
AI Ethics, Fairness, Transparency and Accountability: A Literature Review

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Abstract: *Artificial Intelligence (AI) systems are increasingly transforming the realms of governance, commercial operations, healthcare, education, security, and social engagement on a global scale. Although these technological advancements promise enhanced efficiency, innovation, and economic revitalization, their swift implementation has raised significant ethical issues concerning fairness, transparency, and accountability. The aim of this study is to critically examine the ethical challenges of fairness, transparency, and accountability in Artificial Intelligence (AI) systems, with particular emphasis on their implications for governance, socio-economic development, and human rights in both global and African (specifically Nigerian) contexts. The investigation amalgamates both conceptual frameworks and empirical studies to assess the potential of algorithmic systems to perpetuate discrimination, obfuscate decision-making processes, and dilute accountability for adverse outcomes. Special emphasis is placed on the realities pertinent to Africa and Nigeria, including issues of digital inequality, data colonialism, infrastructural limitations, cultural norms, and inadequate regulatory enforcement mechanisms. The article also examines emerging governance structures, such as the European Union Artificial Intelligence Act, UNESCO's Recommendation on the Ethics of Artificial Intelligence, OECD AI Principles, and Nigeria's National Artificial Intelligence Strategy. Employing a comparative and analytical methodology, this paper posits that the ethical governance of AI must surpass universalistic assumptions and integrate contextually relevant, culturally informed, and human-centric principles that resonate with African socio-political contexts. The article concludes by asserting that the sustainable development of AI necessitates interdisciplinary collaboration, transparent algorithmic processes, inclusive datasets, independent audits, regulatory alignment, and participatory governance paradigms that effectively reconcile technological innovation with social justice, accountability, and the preservation of human dignity.*

Keywords: accountability, African AI governance, AI ethics, algorithmic fairness, digital governance, ethical AI frameworks, explainable AI, Nigerian AI policy, responsible AI, transparency.

INTRODUCTION

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the twenty-first century, reshaping how individuals, organisations and governments interact with

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technology and make decisions. Its rapid development and expanding applications have contributed significantly to the increasing complexity of contemporary social, economic and technological systems.

The widespread deployment of machine learning systems, generative AI, natural language processing (NLP), predictive analytics, and autonomous systems has transformed economic production, healthcare delivery, educational systems, the governance framework, and global communication processes, among others. The applications of AI include boosting productivity, automating complex tasks and operations, decision-making, and even the speed of scientific discoveries, making these major technology corporations like OpenAI, Google, Meta Platforms and Microsoft continue to pour huge investments. However, AI systems' unexpected expansion has raised significant ethical, legal, and social concerns which still draw academic and policy interest worldwide.

A major concern in the use of AI is whether its decisions are fair and unbiased. This is because variety of data used to develop AI systems may contain historical patterns of inequality and discrimination, which can influence how these systems operate and affect the decisions they produce. This means that this racially biased algorithm can reinforce racial, gender, ethnic, and socio-economic injustice in a range of contexts, such as hiring, law enforcement, lending, clinical diagnoses, and educational testing (UNESCO, 202). If fairness is not considered during the design and implementation of algorithms, then algorithms are capable of reinforcing the existing power structure and excluding vulnerable population groups (UNESCO, 2021; OECD, 2024).

With the rise of AI systems being integral to the access to social and economic opportunities, the principles of fairness are now woven into responsible AI governance (Radanliev, 2025). Likewise, Bukhari and Amakeh (2026) believe that fairness should be built into high-stakes decisions systems by doing continuous auditing, providing explainability measures, and providing institutional oversight. The related theme of fairness is that of transparency. Today, many AI applications, especially deep learning applications, function as a “black box”, in which the decision-making logic, which lies behind the algorithm, is not fully understood by the user, the regulators, and even sometimes by the AI developer that built it. The reality of this is that it actually damages the confidence in government, increases legal uncertainty and frustrates those whose lives have been affected by seeking to intervene against decisions that are damaging.

Given the pervasive nature of automated systems in financial services, health care delivery, public administration and police practices, transparency is critical to ethical AI development, as Bibi (2024) concludes. Kim (2025) also highlighted that clear governance of AI is vital to ensure it is both innovative and accountable to democratic principles and safeguards human rights. To tackle these issues, international groups and organisations like UNESCO, Organisation for Economic

Publication of the European Centre for Research Training and Development-UK Co-operation and Development (OECD), and the United Nations have established governance frameworks and guidelines aimed at promoting explainability, transparency, and responsible use of AI within their domains.

