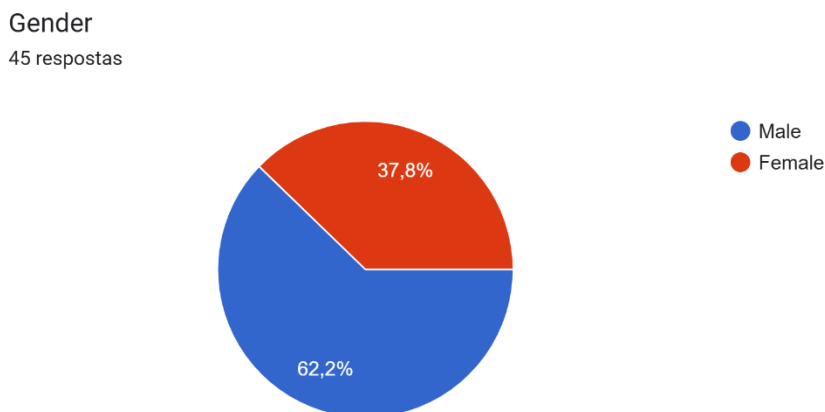


Figure 4.2 Gender

Figure 4.2 illustrates the majority of responders, or 62,2% of the sample, identified as male.

On the other hand, 37,8% of the participants identified as female. This gender distribution provides insight into the study cohort's higher degree of the male representation than female representation, as well as the preponderance of male respondents.

4.2.3.3 Respondents distribution Occupation (Profession)

Occupation
45 respostas

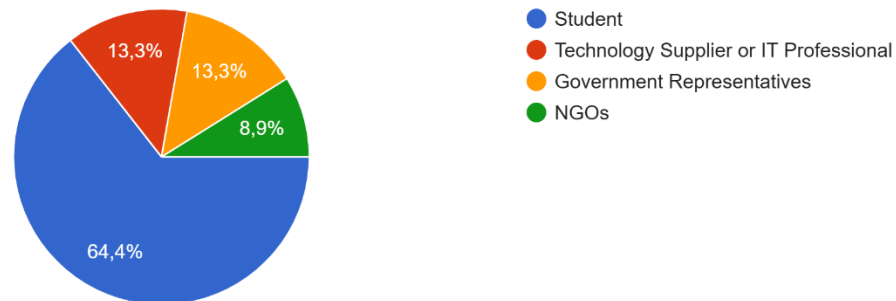


Figure 4.3 Occupation

Figure 4.3 provides a detailed overview of the occupational distribution of the 45 respondents who participated in this study. This analysis reveals a broad spectrum of professional backgrounds, with a notable emphasis on academic perspectives due to the significant representation of students. Specifically, students constitute the largest segment of the sample, comprising 64.4% of the participants. This substantial presence of students suggests a strong inclination towards theoretical and research-oriented viewpoints within the study, potentially providing valuable insights into the future direction of AI adoption in Angolan societies from the perspective of the next generation of professionals.

In addition to students, the sample includes representatives from diverse professional sectors, which enhances the richness and significance of the study. Technology Suppliers or IT Professionals account for 13.3% of the respondents, indicating a substantial participation of individuals directly involved in the technology sector. This considerable presence highlights the critical importance of technical expertise and insights in understanding the practical challenges and opportunities associated with AI implementation. Their input provides valuable perspectives on the feasibility, scalability, and technical considerations related to AI adoption in Angola.

Similarly, Government Representatives also account for 13.3% of the sample, demonstrating the presence of perspectives from the public sector. Their participation is crucial because it brings to light government policies, regulatory frameworks, and strategic initiatives related to AI. The insights provided by government representatives offer a more balanced view of the issues involved, particularly regarding the role of public policy in shaping the future of AI adoption in Angola.

