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The cart before the horse or the horse before the cart – towards AI Policy for Business Practices in Africa

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Abstract

This study seeks to explore the level, scope, and nature of artificial intelligence (AI) policy development for business practices in Africa. Utilizing the PRISMA methodology, fifty-two relevant articles were sourced from the Scopus database and critically analysed. The findings reveal that AI development and diffusion for business operations in Africa are still in their early stages. Moreover, there is a notable paucity of research focused on AI policy for business practices, with only fifty-two articles published on the topic between 2008 and 2024. The existing studies are predominantly in the fields of health, agriculture, higher education, and e-government, with a geographical focus on Southern and Eastern Africa specifically South Africa, Kenya, and Rwanda, with limited research addressing West Africa, particularly Nigeria. Notably, only five out of the fifty-two studies directly addressed AI policy for regulating business practices in Africa. The analysis has so far identified five thematic clusters related to AI policy in business namely governance frameworks, ethical considerations, infrastructure readiness, capacity building, and sector-specific applications. This paper is an ongoing study that underscores the urgent need for African countries to develop robust AI policy frameworks to ensure the fair, ethical, and equitable use of AI in business practices and provides recommendations for policy development and future research.

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Keywords: Disruptive technology, artificial intelligence, business, policy, Africa, adoption.

1. Introduction

Artificial Intelligence (AI) has emerged as a transformative force in various sectors, with its potential to revolutionize business practices by enhancing efficiency, improving decision-making, and fostering innovation. However, as AI technology becomes increasingly integrated into business operations, concerns about its ethical use and the potential for unfair practices have also risen, particularly in regions with developing economies, such as Africa.

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The complexity of AI applications in business, coupled with the unique socio-economic challenges of the African continent, necessitates a robust policy framework to ensure that AI is used to promote fair business practices.

This literature review seeks to explore the existing research on AI applications, focusing on key areas such as infrastructure readiness, policy development, ethical considerations, and practical challenges in the African context. By synthesizing the findings from various studies, this review aims to identify the gaps in current AI practices and provide a foundation for developing a policy guide that can help businesses leverage AI responsibly and equitably. The specific objectives of the study are to ascertain the level, scope, and nature of artificial intelligence (AI) policy development for business practices in Africa. The next sections of the paper cover the methodology, results, discussion and conclusions.

2. Methodology

The study used the PRISMA methodology [1] to search for and analyse 52 articles on artificial intelligence policy for business practices in Africa (Fig.1). The 52 documents included in this research were all relevant and did not contain any obvious mismatches related to the study's focus on artificial intelligence policy for business practices in Africa. The titles, abstracts and keywords either explicitly mentioned AI, digital health, ICT, or other technology-related terms that align with the general theme of artificial intelligence in Africa.