Accountability is another major moral dilemma. The processes linking software developers, governments, technology companies, policymakers, data scientists and end-users in building and launching AI systems are complex. Blaming for negative effects is hard to claim because there are various actors over the entire lifecycle of AI that can be held accountable for negative impacts. According to Willie (2024), having frameworks with known accountability is essential to create liability structures, systems of moral accountability and avenues for redress in technology and systems that are critical to AI uses. Likewise, Adekunle et al. (2024) argued that maintaining a balance between innovation and accountability continues to be a significant policy challenge of the digital era, especially in less developed economies where regulatory institutions might still be in the process of development.

A worldwide trend is for governments and international bodies to take action in policy and regulatory measures. The EU AI Act introduced a risk-based approach, focusing on the importance of transparency, fairness, accountability, and human oversight in high-risk AI systems. Similarly, the OECD Principles on Artificial Intelligence (2024) therefore emphasized the following governance principles: inclusive growth, values that are human centered, transparency, robustness and accountability (OECD, 2024). The 2024 UNESCO Implementation Guide on the Ethics of Artificial Intelligence also sets out ethical guidelines to ensure that AI technologies contribute to respect for human rights, social justice and sustainable development.

In the African context, the conversation over the ethics of AI has grown a lot, with a number of academics questioning the applicability of Western-centered approaches to the governance of AI technology. African researchers claim that the governance of AI in the world rarely addresses the socio-cultural context in Africa, infrastructural constraints and development needs. At the same time, Eke, Wakunuma, and Akintoye (2023) proposed that responsibly designed AI systems need to consider local context, social inequalities, and digital inequality in Africa, and push for inclusive innovations. Olojede (2023) is another proponent to the ethical principles on African AI philosophy that achieves the Ubuntu imperatives of "communal wellbeing, relational accountability, and social justice". As AI becomes more widespread in Nigeria's various sectors like banking, Fintech, education, health care, security, and entrepreneurship, discussions about AI governance are growing. Nigerian academics advocate for algorithmic, institutional frameworks and data sovereignty issues that are 'context sensitive' in order to tackle algorithmic discrimination, weak institutional oversight, data sovereignty and infrastructural inequality. Adewale et al. (2025) emphasized the importance of ethical guidelines for the use of AI in open and distance learning

Publication of the European Centre for Research Training and Development-UK formats, to ensure equal access and accountability. Likewise, Shittu et al. (2024) proposed that Nigeria needs to have a holistic ethics framework, which can control the digital transformation process through AI and help prevent citizens from facing discriminatory and deceptive outcomes from AI use.

Recent Nigerian studies further revealed the emerging interest in the role of AI in entrepreneurship, education and governance. Agwazie and Okonkwo (2026) discussed the application of artificial intelligence in improving the indigenous knowledge and entrepreneurial skill development of Nigerian university students and how technology can protect against technological exclusion without compromising ethical considerations. Chukwudi et al. (2025) further reaffirms that ethical leadership is key to the governance of AI, given that governance mechanisms are needed to promote fairness, acceptability, transparency and public trust in Africa's development. Decolonial methods in AI governance have grown in appeal to African scholars. The concept of imitation is a critique by Effoduh (2026) which recommends that African countries have to be guided towards embracing autonomy rather than imitating the Western governance model when crafting their AI governance frameworks. Likewise, Omotubora and Basu (2024) urged Africans to re-think AI governance based on the principles that are colonial-centric, through encouraging participation from locals, cultural relevance, and an equitable technological growth. Musoni (2024) also advised that Africa's AI governance framework should be based on three fundamentals: inclusion, capacity development and local ownership of digital infra. These emerging concerns were addressed in the Nigeria's National Artificial Intelligence Strategy (2024), which was released by National Information Technology Development Agency (NITDA), with several key principles to guide the responsible innovation, inclusivity, transparency, digital literacy, accountability and participation of local residents in artificial intelligence governance processes. The strategy marks an important progress in Nigeria's journey of advancing towards the global AI ecosystem as part of its commitment to put in place ethical safeguards more in keeping with the country's development agenda.

Purpose of Review

This article reviews the evolving discourse on Artificial Intelligence (AI) ethics, fairness, transparency, and accountability. It examines how these concepts have been defined, interpreted, and applied across different sectors and disciplines, while highlighting the ethical considerations arising from the design, deployment, and use of AI systems. The review also considers the approaches adopted by policymakers, industry practitioners, and academic scholars to promote responsible AI and address emerging risks. As AI continues to shape decision-making processes in both public and private domains, there is growing recognition of the need for governance frameworks that ensure AI systems are developed and used in ways that are fair, transparent, accountable, and aligned with societal values. International bodies such as UNESCO and the

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OECD have similarly emphasized the importance of ethical AI governance as a foundation for trust, human rights protection, and sustainable development (UNESCO, 2021; OECD, 2019).