Furthermore, individuals linked with NGOs (Non-Governmental Organizations) constitute 8.9% of the respondents, illustrating the significant contribution of the non-profit sector. Their participation enhances the research by incorporating perspectives from community development, advocacy, and social welfare programs. The involvement of NGO representatives helps to ensure that the ethical, social, and inclusivity dimensions of AI adoption in Angola are thoroughly considered, promoting a human-centered approach to technological development.

4.2.3.4 Respondents distribution by region

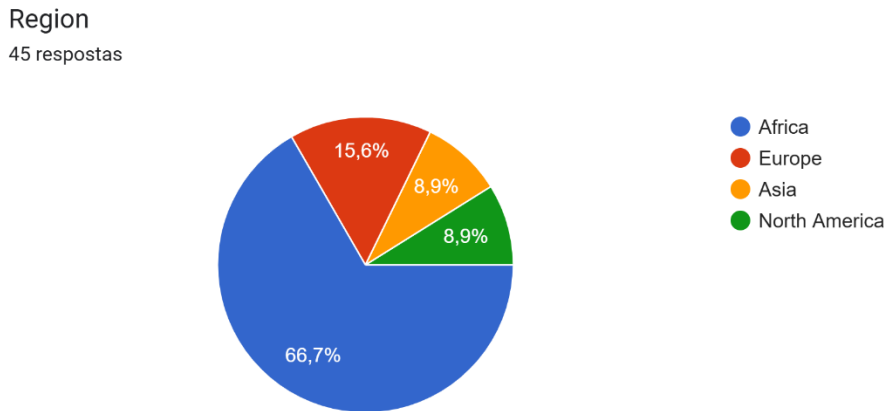


Figure 4.4 Region

Figure 4.4 illustrates the responses were gathered from 45 participants spread throughout four regions: Africa, Europe, Asia, and North America to guarantee a representative sample for the study. The pie chart above shows the distribution, emphasizing how each location is represented proportionately.

Respondent Distribution: Africa: With 66.7% of the sample as a whole, Africa had the highest percentage of responders. This corresponds to 30 participants, demonstrating the region's noteworthy significance for the research.

Europe: Seven participants contributed to the dataset, making up 15.6% of the sample. This ratio guarantees that this region is adequately represented.

With four participants and an 8.9% contribution, Asia offers insights from the viewpoint of this region. Likewise, with 4 individuals, North America makes up 8.9% of the sample, guaranteeing fair input from this area.

4.2.3.5 Familiarity with Artificial Intelligence

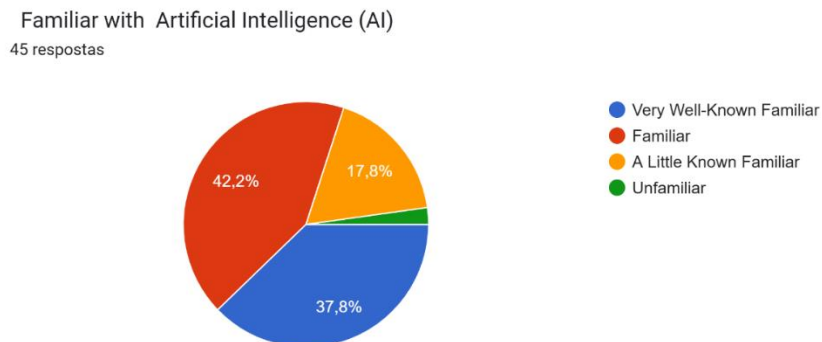


Figure 4.5 Familiarity with AI

Figure 4.5 illustrates the group of diverse in terms of AI familiarity. "Familiar" with AI (42.2%) is the largest group, indicating a moderate level of baseline knowledge. Expertise is provided by the sizable percentage of "Very Well-Known Familiar" (37.8%). "A Little Known Familiar" (17.8%) and "Unfamiliar" (2.2%) are smaller groups. This range makes it possible to investigate how varying degrees of AI expertise affect research findings.

4.3 Findings

4.3.1 How beneficial is AI for addressing challenges In Angola

In your opinion, how beneficial is AI for addressing challenges in Angola?