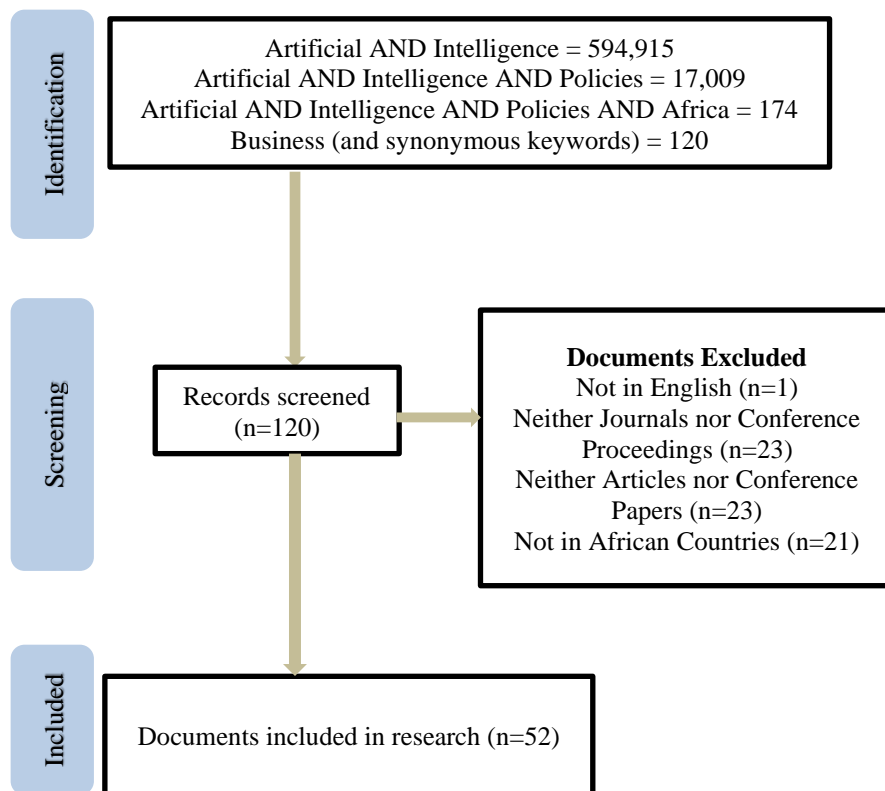


Fig. 1: PRISMA methodology used for the study

While the PRISMA methodology provided a rigorous framework for the systematic review, there are limitations associated with the selected studies. Firstly, reliance on the Scopus database may have excluded relevant articles indexed in other databases, potentially limiting the comprehensiveness of the review. Secondly, the scope of the included studies varied significantly, with some providing broad overviews and others focusing on specific applications of AI, which may affect the generalizability of the findings. Thirdly, the uneven geographical distribution of studies, with a concentration in Southern and Eastern Africa and limited representation from West Africa,

particularly Nigeria, indicates a potential regional bias in the literature. Lastly, the relatively small number of studies directly addressing AI policy for regulating business practices suggests a gap in the literature that may impact the depth of analysis in this specific area.

3.0 Results

One of the objectives of the study was to ascertain the level of artificial intelligence (AI) policy development for business practices in Africa in terms of scholarly outputs. This was addressed by carrying out a publication trends analysis. Although the search was not limited by year, the results show that the first document was published in 2008 and since then, only 52 articles have been published on the subject. This indicates a lack of depth in the literature on artificial intelligence policies for business practices in Africa. The results show a clear trend of increasing research output over time, particularly in the last two years. There has been a marked surge in publications from 2020 onward, with 16 articles published in 2024 alone. This suggests a growing interest and investment in research related to AI in Africa, especially in recent years. The earlier years (2008-2018) show sporadic publications, indicating that the topic has gained significant traction only in the past few years.

Another objective of the study was to determine the scope, and nature of artificial intelligence (AI) policy development for business practices in Africa. To achieve this, a co-citation analysis and thematic mapping were carried out to establish the current thread of research on AI Policy for Business in Africa as well as the thematic areas (Fig. 2 and Fig. 3).