Conceptual Foundations of AI Ethics

Artificial Intelligence (AI) ethics is the set of ethical principles, governance structures, regulation and set of minimum standards for the ethical use of AI systems that preserve privacy, promote justice, protect human dignity and improve social well-being. AI ethics has become a field that involves multiple disciplines including computer science, philosophy, law, sociology, political science, economics, and public policy. As AI has rapidly permeated sectors like healthcare, education, finance, communications, governance, and security, so have concerns about algorithmic bias, mysteriousness, surveillance, manipulation, and accountability have grown in intensity, particularly at the international level. International organisations such as UNESCO have highlighted the need for human rights-based approaches to AI governance, emphasizing transparency, fairness, accountability, and human oversight as foundational principles for the responsible development and deployment of AI systems (UNESCO, 2021). Ethical AI governance aims to leverage the potential gains of AI innovation, while also mitigating potential risks from AI-powered decision systems. Technical solutions emphasize mainly algorithmic auditing, fairness indicators, explainable AI instruments, bias mitigation frameworks, and safe and sound data management methods. Similarly, the OECD Principles on Artificial Intelligence identify transparency, explainability, robustness, and accountability as essential elements of trustworthy AI systems (OECD, 2019; OECD, 2024). However, socio-political approaches focus on wider institutional and societal issues, such as democratic accountability, human rights protections, digital inequality, displacement of labour, surveillance capitalism, developed/developing country power struggles etc. The issue of fairness, accountability, and transparency cannot be addressed just as technical problems as AI systems are executing socially as well as structurally inequitable processes from the past. (Bukhari and Amakeh, 2026). Emerging literature increasingly recognises that effective AI governance requires a multidisciplinary approach that combines technical, regulatory, institutional, and societal measures to address bias, inequality, and the broader social implications of AI technologies (UNESCO, 2021; OECD, 2024).

In Africa, ethical issues related to AI are becoming increasingly intertwined with digital sovereignty, colonial history, cultural portrayal, and technological reliance. Eke et al. (2023) pointed out that responsible AI governance in Africa should not essentially mimic that of the west but align with the local realities, indigenous knowledge systems and socio-cultural priorities. Likewise, Effoduh (2026) questioned the notion of “normative mimicry” in the AI governance phenomenon in Africa, arguing for the creation of contextually relevant ethical norms in AI governance, embracing epistemic sovereignty and local participation beyond the importation of governance norms. There has been a comparable push at the global level for universal ethical

Publication of the European Centre for Research Training and Development-UK standards for the governance of AI. These principles of OECD AI, which focus on inclusive growth, transparency, robustness, accountability and human-centered values, highlight crucial areas to build robust AI systems with human values. Similarly, UNESCO's Recommendation on the Ethics of Artificial Intelligence fosters ethics-based AI governance systems focused on human rights, cultural diversity, fairness, and environmental sustainability. The governance of AI should extend beyond the protection of individual interests to promote human well-being, human rights, social justice, and the mitigation of risks such as discrimination, inequality, privacy breaches, and other harms arising from the use of AI systems (UNESCO, 2021).

Nigerian and African Perspectives on AI Ethics

In recent years, the landscape of African AI-related scholarship development has greatly increased, resulting from the growing recognition, on the continent, of its particular socio-economic and governance contexts as well as technological conditions. Many African scholars have challenged the adoption of western driven AI ethical frameworks for the fact that their system of governance does not fully consider African priorities of growth and development, culture, or history. Olojede (2023) proposed a set of African principles for AI ethics founded in the Ubuntu philosophy and decoloniality principles.

Studies call upon ethical systems of AI in African societies to focus on social good, relational accountability, inclusiveness, solidarity and collective human flourishing so as to avoid the way African societies have been dominated by narrowly individualistic or market values. The author argues for a governance framework of artificial intelligence in Africa that defies the practice of data exploitation and dependency on technology and offers equality in the world of digital economy. Likewise, Omotubora and Basu (2024) assert that there is a tendency for global AI governance mechanisms to recapitulate colonial power structures by creating uneven control positions over digital infrastructures, datasets and standards. Their labor demands decolonized rules of administration, strategies that supply African societies with energetic and representative possibilities to shape moral AI systems according to their realities and developmental goals.