45 respostas

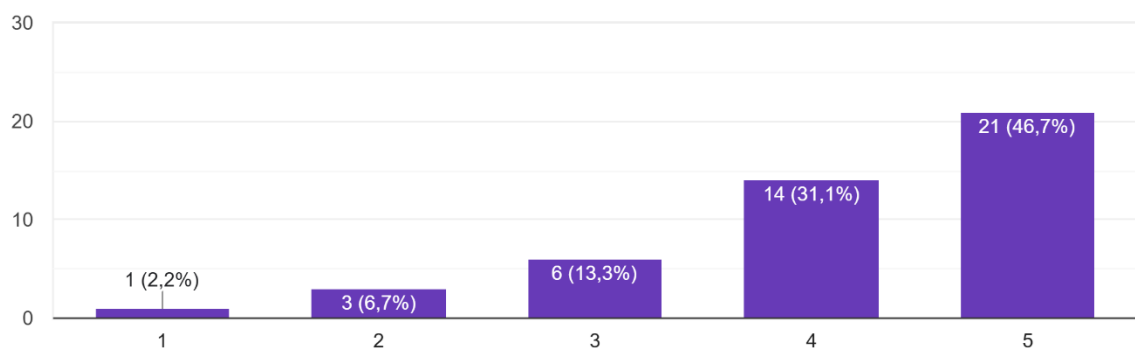


Figure 4.6 How beneficial is AI for addressing challenges

Figure 4.6 illustrates the perceptions of the possible advantages of artificial intelligence (AI) in tackling Angolan specific issues were examined in this study. Results from the sample (n=45) show a generally optimistic attitude, with a sizable percentage considering AI to be very advantageous:

- **High Benefit (Rating of 4 or 5):** A combined **77.8%** of respondents rated AI as either a 4 (31.1%) or 5 (46.7) on a scale of 1 to 5, indicating a strong belief in its potential to address Angolan challenges.
- **Moderate Benefit (Rating of 3):** 13.3% of respondents provided a neutral rating of 3, suggesting a more cautious or uncertain perspective.
- **Low Benefit (Rating of 1 or 2):** A minority of respondents perceived AI as having limited benefit, with 2.2% rating it as 1 and 6.7% rating it as 2.

The results show that respondents generally think AI has an enormous amount of promise to help Angola with its problems.

4.3.2 Sectors most benefit from AI adoption

What sectors do you believe will benefit most from AI adoption? (Select all that apply)

45 respostas

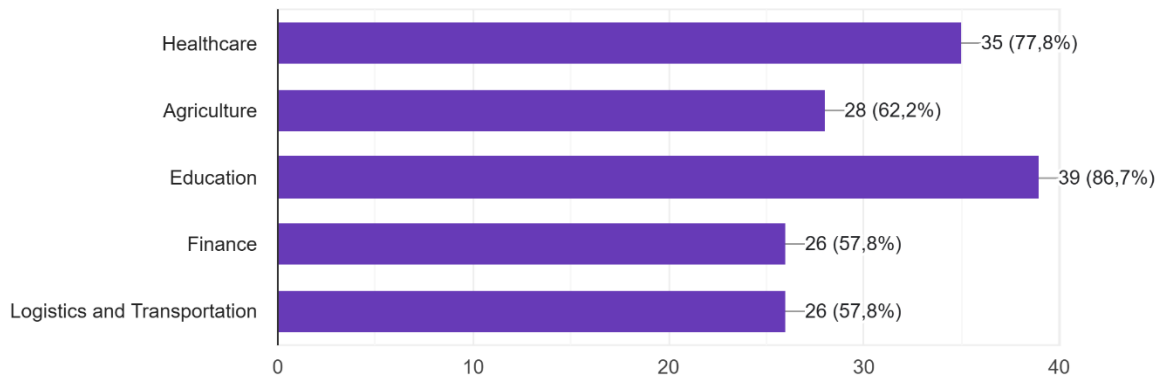


Figure 4.7 Sectors most benefit from AI adoption

Figure 4.7 illustrates the “Perceived Benefits of AI Adoption Across Sectors in Angola”