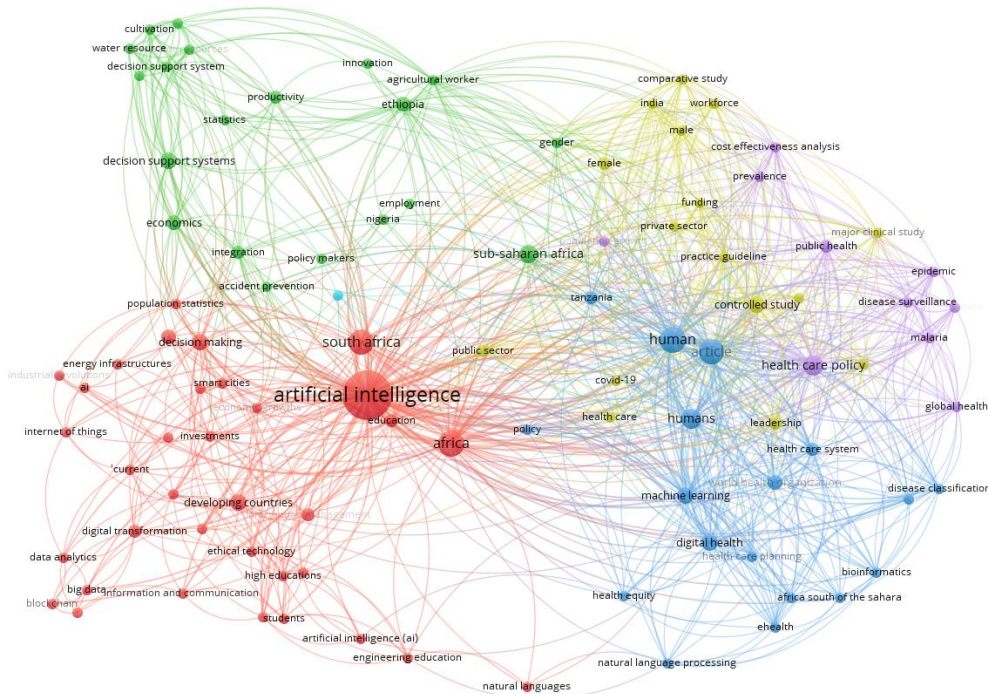


Fig. 2: Cluster of current thread of research on AI Policy for Business in Africa

The co-citation analysis (Fig. 2) shows five overlapping clusters in terms of areas of application of AI in business practices in Africa. The analysis shows that African businesses have and continue to invest in AI infrastructure in terms of decision support systems in the areas of business economics, statistics, innovation, productivity, agriculture cultivation and water resources. African businesses continue to adopt AI in their decision-making process especially in the areas of business investment, managing smart cities, population statistics, energy, digital transformation process and higher education. In addition, African businesses apply machine learning and natural language processing to understand health equity, for healthcare planning, bioinformatics, and the implementation of digital health, electronic health systems, and healthcare systems. It was noted that AI is utilised in

African countries for healthcare policymaking in the form of disease surveillance and classification, public health management and epidemic and global health management. The use of AI by businesses for research and information management was evident in the areas of comparative, controlled and clinical studies and for developing practice guidelines.

3.1 Thematic Focus of Research on AI Policy for Business in Africa

The analysis of abstracts, titles and author keywords reveals that the most common themes include “Artificial intelligence”, “Africa”, “South Africa”, and “decision support system” with the first two being the most prominent. This suggests a strong focus on AI as it pertains to the African context, with South Africa being a significant geographic focus. Other notable themes include "Digital health," "Digital transformation," and "Blockchain," indicating that AI research in Africa is not limited to a single sector but spans healthcare, education, technology, and the broader digital domains and initiatives. The frequent mention of "sub-Saharan Africa" and "AI" underscores the regional focus of the research, reflecting both the challenges and opportunities that AI presents in these specific contexts. The presence of multiple references to "Blockchain" alongside AI suggests an interest in how these two technologies can be leveraged together, particularly in areas such as finance, supply chain management, and secure data handling.