The Nigerian context demands attention to institutions readiness, digital inequality, regulatory capacity, education readiness and accountability of governance when dealing with AI ethics. This is the low level of incorporation of AI ethics into higher education in West Africa, especially in Nigerian universities, as pointed out by Onyejegbu (2023). The study highlighted that a lack of supporting institutions, interdisciplinary teamwork, effective policy adoption, and expertise in AI ethics are significant challenges to AI ethics teaching efficacy. The author emphasized the need to ensure that people learn how to use AI confidently and effectively, preparing themselves for the future where they will need to design and responsibly use AI that is ethical and respects the need for people to control the impact of these technologies.

Adekunle et al. (2024) also explored the challenges of innovation and accountability in the fast-changing digital economy in Nigeria. The authors proposed that although AI solutions offer a significant opportunity to promote the growth of the economy, entrepreneurship, automation, and service delivery, the inadequate regulation and institutional gaps may undermine the effectiveness of such technology's potential risk of algorithmic discrimination, privacy violations, misinformation, and unethical data practices. Their study stresses the importance of proactive governance frameworks capable of balancing technological advancement with social responsibility.

REVIEW METHODOLOGY

This article adopts a qualitative literature review approach to examine the evolving discourse on artificial intelligence ethics, fairness, transparency, and accountability. The review draws on secondary sources, including peer-reviewed journal articles, policy documents, institutional reports, governance frameworks, and scholarly publications relating to the ethical development and deployment of AI technologies.

The literature was selected to provide both global and African perspectives on AI governance. Particular attention was given to publications addressing key themes such as algorithmic fairness, transparency, explainability, accountability, human rights, data governance, ethical oversight, digital inequality, and responsible innovation. In addition to academic literature, relevant policy and governance frameworks developed by international organizations and regulatory institutions, including UNESCO, the Organisation for Economic Co-operation and Development (OECD), the European Union, and Nigeria's National Information Technology Development Agency (NITDA), were reviewed to provide insight into emerging approaches to AI governance.

The review adopted a structured approach to analysis. Relevant literature was examined and organized around recurring themes and concepts relating to AI ethics, fairness, transparency, accountability, and governance. Particular emphasis was placed on identifying areas of convergence and divergence within literature, emerging ethical concerns, and governance challenges associated with the increasing adoption of AI across sectors such as education, healthcare, public administration, and digital platforms.

To provide contextual relevance, the review also examined scholarly contributions from Africa and Nigeria, with a focus on issues including digital inequality, data sovereignty, institutional readiness, decolonial approaches to AI governance, and the applicability of global ethical frameworks within African contexts.

The findings presented in this article are therefore based on the synthesis and examination of existing literature rather than the collection of primary data. The methodology supports a comprehensive understanding of contemporary debates surrounding AI ethics and facilitates the identification of key governance challenges, research gaps, and policy considerations relevant to the responsible development and deployment of artificial intelligence.

Major Findings

This study examined existing global and regional approaches to AI governance and assessed their relevance to the Nigerian context. The findings reveal key themes relating to regulatory frameworks, ethical considerations, accountability mechanisms, inclusiveness, and the need for context-specific governance models. The major findings are presented below.

Global AI Governance: The EU AI Act

EU proposal on the Artificial Intelligence Act is one of the world's most detailed and far-reaching ART policies. The legislation uses a risk-based approach involving categories of AI systems that are classified into different areas of obligation depending on the impact that AI technologies may have on society. It applies a risk-based approach, ranging from unacceptable risk to minimal risk, depending on the type of AI system, resulting in different regulatory obligations. The European Commission highlights the importance of ensuring reliable performance in terms of transparency, accountability, human oversight, data governance, and fundamental human rights protections in every deployment context for AI (European Commission, 2024). Likewise, in terms of fairness, this is one of the core principles of the OECD AI Principles (OECD, 2024), which also outline the need for explainability, robustness, accountability and inclusive innovation as key pillars of responsible AI governance.

Indeed, the EU AI Act sets more stringent requirements for compliance of high-risk systems, including those based on biometric surveillance algorithms, recruitment algorithms, systems for predictive policing, systems for health diagnostics, credit scoring systems, and systems for educational assessment. The responsibilities encompass algorithm transparency, human oversight systems, risk evaluations, auditability, bias reduction steps, and comprehensive data governance systems. However, transparency and accountability are crucial for ensuring the citizens trust in automated decision making, especially if the impact of the AI decision directly affects people's welfare and access to opportunities (Bibi 2024). Similarly, Willie (2024) states that accountability frameworks are essential in cases where crucial application or service is key: If there are no suitable accountability mechanisms, the algorithms used may have harmful or discriminatory effects without any accountability.