This study also explored which sectors respondents believed would benefit most from AI adoption in Angola. The results indicate important areas of perceived promise given the option to choose from a variety of industries (n=45):

- **Education:** Overwhelmingly, education was identified as the sector with the most potential benefit from AI adoption, with **86.7% (39 respondents)** selecting this option.
- **Healthcare:** Close behind, healthcare was also viewed as a high-potential area, selected by **77.8% (35 respondents)**.
- **Agriculture:** Agriculture was seen as beneficial by **62.2% (28 respondents)**, indicating a significant belief in AI's potential for this sector.
- **Finance and Logistics & Transportation:** Both finance and logistics & transportation were selected by **57.8% (26 respondents)**, suggesting a similar level of perceived benefit.

By including these findings and interpretations, the respondents strongly believe AI adoption would benefit **education and healthcare**, aligning with national development priorities. They also see significant potential in **agriculture, finance, and logistics & transportation** for driving economic diversification.

4.3.3 Biggest challenges to AI adoption in Angola

What do you consider the biggest challenges to AI adoption in Angola? (Select all that apply)

45 respostas

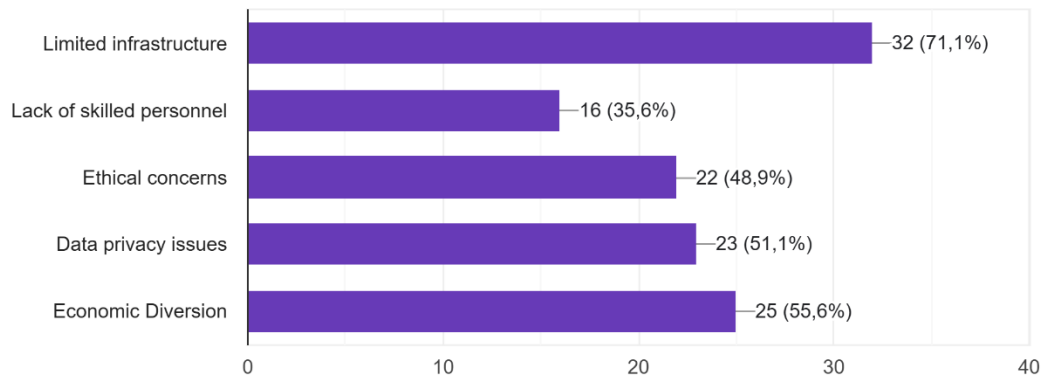


Figure 4.8 Biggest challenges to AI adoption

Figure 4.8 illustrates the “Perceived Challenges to AI Adoption in Angola”

The study sought to identify the major challenges perceived to hinder AI adoption in Angola. When 45 respondents were asked to check all that applied, the following main issues emerged:

- **Limited Infrastructure:** This was identified as the most significant challenge, with **71.1%** (32 respondents) selecting this option.
- **Economic Diversion:** 55.6% (25 respondents) see Economic Diversion to be a big challenge to AI adoption in Angola
- **Data Privacy Issues:** A majority also expressed concern about data privacy, with **51.1%** (23 respondents) identifying this as a key challenge.
- **Ethical Concerns:** Ethical considerations were highlighted by **48.9%** (22 respondents).
- **Lack of Skilled Personnel:** Lack of skilled personnel, with **35.6%** (16 respondents) selecting this option.

There are obstacles in Angola's way of achieving AI's transformative potential. While there is clear excitement about AI's potential in fields like healthcare and education, our study highlights a crucial conflict: the frameworks required to facilitate AI adoption are insecure.

Most significantly, inadequate infrastructure acts as a real obstacle and a sobering reminder that developing technology necessitates a strong foundation. At the same time, worries about data privacy, ethics, economic diversion, and skills shortages highlight the necessity of a comprehensive and well-managed strategy.

