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**Ethical Issues in Artificial Intelligence Adoption in African Higher
Education Institutions in Nigeria**

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Nigeria**



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Abstract

Purpose: The aim of the study was to investigate the ethical issues in artificial intelligence adoption in African higher education institutions.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: Ethical concerns surrounding the adoption of Artificial Intelligence (AI) in African higher education institutions reveal key findings from recent studies. These include issues of data privacy, transparency in AI algorithms, and ethical implications in decision-making processes. Universities in Africa implementing AI technologies must navigate challenges such as ensuring ethical data handling and maintaining transparency in AI systems.

Unique Contribution to Theory, Practice and Policy: Ethical frameworks in AI adoption, critical theory & ethics of care may be used to anchor future studies on the ethical issues in artificial intelligence adoption in African higher education institutions. Embed ethics education into AI courses and training programs across African universities. Equip students, educators, and AI developers with the knowledge and skills to identify, analyze, and address ethical dilemmas associated with AI technologies. Develop and enforce clear, context-specific AI ethics policies and regulatory frameworks at national and institutional levels. These policies should outline guidelines for data management, algorithmic transparency, and ethical review processes.

Keywords: *Ethical Issues, Artificial Intelligence Adoption, African Higher Education Institutions*

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INTRODUCTION

Ethical implementation refers to the process of integrating ethical principles and standards into the development, deployment, and use of technologies, particularly in fields like artificial intelligence (AI). This approach ensures that technological advancements benefit society while minimizing potential harms and risks. Ethical implementation involves creating frameworks, guidelines, and practices that uphold values such as fairness, transparency, accountability, and respect for human rights. One crucial aspect of ethical implementation is the development of clear and comprehensive guidelines that guide the design and deployment of AI systems. For example, in developed economies like the USA and Japan, ethical implementation frameworks such as the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems provide guidelines that advocate for transparency in decision-making processes of AI algorithms, ensuring they are accountable and unbiased (IEEE Standards Association, 2019).

Another key element of ethical implementation is fostering public trust through stakeholder engagement and awareness initiatives. In countries like the UK, efforts are made to involve diverse stakeholders, including researchers, policymakers, industry leaders, and the public, in shaping ethical guidelines for AI technologies. This inclusive approach helps address societal concerns and ensures that AI systems are developed and deployed in ways that align with ethical standards and public expectations (UK Government Office for Artificial Intelligence, 2020). In the USA, for instance, ethical implementation in AI has been significantly influenced by initiatives such as the development of AI ethics guidelines by organizations like the IEEE and the Partnership on AI. These guidelines aim to ensure that AI technologies are developed and deployed in a manner that respects ethical principles such as fairness, transparency, and accountability. According to a recent study by Robillard (2019), ethical considerations in AI development have gained prominence, with 82% of AI developers acknowledging the importance of ethical guidelines in their work. This statistic underscores the growing recognition of ethical implementation as a critical aspect of AI innovation in the USA. In Japan, ethical implementation in AI is similarly guided by frameworks that emphasize human-centric AI development. The Japanese government has established AI R&D policies that prioritize ethical considerations, aiming to foster AI technologies that benefit society while minimizing risks. For example, the AI R&D Strategy formulated by the Ministry of Economy, Trade, and Industry (METI) includes provisions for ethical guidelines that govern AI applications in various sectors, from healthcare to finance. These guidelines are informed by principles such as safety, security, and respect for human rights, as highlighted in a study by Taddeo and Floridi (2020). This approach ensures that AI technologies in Japan are aligned with societal values and ethical norms, promoting responsible innovation.

In Germany, ethical implementation of AI is guided by principles of data protection and privacy, aligned closely with the European Union's General Data Protection Regulation (GDPR). The German Ethics Commission on Automated and Connected Driving has developed guidelines that prioritize safety, data security, and ethical decision-making in autonomous driving technologies. These efforts ensure that AI applications in Germany adhere to rigorous ethical standards, aiming to build public trust and confidence in AI technologies (Jeske et al., 2020). France has adopted a proactive approach to AI ethics through the establishment of the French Strategy for Artificial Intelligence. This strategy emphasizes the importance of ethical guidelines that promote fairness, accountability, and human-centric AI development. The French Data Protection Authority (CNIL)

has been instrumental in developing guidelines that address ethical challenges such as algorithmic transparency and the right to explanation, ensuring that AI technologies in France uphold fundamental rights and ethical principles (Boudes, 2021).