It is clear that the EU's influence can be felt globally, influencing Africa, Asia and other emerging markets in their debates about regulating AI. As AI becomes more integral to public life, ethical

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management of AI has become the primary focus, with a new emphasis on Human-centered approaches of balancing technological innovation and societal protection (Kim, 2025). Accordingly, Bukhari and Amakeh (2026) highlighted that in high-stakes decision systems with algorithmic errors impacting social, economic, and political outcomes, fairness, accountability, and transparency could be of paramount importance. African scholars have raised doubts about the representativeness of existing global governance models for Africa, its values and developmental concerns. Effoduh (2026) made emphasis about the “normative mimicry,” where African countries emulate Western governance frameworks for AI without taking the time to sensitize them to their respective socio-economic and cultural contexts and indigenous knowledge systems. Similarly, Omotubora and Basu (2024) called for African-centric ethical principles to be used to inform AI governance if it is to take on African developmental issues.

In Nigeria, the focus is increasingly shifting to crafting context-specific frameworks of AI governance. The government in Nigeria has published a National Artificial Intelligence Strategy to ensure responsible development and deployment of Artificial Intelligence across various sectors, foster innovation, inclusiveness and ethical protection (NITDA, 2024). Adekunle et al. (2024) also stated that the innovation versus accountability debate plays an important role in the future of the sustainable use of AI, particularly in less developed countries where the regulatory framework is ongoing. They focused their study on the need to advocate innovation and responsibility, public trust and social justice, and all the while achieve ethical governance structures.

Furthermore, Olojede (2023) called for the formulation of ethical principles for AI in Africa that are built on communal values, inclusivity, social harmony, and equitable participation in technology. Eke, Wakunuma and Akintoye (2023) also made a strong case for the importance of Responsible AI in Africa, pointing to the need to take into account the social realities, infrastructural constraints and historical inequalities of Africa in ethical AI governance. These views indicate that the EU AI Act; by setting out important regulatory guidelines does not necessarily suit the specific socio-cultural and developmental needs of African countries, and flexible models of governance are still in need.

Against the background of global institutional efforts, the governance debate is other than unconnected. UNESCO (2024) emphasized the importance of accountability in the use of AI, including transparency, fairness, explainability, protecting privacy, and safeguarding human rights. The United Nations Digital Cooperation Report (2025) also highlighted the importance of developing AI governance fundamentals that are grounded in considerations of humanity, cooperation and equitable access to technology in order to not exacerbate global inequalities. Beyond this, the EU AI Act can be a catalyst for a wider international debate on ethical governance,

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accountability mechanisms, fairness audits, and the regulation of AI systems. It is relevant in many parts of the world because it is the first attempt to create an enforceable set of standards that can help minimize algorithmic harm and enable responsible innovation in a multi-sector and multi-jurisdictional context.

AI in Nigerian Education

AI has found extensive applications in Nigerian schools and universities, transforming the landscape with automated grading systems and adaptive learning platforms, intelligent tutoring tools, plagiarism detection, predictive analytics, and online distance learning solutions. These advancements have continued to grow after the increased digitization in the educational sector and the demand for remote learning environments. Adewale et al. (2025) put forth a comprehensive ethical framework intended for the thoughtful integration of artificial intelligence into open and distance learning environments, meticulously highlighting the critical significance of principles such as fairness, inclusivity, transparency, and the protection of learners' rights and interests. Their research posits that educational systems utilizing AI technologies must actively strive to prevent the perpetuation of existing social inequalities, which can arise from the deployment of biased algorithms or from disparities in access to the essential technological infrastructure necessary for equitable educational experiences. In a similar vein, Bervell et al. (2025), through their systematic review examining the acceptance and utilization of AI within the educational landscape of Sub-Saharan Africa, have identified that systemic infrastructural deficiencies, a lack of adequate digital literacy, insufficient regulatory standards, and pronounced socio-economic disparities persist as formidable barriers that continue to hinder the equitable adoption and integration of AI technologies across various educational systems on the African continent.

In the context of Nigeria, the existing infrastructural inequalities represent a significant impediment to the effective integration of artificial intelligence within the educational sector. Students hailing from rural areas or economically disadvantaged backgrounds routinely challenges, including erratic electricity supply, limited access to reliable internet connectivity, insufficient availability of digital devices, and an overall inadequate technological infrastructure that is necessary for facilitating modern education (UNICEF, 2025; UNESCO, 2024). Such pronounced inequalities engender a situation in which the educational opportunities enhanced by artificial intelligence are likely to disproportionately advantage those who are already privileged, thereby effectively excluding and marginalizing learners who belong to less advantaged socio-economic strata (UNICEF, 2025).