Angola is at a turning point. It takes more than simply money to overcome these obstacles; it takes a strategic vision that puts infrastructure development first, develops a trained workforce, sets moral standards, safeguards the economy, and encourages justice and inclusion, making certain that, rather than escalating already existing inequalities, AI acts as a catalyst for widespread advancement.

4.3.4 How significant these challenges are

How significant do you think these challenges are? (Scale: 1-5)

45 respostas

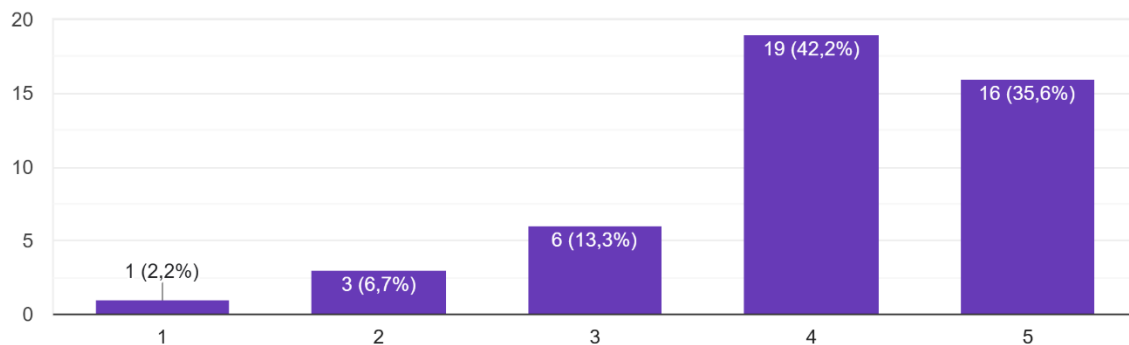


Figure 4.9 How significant these challenges are?

Figure 4.9 illustrates the “Significance of Challenges to AI Adoption”

In examining the “Significance of Challenges to AI Adoption in Angolan Societies” the study explored the perceived significance of these obstacles on a scale of 1 (not significant) to 5 (very significant), the replies' distribution (n=45) shows that there is broad agreement that these challenges are important:

- **Significant to Very Significant (Ratings of 4 or 5):** A combined **77.8%** of respondents rated the challenges as either a 4 (42.2%) or 5 (35.6%), indicating a widespread perception of high significance.
- **Moderate Significance (Rating of 3):** A small proportion, **13.3%**, rated the challenges as moderately significant.
- **Low Significance (Ratings of 1 or 2):** Only a small minority viewed the challenges as having low significance, with 2.2% rating them as 1 and 6.7% rating them as 2.

Taken together with the earlier findings (which identified specific challenges like limited infrastructure, data privacy, ethics, and a skills gap), these results paint a clear picture: while there's optimism about AI's potential in Angola, there's also a strong awareness that significant obstacles stand in the way. The overwhelmingly high ratings for significance suggest that these are not merely minor hurdles but rather substantial roadblocks that must be addressed strategically.

Overcoming these challenges requires a multi-pronged approach: targeted investments in infrastructure, comprehensive education and training programs, robust ethical guidelines and data privacy regulations, and proactive government policies. The future of AI in Angola hinges

not only on its potential benefits but on a concerted effort to mitigate these perceived challenges and pave the way for responsible and sustainable AI adoption.