Canada has been proactive in developing ethical guidelines for AI through initiatives like the Canadian AI Strategy. The strategy emphasizes principles such as transparency, accountability, and inclusivity in AI development and deployment. Canada's approach includes regulatory frameworks that prioritize data privacy and ethical considerations, aiming to foster public trust and responsible innovation in AI technologies (Government of Canada, 2017). In Australia, ethical implementation of AI is guided by principles outlined in the AI Ethics Framework. Developed by the Australian Government, the framework promotes values such as fairness, privacy protection, and human-centric AI development. Australia's approach includes initiatives to engage stakeholders and develop guidelines that address ethical challenges in AI applications across sectors like healthcare, finance, and transportation (Department of Industry, Science, Energy and Resources, 2019).

Moving to developing economies, ethical implementation in countries like India and Brazil faces unique challenges and opportunities. In India, for instance, efforts are underway to establish AI ethics frameworks that address cultural sensitivities and social inequalities. The National Strategy for Artificial Intelligence, launched by NITI Aayog, outlines principles for ethical AI development that prioritize inclusive growth and ethical considerations in AI deployment. Similarly, in Brazil, the adoption of AI is accompanied by efforts to integrate ethical guidelines that uphold principles of fairness and transparency. These initiatives aim to ensure that AI technologies contribute positively to societal development while minimizing potential risks and ethical concerns. In India, ethical implementation of AI is guided by the National Strategy for Artificial Intelligence, which includes principles such as privacy protection, transparency, and inclusivity. The strategy aims to leverage AI technologies for socio-economic development while addressing ethical concerns related to data privacy, algorithmic bias, and accountability. Initiatives such as the AI for All program promote ethical AI research and development that considers India's diverse cultural and societal contexts, ensuring responsible AI adoption across various sectors (NITI Aayog, 2018).

Brazil is integrating ethical guidelines into AI development to ensure responsible innovation and societal benefits. The Brazilian Artificial Intelligence Strategy focuses on principles of fairness, accountability, and transparency in AI technologies. Initiatives such as the National Strategy for Artificial Intelligence aim to foster ethical AI adoption that respects human rights and cultural diversity. By developing AI ethics frameworks tailored to Brazilian contexts, policymakers seek to mitigate risks and promote the ethical use of AI in areas like healthcare, agriculture, and public administration (Ministério da Ciência, Tecnologia e Inovações, 2020). China has adopted a comprehensive approach to AI ethics through national strategies and guidelines. The Beijing AI Principles, for example, outline ethical guidelines that emphasize safety, fairness, and accountability in AI technologies. China's regulatory framework includes initiatives to address ethical challenges such as algorithmic bias and data privacy, reflecting the country's commitment to responsible AI innovation amidst rapid technological advancements (China Academy of Information and Communications Technology, 2019). Mexico is advancing ethical implementation of AI through initiatives like the National Strategy for Artificial Intelligence. The strategy focuses on principles of transparency, accountability, and societal benefit in AI

development and deployment. Mexico's approach includes efforts to establish ethical guidelines that address cultural and societal impacts of AI technologies, promoting responsible AI adoption across various sectors including education, healthcare, and public administration (Ministry of Economy of Mexico, 2020).

In Sub-Saharan Africa, ethical implementation of AI is emerging as a critical area of focus amidst rapid technological advancements. Countries like Kenya and South Africa are exploring strategies to develop AI ethics frameworks that are contextually relevant and inclusive of diverse cultural perspectives. Initiatives such as the African Artificial Intelligence Policy and Strategy in Kenya aim to guide ethical AI development that promotes transparency, accountability, and equity. These efforts are crucial in ensuring that AI technologies in Sub-Saharan Africa contribute to sustainable development goals while upholding ethical standards and protecting human rights.

In Kenya, ethical implementation of AI is gaining traction through initiatives like the African Artificial Intelligence Policy and Strategy. The strategy emphasizes ethical AI development that promotes transparency, accountability, and respect for human rights. By integrating ethical guidelines into AI research and deployment, Kenya aims to harness AI technologies for sustainable development while addressing ethical concerns such as bias mitigation and data protection. Stakeholder engagement and capacity-building efforts are key components of Kenya's approach to ensuring responsible AI adoption across diverse sectors (AI Kenya, n.d.). South Africa is advancing ethical implementation of AI through initiatives that prioritize ethical guidelines and regulatory frameworks. The South African Responsible AI Principles outline principles such as fairness, accountability, and privacy protection in AI development and deployment. Efforts by regulatory bodies and research institutions aim to promote ethical AI practices that align with South Africa's socio-cultural contexts and legal frameworks. By fostering ethical AI innovation, South Africa seeks to maximize the benefits of AI while minimizing risks and ensuring societal inclusivity (Department of Communications and Digital Technologies, 2021).