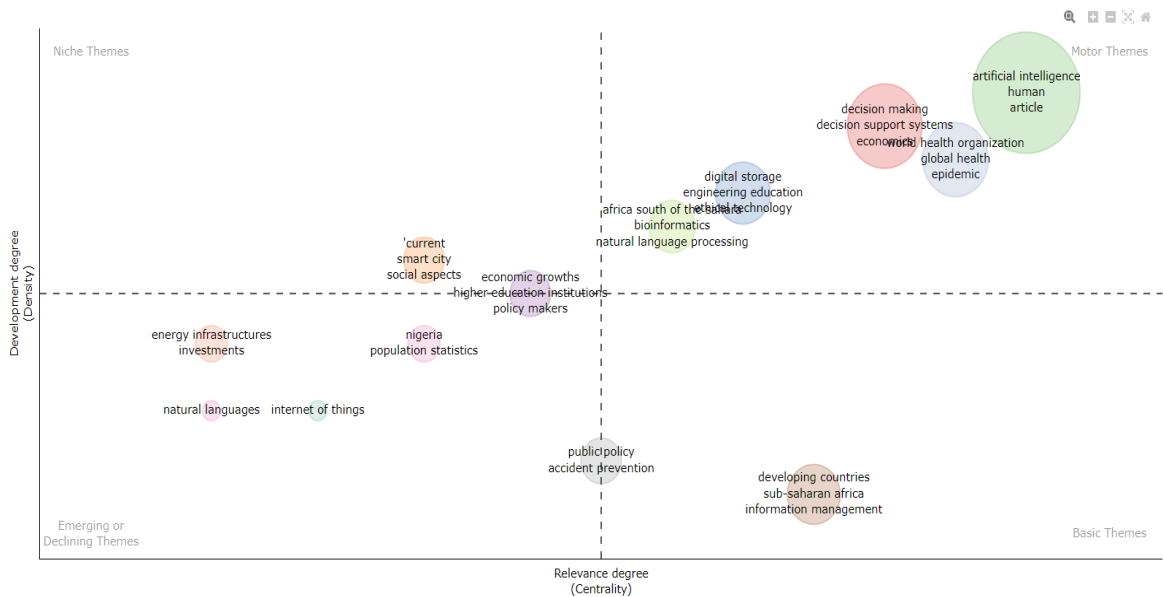


Fig. 3: Thematic Map of Research on AI Policy for Business Practice in Africa

3.2 Research Gaps and Implications

The literature review revealed several critical insights into the thematic areas of AI adoption and its implications for business practices in Africa. Key research gaps and their implications are discussed below:

Infrastructure and Capacity Gaps: Several studies highlighted the significant gaps in infrastructure and capacity that hinder the widespread adoption of AI in Africa. For instance, the research by [2] emphasized the need for targeted investments in AI infrastructure and capacity building to support AI integration in higher education and business practices. The lack of robust digital infrastructure limits businesses' ability to implement AI solutions effectively, impeding potential gains in efficiency and innovation.

Ethical Concerns, Governance, and Policy Gaps: Ethical considerations surrounding AI deployment in Africa are not extensively covered. While some works discuss research ethics and the ethical challenges in AI applications in global health [3], there is a need for further research into the sociocultural impacts, data privacy issues, and the ethical challenges that arise from AI integration across different sectors [4].

The influence of AI on governance and public policy in Africa is another underrepresented area. Although some studies touch on the implications of AI for higher education and governance in specific contexts [5], comprehensive research on how AI can improve governance outcomes and public service delivery is lacking. The absence of clear policies to govern AI use is a significant barrier to ensuring fair business practices.

Ethical considerations also emerged as a central theme, particularly in studies focusing on cybersecurity [6] and financial services [7]. These studies underscored the importance of developing explainable AI (XAI) frameworks to enhance transparency and build trust among users. The lack of clear policies to govern AI use was identified as a major barrier to ensuring fair business practices.

AI for Decision-Making and Business Efficiency: The potential of AI to improve decision-making and business efficiency was demonstrated across several domains. For example, cognitive computing was shown to significantly enhance financial decision-making by identifying patterns that human analysts might miss [7]. Similarly, AI-driven predictive maintenance was found to reduce downtime and maintenance costs in manufacturing [8]. However, the adoption of these technologies is limited by infrastructural and capacity constraints.

Challenges in Scalability and Implementation: The scalability of AI solutions, particularly in diverse and resource-constrained environments, was a recurring challenge. Studies on adaptive learning [9] and disaster management [10] highlighted the difficulties in scaling AI technologies to accommodate larger, more diverse populations and varying regional conditions.

Sector-Specific Findings: The review also uncovered sector-specific insights, such as the need for better integration of AI with existing health informatics systems in healthcare [11] and the challenges of using AI for financial fraud detection in evolving market conditions [12].

AI and Economic Development: Although there is a notable discussion of AI's role in sectors like health and education, the literature reveals a scarcity of studies that explore the broader economic implications of AI in Africa. While some studies discuss AI's impact on economic sectors such as renewable energy and industrial productivity [13][14], a comprehensive examination of AI's potential to drive economic growth and sustainable development remains underexplored.

Localization of AI Technologies: The adaptation of AI technologies to suit the unique socio-economic and cultural contexts of African countries is underexplored. No significant studies were found that specifically address this issue, indicating a gap in research focused on developing AI solutions tailored to local needs and challenges.

Funding and Support Structures: The literature review also highlights a gap in understanding the funding landscape for AI research and development in Africa. While some works discuss challenges in AI development and the role of academic institutions [15], there is limited discussion on how AI initiatives are funded, the role of international collaborations, and the potential for increasing financial support to advance AI research on the continent.