4.3.5 Recommendations for the integration of Future Prospects for AI Adoption in Angolan Societies

Table 4.2 Recommendations from respondents on AI integration

Category	Considerations	Description
Data Security & Privacy	- Implement end-to-end encryption across AI systems - Localize data storage within Angola for sensitive data	Ensure data integrity and confidentiality by encrypting data at every stage. Prioritize local data centers to comply with evolving data sovereignty regulations and reduce reliance on foreign infrastructure.
Ethical Considerations	- Establish AI ethics review boards - Integrate cultural sensitivity training for AI developers	Create boards comprising diverse stakeholders (e.g., ethicists, community leaders, legal experts) to assess AI projects. Train developers to understand Angolan societal values, avoiding unintended biases and ensuring equitable outcomes.
Regulation & Infrastructure	- Pilot AI regulatory sandboxes - Develop AI-ready infrastructure in key sectors	Create controlled environments where AI solutions can be tested under regulatory oversight. Upgrade infrastructure in sectors like agriculture and healthcare to facilitate AI integration, including reliable internet and data processing capabilities.
Collaboration & Education	- Establish university-industry AI research centers - Create vocational AI training programs	Build dedicated centers for AI research and innovation, linking universities with industry partners. Offer vocational training to equip workers with the skills needed for AI-driven jobs.

		minimizing potential displacement.
Accessibility	• Subsidize AI tools for SMEs and micro-businesses • Develop offline AI solutions for remote areas	Offer subsidies or grants to enable small businesses to adopt AI technologies, fostering economic growth. Develop AI solutions that can operate offline to support communities with limited internet connectivity, such as AI-powered diagnostic tools.

4.4 Conclusion

In conclusion, the findings of this study shed light on the multifaceted implications and addressed the main obstacles and possibilities found during the study, offering a thorough examination of the chances for AI adoption in Angolan societies. The results highlight AI's revolutionary potential in industries like healthcare, agriculture, finance, and education, which is consistent with the study's goals of advancing economic growth and sustainable development. However, the analysis also highlights critical barriers, including infrastructure limitations, a shortage of skilled personnel, and ethical considerations surrounding data privacy and algorithmic bias.

The research reveals the need for a multi-faceted approach to AI adoption, encompassing strategic investments in infrastructure, targeted education and training programs, and the establishment of robust ethical frameworks. Furthermore, effective stakeholder collaboration is essential to ensure that AI solutions are aligned with the specific needs and priorities of Angolan societies. Policymakers, researchers, developers, and the general public must engage in a participatory dialogue to foster trust, promote innovation, and mitigate potential risks.

This study has provided a roadmap for responsible and effective AI adoption in Angola. By addressing the identified challenges, leveraging the available opportunities, and fostering a collaborative ecosystem, Angola can harness the transformative power of AI to achieve its sustainable development goals and improve the lives of its citizens.

CHAPTER 5: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary

This dissertation investigated the future prospects of AI adoption in Angolan societies, focusing on its potential for sustainable development and addressing critical challenges. Chapter One introduced the context, outlining Angola's diverse landscape, its challenges (poverty, infrastructure, climate change), and AI's potential as a game-changer. The research aimed to explore AI's potential, analyse its current state, evaluate ethical considerations, and develop recommendations for policymakers.

Chapter Two reviewed existing literature, highlighting AI's potential across various sectors (agriculture, healthcare, education, finance) and underscoring the importance of ethical frameworks and data privacy. Gaps in knowledge were identified, particularly the need for Angola-specific research and empirical assessments of AI's impact.

Chapter Three detailed the qualitative research methodology, employing a constructivist philosophy and a case study design. Semi-structured interviews were conducted with a purposive sample of 45 stakeholders, representing AI researchers, government officials, NGO representatives, and potential AI users.

Chapter Four (implied from your structure) presented the findings of the research, based on the survey results and interview insights. Key findings include:

- **Strong Belief in AI's Potential:** A significant majority (77.8%) of respondents believe that AI holds high potential for addressing challenges in Angola.
- **Sector Prioritization:** Education and healthcare were overwhelmingly identified as the sectors with the most to gain from AI adoption (86.7% and 77.8%, respectively), followed by agriculture (62.2%), finance (57.8%), and logistics & transportation (57.8%).
- **Significant Challenges:** Limited infrastructure was identified as the most significant barrier to AI adoption (71.1%), followed by Economic Diversification (55.6%), data privacy issues (51.1%), ethical concerns (48.9%), and a lack of skilled personnel (35.6%). 77.8% rated those challenges as highly significant.