Nigeria is developing its approach to AI ethics through initiatives that prioritize ethical guidelines and regulatory frameworks. The Nigerian National AI Strategy aims to promote principles such as fairness, transparency, and data protection in AI technologies. Nigeria's strategy includes capacity-building programs and stakeholder engagements to address ethical concerns related to AI adoption in sectors like agriculture, fintech, and telecommunications (National Information Technology Development Agency, 2020). In Ghana, efforts are underway to integrate ethical considerations into AI development and deployment through initiatives such as the Ghana AI Policy and Strategy. The strategy emphasizes principles of inclusivity, accountability, and ethical governance in AI technologies. Ghana's approach includes collaboration with stakeholders to develop guidelines that promote responsible AI innovation while ensuring respect for human rights and societal values (National Communications Authority of Ghana, 2021).

AI ethics guidelines serve as frameworks to ensure the responsible development and deployment of artificial intelligence technologies. These guidelines typically emphasize several key principles. Firstly, transparency and explainability require AI systems to be understandable and accountable, ensuring that decisions made by AI are traceable and comprehensible to stakeholders (Florida, 2018). Secondly, fairness and non-discrimination advocate for AI systems to avoid bias and ensure equitable treatment across diverse populations, preventing unjust outcomes and promoting inclusivity (Jobin, 2019). Thirdly, privacy and data governance guidelines focus on protecting user

data and maintaining confidentiality, emphasizing the ethical collection, storage, and usage of personal information (Mittelstadt, 2016). Lastly, accountability and oversight guidelines emphasize the need for clear responsibility frameworks and regulatory mechanisms to address the consequences of AI systems' actions, ensuring accountability for both developers and users (Boddington, 2017).

Implementing these AI ethics guidelines ethically requires integrating them into organizational policies and practices. This involves embedding ethical considerations into the design, development, and deployment phases of AI systems (European Commission, 2019). Ethical implementation also entails ongoing monitoring and evaluation to assess adherence to guidelines and address emerging ethical challenges (Jobin, 2019). Moreover, fostering interdisciplinary collaboration among stakeholders, including ethicists, technologists, policymakers, and affected communities, is essential to ensure diverse perspectives are considered in AI development and deployment (Floridi, 2018). By adopting these approaches, organizations can promote the responsible use of AI technologies while upholding ethical standards and mitigating potential risks to individuals and society.

Problem Statement

Artificial intelligence (AI) holds significant promise for transforming educational practices in African higher education institutions by enhancing learning experiences, improving administrative efficiency, and facilitating research advancements. However, the adoption of AI technologies in this context raises complex ethical issues that need critical examination. These include concerns over data privacy and security, algorithmic bias in educational outcomes, equitable access to AI-driven educational resources, and the ethical implications of AI-driven decision-making processes in academic settings (Kizito & Banothile, 2021; Maiga, 2020). The rapid integration of AI technologies in African higher education institutions without robust ethical frameworks and guidelines risks exacerbating existing inequalities and potentially compromising academic integrity and student welfare (Ezenwoke & Eze, 2021). Therefore, understanding and addressing these ethical challenges are crucial for maximizing the benefits of AI adoption while mitigating its potential risks in the educational landscape of Africa.

Theoretical Framework

Ethical Frameworks in AI Adoption

This theory focuses on ethical frameworks that guide the development and implementation of AI technologies. One prominent framework is the "Value Sensitive Design" (VSD) proposed by Batya Friedman and colleagues. VSD emphasizes the integration of human values into the design of technology to ensure ethical outcomes and societal well-being (Friedman, 2019). In the context of AI adoption in African higher education, VSD can help identify and mitigate ethical risks related to privacy, fairness, and transparency in AI systems, thereby fostering responsible AI deployment (Friedman, 2019).

Critical Theory

Critical theory, originally developed by the Frankfurt School thinkers such as Theodor Adorno and Max Horkheimer, critiques power structures and societal norms that perpetuate inequality and injustice. Applied to AI adoption, Critical Theory examines how power dynamics influence the

development and use of AI in educational settings, particularly in African contexts where historical inequalities may affect access and outcomes (Fuchs, 2020). By applying Critical Theory, researchers can explore how AI technologies may reinforce or challenge existing educational disparities and advocate for equitable AI policies and practices (Fuchs, 2020).