4. Discussion

The findings from this literature review underscore the critical need for a comprehensive policy framework to guide the ethical and equitable use of AI in business practices, especially in Africa. The identified gaps in infrastructure, capacity, and policy highlight the importance of targeted investments and the development of context-specific guidelines that address the unique challenges faced by businesses in Africa.

Globally, AI policy development has gained significant momentum, with countries and regions like the European Union, the United States, and China establishing comprehensive AI strategies and regulatory frameworks. These policies often address ethical considerations, data privacy, accountability, and transparency, aiming to harness AI's benefits while mitigating its risks. Africa's lag in AI policy development places it at a disadvantage in the global landscape, potentially exacerbating existing socio-economic disparities.

Ethical considerations, particularly regarding explainability and transparency, must be at the forefront of AI policy development. The lack of trust in AI systems, driven by their opaque decision-making processes, poses a significant barrier to their adoption in business. Developing explainable AI frameworks that allow users to understand and trust AI-driven decisions is essential for fostering a fair and inclusive business environment. For example, South Africa's Draft National Policy on Data and Cloud [16] highlights the need for transparency and accountability in AI applications, setting a precedent for other African countries.

Addressing infrastructure and capacity gaps requires concerted efforts from governments, the private sector, and international partners. Investment in digital infrastructure, such as broadband connectivity and data centres, is crucial. Capacity-building initiatives, including education and training programs in AI and related fields, can equip

the workforce with the necessary skills. Rwanda's establishment of the African Institute for Mathematical Sciences [17] and its focus on AI education exemplify how targeted efforts can build local capacity.

The scalability of AI technologies remains a major challenge, particularly in sectors such as education and disaster management, where the diversity of needs and conditions can complicate implementation. Therefore, policies must be flexible enough to adapt to different contexts and ensure that the benefits of AI are widely distributed. AI technologies need to be adapted to local languages, cultural norms, and socio-economic conditions. Initiatives like Google's AI research centre in Ghana [18] aim to develop AI solutions tailored to African challenges, such as improving healthcare diagnostics and agricultural productivity.

To address the identified challenges in AI policy development for business practices in Africa, some policy recommendations are proposed. Firstly, African governments should develop comprehensive national AI strategies that articulate clear visions for AI integration in business practices. These strategies should include ethical guidelines, regulatory frameworks, and investment priorities to guide the responsible development and use of AI technologies. By establishing clear national agendas, governments can coordinate efforts across different sectors, attract investment, and ensure that AI initiatives align with broader economic and social objectives.

Secondly, there is a pressing need to establish ethical frameworks that create guidelines and standards for AI use in business. These frameworks should focus on transparency, accountability, fairness, and respect for human rights, aligning with international best practices while considering local socio-cultural contexts. By incorporating ethical considerations into AI policies, businesses can build trust with consumers and stakeholders, mitigate risks associated with AI deployment, and promote the equitable use of AI technologies across society.

Implementing robust data governance policies is thirdly essential to ensure data privacy, security, and ethical use. Such policies foster trust among businesses and consumers by protecting sensitive information and establishing clear protocols for data handling. Effective data governance can mitigate risks related to data breaches and misuse, enhance compliance with international data protection standards, and support the development of secure AI applications that respect user privacy.

Lastly, promoting public-private partnerships is crucial to accelerate AI development and adoption. Encouraging collaborations between government, the private sector, and international partners can facilitate the sharing of resources, expertise, and drive investment in AI infrastructure and research. These partnerships can help overcome resource constraints, foster innovation through collaborative research and development, and support capacity-building initiatives. By working together, stakeholders can create a supportive ecosystem that enables businesses to leverage AI technologies effectively and contributes to sustainable economic growth.

Overall, the review reveals that while AI has the potential to enhance business efficiency and decision-making, its benefits are not uniformly accessible across all sectors or regions. The integration of AI with existing systems, particularly in healthcare and financial services, is another critical area that requires attention. Ensuring that AI systems can work seamlessly with current infrastructure is key to maximizing their effectiveness and minimizing disruption. By explicitly connecting the findings to broader global trends and highlighting potential future developments in AI policy, this discussion emphasizes the importance of proactive policy development. Addressing the gaps through targeted initiatives can enable African businesses to leverage AI responsibly and equitably, contributing to economic growth and improved societal outcomes.