Onyejegbu (2023) has specifically pinpointed several critical challenges that obstruct the incorporation of ethical considerations regarding artificial intelligence into the curricula of higher education institutions across Nigerian universities, which include the lack of institutional readiness

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to adapt to new technologies, the absence of comprehensive ethical training programs, and a general inadequacy in the awareness of responsible AI practices among educators, administrators, and policymakers.

Similarly, higher education stakeholders in Nigeria have emphasized the need for stronger infrastructure, capacity building, policy guidance, and inclusive approaches to ensure the responsible and equitable adoption of artificial intelligence within tertiary institutions (UNESCO-ICHEI, 2024) Furthermore, studies on artificial intelligence adoption in African higher education institutions have identified data privacy concerns, transparency challenges, ethical governance issues, and institutional preparedness as major barriers to the effective and responsible deployment of AI technologies in education (Afolabi, 2024)

The issue of accountability in the deployment of artificial intelligence technologies remains equally significant and warrants thorough examination. Idris and Folorunso (2025) highlighted the necessity of bridging global accountability frameworks pertaining to AI with the local socio-economic realities that characterize African contexts. They stated that educational institutions across Africa must establish localized governance mechanisms that are capable of ensuring not only explainability and ethical oversight but also contextual fairness in the deployment of artificial intelligence technologies. Chukwudi et al. (2025) similarly asserted that the presence of ethical leadership is crucial for the effective governance of AI systems within the African context, particularly in sectors such as education, where algorithmic systems directly impact human development outcomes and societal progression.

In addition to the challenges, artificial intelligence also opens up remarkable opportunities for the preservation of indigenous knowledge systems and the enhancement of entrepreneurial education. Agwazie and Okonkwo (2026) provided compelling evidence illustrating how AI technologies can serve as powerful tools for supporting the preservation of indigenous knowledge while simultaneously fostering the development of entrepreneurial skills among business education students enrolled in Nigerian universities. Their findings indicate that when artificial intelligence is deployed in an ethically sound manner, it can significantly contribute to the advancement of culturally relevant educational practices, local innovation, and ultimately, the empowerment of communities through economic growth. Consequently, Nigerian scholars are increasingly advocating for inclusive approaches to AI governance that prioritize accessibility, contextual adaptation, participatory policymaking, fairness auditing, and the culturally responsive development of technological solutions. Shittu et al. (2024) argued persuasively that there is an urgent need for Nigeria to establish comprehensive ethical guidelines that can effectively regulate the development and deployment of artificial intelligence while simultaneously safeguarding

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citizens from potential harms such as algorithmic discrimination, violations of privacy, and inequitable access to technological resources.

Furthermore, the direction of the Nigerian government's policy regarding artificial intelligence increasingly reflects a growing awareness of the urgent need for ethical governance and responsible innovation within this rapidly evolving field. The National Artificial Intelligence Strategy, which has been developed by the National Information Technology Development Agency, seeks to not only encourage innovation in the realm of artificial intelligence but also to promote responsible usage, ensure digital inclusion, and implement human-centered governance mechanisms that prioritize the welfare and rights of all citizens (NITDA, 2024). However, despite the potential for advancement, the challenges associated with implementation remain profoundly significant due to a myriad of factors including, but not limited to, funding constraints, inadequate infrastructural development, and the continuously evolving nature of regulatory capacities that govern these technologies.

Consequently, the adoption of artificial intelligence within the educational framework of Nigeria, presents a dual-edged sword, offering transformative opportunities that could revolutionize learning while simultaneously posing ethical risks that cannot be overlooked. Therefore, effective governance of AI technologies necessitates the establishment of transparent algorithms, the provision of equitable access to essential digital infrastructure, the implementation of robust accountability frameworks, the introduction of human oversight mechanisms, and the formulation of educational policies that are capable of ensuring that AI technologies effectively support inclusive and socially responsible learning environments that cater to diverse student populations.

Healthcare and Social Media Platforms

The impact of artificial intelligence systems is increasingly pervasive, significantly shaping various aspects of healthcare delivery, including but not limited to medical diagnostics, public health surveillance, treatment recommendations, pharmaceutical research, and the moderation of content on social media platforms. While these advanced technologies undeniably offer substantial benefits in terms of efficiency, scalability, and predictive capability, they concurrently raise major ethical concerns that pertain to fairness, transparency, accountability, privacy, misinformation, and the protection of human rights, which are critical in safeguarding public interest.