Ethics of Care

The Ethics of Care, advanced by feminist scholars such as Carol Gilligan, emphasizes relational and contextual ethics, focusing on empathy, responsibility, and interconnectedness. In the context of AI adoption in African higher education, the Ethics of Care encourages considerations of how AI systems affect student-teacher relationships, student well-being, and educational equity (Puig de la Bellacasa, 2017). By integrating the Ethics of Care into AI governance frameworks, institutions can prioritize student-centered ethical practices and ensure that AI technologies enhance rather than undermine educational values and human dignity (Puig de la Bellacasa, 2017).

Empirical Review

Kizito and Banothile (2021) explored the ethical implications of AI adoption in African higher education institutions through a mixed-methods approach involving interviews and surveys. Their study aimed to assess stakeholder perceptions and experiences regarding AI technologies in educational settings. They found that stakeholders expressed significant concerns about data privacy, algorithmic bias, and the ethical implications of AI-driven decision-making processes. Participants emphasized the need for context-specific ethical guidelines tailored to African cultural and educational contexts to ensure fairness and transparency in AI applications. Recommendations from the study included the development of robust AI ethics frameworks that integrate local perspectives and values, as well as enhancing educational programs to raise awareness about ethical considerations among educators, students, and administrators.

Maiga, Thomas and Odiaka (2020) conducted a comprehensive examination of AI's opportunities and challenges in African higher education institutions through case studies and literature reviews. They highlighted the transformative potential of AI technologies in improving access to education and enhancing learning outcomes. However, the study also underscored several ethical dilemmas, such as biases in AI algorithms and concerns over data ownership and privacy. Their findings emphasized the importance of establishing robust AI governance frameworks that prioritize ethical principles and accountability. Recommendations included integrating ethics education into AI curriculum, developing guidelines for ethical AI development and deployment, and fostering interdisciplinary collaborations to address ethical challenges effectively.

Ezenwoke and Eze (2021) analyzed ethical issues arising from AI adoption in higher education institutions across Africa. Their study synthesized existing research to identify key ethical concerns, including privacy risks associated with AI-driven data collection and the need for equitable access to AI technologies. The review highlighted gaps in current ethical guidelines and regulatory frameworks, particularly in the African context, which may not adequately address cultural sensitivities and societal impacts. Recommendations proposed by the authors included establishing AI ethics committees within universities, developing comprehensive AI ethics policies, and integrating ethical considerations into AI research and development practices. They emphasized the importance of proactive measures to ensure responsible AI adoption and mitigate potential risks to students, educators, and institutions.

Abdullahi, Adamu and Isa (2019) conducted a survey among university administrators in Sub-Saharan Africa to assess their awareness and preparedness regarding ethical issues related to AI adoption. The study aimed to gauge administrators' perceptions of ethical challenges, including biases in AI algorithms, data privacy concerns, and implications for academic integrity. Findings indicated varying levels of awareness and readiness among administrators, with many expressing concerns over the ethical implications of AI technologies in higher education. Recommendations from the study included capacity-building initiatives to enhance ethical literacy among administrators, the establishment of clear guidelines for AI research and deployment, and fostering dialogue between academia, industry, and regulatory bodies to develop context-specific ethical frameworks.

Okereke and Alhassan (2018) conducted a qualitative study focusing on the ethical dimensions of AI-driven educational technologies in West African universities. Through focus groups and interviews with stakeholders, they explored concerns such as fairness, transparency, and accountability in the use of AI technologies. The study identified the need for ethical guidelines to govern the development and deployment of AI systems in educational settings, emphasizing the importance of stakeholder engagement and interdisciplinary collaboration. Recommendations included establishing AI ethics boards within universities to oversee ethical issues, integrating ethics education into AI courses, and promoting partnerships between academia and industry to foster responsible AI innovation.

Bello and Afolabi (2022) investigated the ethical implications of AI adoption in Nigerian higher education institutions through case studies and stakeholder interviews. Their study explored ethical dilemmas arising from AI technologies, such as biases in algorithms and concerns over data privacy and security. Findings highlighted the need for comprehensive AI ethics guidelines tailored to Nigerian educational contexts to ensure ethical AI development and deployment. Recommendations included the establishment of regulatory frameworks for AI ethics, capacity-building initiatives for stakeholders, and the promotion of ethical best practices through awareness campaigns and policy advocacy.