5.0 Conclusion

This literature review reinforces the conclusion that AI research in Africa is rapidly growing and is characterized by a strong focus on addressing local challenges through innovative applications of AI technology. However, significant gaps remain in infrastructure, capacity, ethical considerations, and policy development, which hinder the widespread and equitable adoption of AI in business practices. Consequently, the following specific recommendations are proposed:

- 1) **Policy Development and National AI Strategies.** African governments should develop comprehensive national AI strategies that outline clear visions for AI integration in business practices, including ethical guidelines, regulatory frameworks, and investment priorities. It is equally important for business leaders in Africa to develop robust ethical frameworks for responsible and fair use of AI. Establish ethical guidelines and standards for AI use in business, focusing on transparency, accountability, fairness, and respect for human rights. These frameworks should align with international best practices while considering local socio-

cultural contexts. In addition, AI thrives on data; it is therefore imperative for businesses and governments in Africa to focus their attention on data governance. Government and business leaders in Africa need to implement robust data governance policies that ensure data privacy, security, and ethical use, fostering trust among businesses and consumers.

- 2) Capacity building in the form of education and training is fundamental to the effective adoption and use of AI for business practices. African governments and businesses must therefore invest in education and training programs to build local expertise in AI and related fields to be able to leverage AI to solve African problems. This can be achieved through partnerships with universities and technical institutions to develop curricula that equip the workforce with the necessary AI skills for business operations. There is also the need for research and development support especially for small and medium enterprises to be able to leverage the immense capabilities of AI for operations. African businesses and governments should increase funding and support for AI research and development, to drive innovation and the creation of solutions tailored to African contexts.
- 3) Infrastructure Development. Digital infrastructure is the foundation of any technology-driven economy. It is therefore critical for African governments and business leaders to prioritise investments in digital infrastructure, such as broadband connectivity and data centres, to support AI technologies' deployment and scalability. However, in those African countries where investments in digital infrastructure might seem high, African governments can explore public-private partnerships. Business leaders are encouraged to collaborate with government, private sector, and international partners to share resources, expertise, and drive investment in AI infrastructure and research.

The study highlights the highly interdisciplinary nature of studies on AI, often AI being applied in several fields to tackle complex issues such as healthcare access, digital transformation, and financial inclusion. There is a clear trend towards ensuring that AI technologies are adapted to the specific needs and contexts of African countries, which is crucial for their successful implementation and sustainability. Moreover, the analysis highlights both the progress being made and the gaps that still exist in the literature. For instance, while there is considerable focus on the potential of AI, there is less emphasis on the ethical implications and the need for equitable access to AI-driven solutions. Addressing these gaps will be critical as the field continues to evolve. Also, this literature review highlights the urgent need for a policy guide that addresses the ethical, infrastructural, and practical challenges of AI adoption in business practices, particularly in Africa.

The findings suggest that such a policy should focus on building AI infrastructure, enhancing capacity, developing explainable AI frameworks, and ensuring scalability and integration with existing systems. By addressing these issues, the policy can help businesses in Africa leverage AI to enhance efficiency and decision-making while ensuring that its use is fair, transparent, and inclusive. As AI continues to evolve, ongoing research and policy development will be crucial to navigating the complex landscape of AI ethics and business practices, ultimately contributing to sustainable and equitable growth across the continent. In summary, AI research in Africa is on a promising trajectory, with growing recognition of the need to tailor AI solutions to the continent's unique challenges and opportunities. This research not only contributes to the global AI discourse but also plays a vital role in driving sustainable development across the continent.

The study ends with some suggestions for future research. It is recommended that future research look into the localisation of AI technologies and how this can help solve unique but complex African problems. For example, how can businesses develop AI solutions and adapt these to the unique socio-economic and cultural contexts of African countries? It is also important for future studies to look into assessing the economic impact of AI to justify AI adoption in African business operations. In future, researchers can consider conducting comprehensive studies on AI's potential to drive economic growth and sustainable development in Africa to help inform policy and investment decisions. Finally, AI initiatives are inherently projects that provide evidence of case studies and best practices from which to learn. Therefore, documenting and analysing successful AI policy implementations to provide valuable insights and models for other countries should be a top consideration by African governments and business leaders.

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