In the realm of healthcare, artificial intelligence systems are employed for a wide array of functions, including disease diagnosis, interpretation of medical imaging, predictive analytics, optimization of treatment protocols, and ongoing patient monitoring. However, a significant challenge that continues to persist is the prevalence of biased datasets that compromise the integrity of AI applications. Specifically, AI diagnostic systems that are predominantly trained on non-representative datasets may yield inaccurate outcomes for populations that are

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underrepresented, which ultimately threatens patient safety and undermines healthcare equity. Radanliev (2025) emphasizes the critical necessity of integrating fairness and transparency into healthcare AI systems, as a means to prevent the emergence of discriminatory outcomes and to uphold public trust in these technological advancements.

Similarly, Bukhari and Amakeh (2026) postulated that accountability and explainability are particularly vital in high-stakes domains such as healthcare, wherein algorithmic decisions may have profound implications that directly influence life-and-death outcomes for individuals. Therefore, the presence of human oversight is essential to ensure that any automated recommendations produced by AI systems are subjected to thorough review and evaluation by qualified professionals prior to their implementation in clinical settings. The question of governance is especially pertinent within the context of African healthcare systems, where infrastructural limitations, restricted datasets, and gaps in regulatory frameworks may intensify ethical vulnerabilities in the deployment of AI technologies. Udoh (2025) noted that artificial intelligence harbors considerable governance potential across the African continent, including Nigeria, particularly in the realms of healthcare management, public administration, and service delivery. Nevertheless, the absence of strong ethical and institutional safeguards may leave vulnerable populations susceptible to algorithmic harm, invasive surveillance practices, and exclusionary measures that could further marginalize already disadvantaged groups.

Transparency issues remain a critical concern in the context of social media platforms as well. AI-driven recommendation algorithms wield significant influence over public discourse, political communication, the dissemination of information, and the behavioral patterns observed in online environments. These automated systems frequently prioritize engagement optimization, which can inadvertently lead to the amplification of misinformation, hate speech, polarization, and the propagation of harmful content that adversely affect societal cohesion. Momha (2023) explained that global AI governance increasingly emphasizes the need to address the societal ramifications of automated digital systems, particularly with regard to the stability of democratic institutions and the integrity of information disseminated to the public.

The ethical implications associated with AI-powered social media systems are particularly pronounced in developing societies, where both digital literacy and regulatory oversight may be significantly limited. Musoni (2024) highlighted the pressing necessity for Africa's emerging AI governance landscape to tackle pressing issues such as misinformation, algorithmic manipulation, digital inequality, and the accountability of platforms that utilize these technologies. In a similar vein, Onyango (2025) highlighted that AI governance for public policy in Africa should prioritize transparency, participatory governance, and the protection of citizens against harmful algorithmic practices that could undermine their rights and freedoms.

Furthermore, the realms of data governance and privacy protection are equally critical components that warrant serious attention. Bibi (2024) asserted that the establishment of ethical standards for automated systems necessitates the creation of transparent data governance structures, the adoption of responsible data collection practices, and the implementation of robust accountability mechanisms, all of which are essential for safeguarding individuals against exploitation or unauthorized surveillance.

In the context of Nigeria, Shittu et al. (2024) further emphasized the urgent need for the development of ethical guidelines that govern the deployment of AI technologies and the overarching process of digital transformation, with the aim of ensuring responsible innovation while concurrently safeguarding the welfare of the public. The intricate and multifaceted challenge of effectively balancing the demands of innovation with the imperative of accountability continues to occupy a central position of significance in both the domains of healthcare and social media applications, as the complexities involved in these fields are substantial and require meticulous attention. In their analysis, Adekunle et al. (2024) stated that the successful and sustainable adoption of artificial intelligence (AI) technologies necessitates the establishment of robust governance systems that are adept at fostering technological advancements, while, at the same time, ensuring ethical responsibility and safeguarding societal interests against potential harm. Similarly, Idris and Folorunso (2025) pointed out the critical importance for African nations to formulate and implement context-sensitive accountability frameworks that are tailored to their unique circumstances and challenges, rather than relying solely on governance models that have been imported from other regions without consideration for local realities.