Okeke and Nwosu (2023) assessed ethical challenges in AI adoption across African universities. Their study reviewed existing policies and practices related to AI ethics, identifying gaps and opportunities for improvement. Key findings included the need for standardized AI ethics frameworks, transparent data management practices, and the establishment of regulatory bodies to oversee AI adoption. Recommendations emphasized the importance of collaborative efforts between universities, governments, and industry stakeholders to develop robust AI ethics guidelines and ensure compliance with ethical standards. The study advocated for proactive measures to address ethical concerns, promote responsible AI innovation, and safeguard the interests of students, educators, and institutions.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Gaps: While studies like those by Kizito & Banothile (2021) and Maiga (2020) emphasize the need for robust AI ethics frameworks tailored to African contexts, there remains a gap in the development of comprehensive, context-specific guidelines that integrate local cultural values. Current frameworks often do not sufficiently address diverse ethical perspectives and societal norms across different regions in Africa. Despite recommendations to integrate ethics education into AI curricula (Maiga, 2020), there is a gap in understanding how effectively these educational efforts translate into practical ethical behavior among students, educators, and administrators in diverse African educational settings.

Contextual Gaps: Ezenwoke & Eze (2021) highlight gaps in existing AI ethics policies and regulatory frameworks in African higher education institutions. There is a need for more specific guidelines and policies that address the unique socio-cultural contexts and ethical concerns prevalent across different African countries. Abdullahi (2019) reveal varying levels of awareness and preparedness among university administrators regarding ethical issues in AI adoption. This points to a contextual gap in the implementation of consistent and proactive measures to address ethical challenges uniformly across African universities.

Geographical Gaps: Studies such as Okereke & Alhassan (2018) and Bello & Afolabi (2022) underscore ethical dilemmas specific to West African and Nigerian educational contexts, respectively. However, there is a geographical gap in comprehensive comparative analyses that encompass the entire African continent, thereby limiting a holistic understanding of regional variations in AI ethics adoption. Okeke & Nwosu (2023) advocate for collaborative efforts between universities, governments, and industry stakeholders to address ethical challenges. Yet, there remains a gap in the geographical spread and effectiveness of these collaborative initiatives, particularly in fostering cross-border partnerships and knowledge sharing across diverse African regions.

CONCLUSION AND RECOMMENDATIONS

Conclusions

Ethical issues surrounding the adoption of Artificial Intelligence (AI) in African higher education institutions represent a critical area of concern and opportunity for advancement. The studies reviewed highlight a complex landscape where transformative AI technologies offer potential benefits in education accessibility and learning outcomes, yet also introduce significant ethical challenges. These challenges, including algorithmic bias, data privacy concerns, and the need for culturally sensitive AI frameworks, underscore the importance of proactive ethical considerations. A key conclusion drawn from the research is the urgent need for tailored AI ethics frameworks that reflect African cultural contexts and values. This approach not only ensures fairness and transparency in AI applications but also fosters trust among stakeholders—students, educators, administrators, and the broader community. Integrating ethics education into AI curricula emerges as a crucial step toward equipping future professionals with the knowledge and skills to navigate ethical dilemmas responsibly.

Moreover, addressing regulatory and policy gaps in AI ethics across African nations is essential. Establishing clear guidelines and oversight mechanisms can mitigate risks associated with AI adoption while promoting innovation and ethical best practices. Collaborative efforts between academia, government bodies, industry stakeholders, and local communities are pivotal in developing and implementing these frameworks effectively. In conclusion, navigating ethical issues in AI adoption requires a balanced approach that embraces technological innovation while safeguarding ethical principles and societal values. By addressing these challenges comprehensively and collaboratively, African higher education institutions can harness the full potential of AI to enhance learning experiences, promote inclusivity, and contribute positively to global AI discourse.

Recommendations

Theory

Develop Context-Sensitive AI Ethics Frameworks: Tailor AI ethics frameworks to reflect diverse African cultural, social, and educational contexts. Incorporate principles of fairness, transparency, and accountability that resonate with local values and norms. This theoretical contribution ensures that AI technologies are ethically deployed and managed, addressing concerns such as algorithmic bias and data privacy in ways that are meaningful and relevant across the continent.

Practice

Embed ethics education into AI courses and training programs across African universities. Equip students, educators, and AI developers with the knowledge and skills to identify, analyze, and address ethical dilemmas associated with AI technologies. Practical initiatives should focus on fostering a culture of ethical awareness and responsibility among stakeholders, ensuring that ethical considerations are central to the development, deployment, and use of AI systems.

Policy

Develop and enforce clear, context-specific AI ethics policies and regulatory frameworks at national and institutional levels. These policies should outline guidelines for data management, algorithmic transparency, and ethical review processes. Establish AI ethics committees or boards within universities to oversee compliance and address emerging ethical issues. Policy recommendations should aim to harmonize AI regulations across African countries while accommodating regional variations and needs

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