5.2 Conclusions

The research concludes that AI holds considerable promise for Angola, particularly in addressing critical development needs in education, healthcare, and economic diversification. However, the path to realizing this potential is fraught with challenges. The pervasive lack of infrastructure, coupled with concerns surrounding data privacy, ethical considerations, and skills gaps, represents significant barriers that must be addressed proactively. Addressing Economic Diversification by creating policies that target all sectors of the economy to promote inclusion and equality. The overall belief that these challenges are highly significant highlights the urgency of strategic intervention.

5.3 Recommendations

Based on the findings and conclusions of this study, the following recommendations are proposed:

1. **Prioritize Infrastructure Investment:** The Angolan government should prioritize strategic investments in technology infrastructure, including expanding internet access, improving data storage capabilities, and ensuring reliable power supply. This is the foundational step for enabling AI adoption.
2. **Develop AI-Specific Education and Training Programs:** Invest in education and training programs at all levels to cultivate a skilled workforce capable of developing, implementing, and maintaining AI systems. This includes promoting STEM education, offering specialized AI training courses, and fostering collaborations between universities and industry.
3. **Establish a Clear Ethical and Regulatory Framework:** Develop a comprehensive ethical framework and robust data privacy regulations to govern AI development and deployment. This should include guidelines for fairness, transparency, accountability, and data security, ensuring responsible and trustworthy AI practices.
4. **Promote Public Awareness and Engagement:** Raise public awareness about the potential benefits and risks of AI through educational campaigns and community engagement initiatives. This will foster greater understanding and acceptance of AI technologies.
5. **Encourage Collaboration and Partnerships:** Foster collaboration and partnerships between government, industry, academia, and civil society to promote AI innovation and adoption. This includes creating platforms for knowledge sharing, supporting research and development, and facilitating access to funding and resources.
6. **Focus on Sector-Specific AI Applications:** Develop targeted AI solutions for key sectors, such as education, healthcare, and agriculture, to address specific challenges and improve outcomes. This should involve identifying priority areas, piloting innovative AI applications, and scaling successful initiatives.
7. **Address Economic Diversification:** Government officials must be aware of Economic Diversification challenges and promote initiatives and policies that include the participation of all Angolan citizens, from all sectors of the economy.

5.4 Future Research Directions

This study provides a foundation for future research on AI adoption in Angola. Further research is recommended in the following areas:

- **Empirical Studies:** Conduct empirical studies to assess the actual impact of AI interventions on development outcomes in specific sectors.
- **Qualitative Exploration:** Gather more in-depth qualitative data to understand the nuanced perspectives and experiences of various stakeholders regarding AI adoption.
- **Comparative Analysis:** Compare AI adoption strategies and outcomes in Angola with those in other African countries to identify best practices and lessons learned.

- **Ethical Framework Development:** Develop a context-specific ethical framework for AI in Angola, taking into account cultural values and societal needs.
- **Impact Assessment:** Conduct comprehensive impact assessments to evaluate the long-term social, economic, and environmental consequences of AI adoption in Angola.

By addressing these recommendations and pursuing further research, Angola can harness the transformative power of AI to achieve sustainable development and improve the lives of its citizens.

Key Improvements and Considerations:

- **Holistic Approach:** This chapter synthesizes all elements of your study—introduction, literature review, methodology, findings—to provide a complete narrative.
- **Actionable Recommendations:** The recommendations are specific, actionable, and tailored to the Angolan context.
- **Future Research:** The future research directions guide further exploration and build upon the foundations laid by your study.
- **Clarity and Conciseness:** The language is clear, concise, and avoids jargon.
- **Consider your Actual Chapter 4:** This draft *assumes* the content of Chapter 4. You'll need to replace the bracketed summaries with *your actual findings* for that chapter. The more detailed your Chapter 4 summary, the stronger your conclusions and recommendations will be.
- **Be Specific:** The best dissertations have conclusions that are *directly supported* by the evidence presented. Make sure your recommendations are clearly linked to your findings.

Further research in the identified areas can contribute to a deeper understanding of the transformative potential of AI adoption in Angolan societies, ultimately advancing the quality and accessibility services for all.

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Appendix i: AUREC Approval Letter



AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 Website: www.africanu.edu

Ref: AU 3487/24

25 October 2024

VICTORINO ALMEIDA

C/O Africa University

Box 1320

MUTARE

RE: THE FUTURE PROSPECTS OF ADOPTION IN ANGOLAN SOCIETIES

Thank you for the above-titled proposal you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal

- **APPROVAL NUMBER** AUREC 3487/24
This number should be used on all correspondences, consent forms, and appropriate document
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** October 25, 2024
- **EXPIRATION DATE** October 25, 2025
- **TYPE OF MEETING:** Expedited
After the expiration date, this research may only continue upon renewal. A progress report on a standard AUREC form should be submitted a month before the expiration date for renewal purposes.
- **SERIOUS ADVERSE EVENTS** All serious problems concerning subject safety must be reported to AUREC within 3 working days on the standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.



Yours Faithfully

MARY CHINZOU

ASSISTANT RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE

Appendix ii: AUREC Proof of Payment

 AFRICA UNIVERSITY	Account Number <u>1250</u>	143344
	Date <u>17/09/2024</u>	
Received from <u>Victorino De Almeida</u>	USD R/S	
For <u>AUREC FEES</u>	15-00	
The Sum of \$ <u>fifteen USD</u>		
<u>dollars</u>		
Cash ☐ Swipe ☒ Transfer ☐ Mobile ☐	<u>Ruseba</u>	With Thanks

Print Solutions: 0774 093 686

Appendix iii: Questionnaire

SECTION A: Participant's Information

1. What is your age?

-18-24

-25-34

-35-45

-Above 45

2. Gender:

-Male

-Female

3. Occupation

-Student

-Technology Supplier or IT Professional

-Government Representative

-NGOs

4. Region

-Africa

-Europe

-Asia

-North America

SECTION B: Awareness and Understanding of AI

5. Familiar with Artificial Intelligence (AI)

-Very Well-Known Familiar

-Familiar

-A Little Known Familiar

6. What sources do you rely on for information about AI? (e.g., media, academic publications, workshops)

SECTION C: Perceptions of AI Adoption

7. In your opinion, how beneficial is AI for addressing challenges in Angola? (Scale: 1-5)

8. What sectors do you believe will benefit most from AI adoption? (Select all that apply)

-Healthcare

-Agriculture

-Education

-Finance

-Logistics and Transportation

-Other (please specify)

SECTION D: Challenges to AI Adoption

8. What do you consider the biggest challenges to AI adoption in Angola? (Select all that apply)

-Limited infrastructure

-Lack of skilled personnel-

-Ethical concerns

-Data privacy issues

-Economic Diversion

-Other (please specify)

9. How significant do you think these challenges are? (Scale: 1-5)

SECTION E: Ethical Considerations

10. What ethical issues do you think are most important regarding AI in Angola? (Select all that apply)

-Bias in algorithms

-Data privacy and security

-Job displacement

-Cultural Considerations

-Other (please specify)

11. How confident are you that ethical considerations will be addressed in AI development? (Scale: 1-5)

SECTION F: Opportunities for AI Implementation

12. In which areas do you see the most potential for AI to make a positive impact? (Open-ended)

13. What specific initiatives or projects involving AI would you like to see implemented in Angola? (Open-ended)

SECTION G: Recommendations for Policymakers

14. What policies do you think would support effective AI adoption in Angola? (Open-ended)

15. How can stakeholders collaborate to enhance AI integration in various sectors? (Open-ended)