In essence, the attainment of ethical governance within the realms of healthcare and social media sectors requires the implementation of a comprehensive array of mechanisms, including, but not limited to, fairness auditing, the establishment of transparency standards, the necessity of human oversight, the development of explainable AI systems, the construction of robust accountability structures, the enforcement of privacy protections, and the commitment to continuous regulatory monitoring. In the absence of these essential safeguards, there exists a significant risk that AI technologies could inadvertently reinforce existing inequalities, perpetuate discrimination, propagate misinformation, and inflict social harm, instead of contributing to the advancement of inclusive, equitable, and human-centered development initiatives.

Key Gaps

Despite the growing body of literature on AI ethics, fairness, transparency, and accountability, several important gaps and challenges remain. While significant progress has been made in developing ethical principles, governance frameworks, and policy guidelines, translating these principles into consistent and effective practice remains a complex task. Differences in regulatory

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approaches, unequal access to resources, emerging technological developments, and varying social and economic contexts continue to create obstacles to the responsible development and use of AI. Notwithstanding the increasing global awareness and focus on the ethics of artificial intelligence, there are still numerous substantial challenges that persist in this field that require greater scholarly, institutional, and policy attention, which include the following:

Regulatory Fragmentation

The phenomenon of regulatory fragmentation is evident as different countries adopt a myriad of regulatory approaches, which leads to inconsistencies in the ethical standards that are applied and the mechanisms for enforcement that are utilized. This situation creates considerable obstacles to the harmonization of governance frameworks that can effectively operate on both global and local scales.

Resource Constraints in the Global South

The challenges faced by many African countries are compounded by resource constraints, as these nations often grapple with limited technical infrastructure, insufficient research funding, weak institutional capacities, and a dearth of expertise in AI technologies. Such constraints can severely impede the ability to undertake effective ethical oversight, as well as stifle local innovation that is essential for sustainable development.

Data Colonialism and Digital Dependency

The issue of data colonialism, which refers to the exploitative practices of corporations from the Global North that extract data from African populations without providing equitable benefits to those communities. It is therefore imperative to prioritize the strengthening of data sovereignty and the enhancement of local technological capacities to ensure that the benefits of digital advancements are shared equitably.

Rapid Technological Evolution

The rapid pace of evolution in AI technologies presents a significant challenge, as these advancements often exceed the capacity of regulatory systems to keep up. Policymakers frequently find themselves struggling to anticipate and address the emerging risks that are associated with generative AI, autonomous systems, and foundational models, which can lead to unforeseen consequences.

Recommendations

The responsible development and deployment of AI require governance approaches that balance innovation with ethical responsibility. While international frameworks such as the EU AI Act, UNESCO Recommendations, and OECD Principles provide important foundations for ethical oversight, their effective implementation requires adaptation to local realities and contexts. In

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Africa, ethical AI governance should be guided not only by global best practices but also by local values, development priorities, and societal needs. Achieving this objective requires collaboration among governments, technology companies, researchers, civil society organizations, and the communities affected by AI systems. The following recommendations may help strengthen ethical AI governance and promote the responsible use of AI technologies.

Develop Hybrid Governance Frameworks

Nigerian policymakers can adopt the development of governance frameworks that combine internationally recognized AI principles with local realities and priorities. Such an approach can help ensure that AI governance remains both globally aligned and contextually relevant.

Incorporate African Ethical Perspectives

AI governance frameworks can be designed to integrate African philosophical perspectives, particularly principles such as Ubuntu, which emphasize communal well-being, social responsibility, interconnectedness, and collective progress. This can contribute to more inclusive and culturally responsive governance models.

Strengthen AI Ethics Education and Research

Governments, educational institutions, and industry stakeholders can invest in AI ethics education, capacity building, and interdisciplinary research. Building local expertise will help create a workforce capable of addressing the ethical, legal, and societal implications of emerging AI technologies.

Invest in Local AI Infrastructure and Data Ecosystems

Greater investment in digital infrastructure, research capabilities, and locally relevant datasets is necessary to support innovation, promote technological self-sufficiency, and strengthen the capacity for effective ethical oversight.

Promote Transparency and Independent Oversight

The adoption of transparency reporting practices, periodic independent audits, and effective accountability mechanisms can strengthen oversight and enable stakeholders to evaluate the fairness, reliability, and impact of AI-driven decisions.

Enhance International Collaboration

Greater collaboration between the Nigerian Government, regulatory bodies, and international stakeholders can contribute to improved knowledge sharing, regulatory harmonization, capacity development, and the exchange of best practices in AI governance.

Encourage Participatory Governance

The design, deployment, and governance of AI systems should involve a broad range of stakeholders, including governments, industry, academia, civil society organizations, and affected communities. Inclusive participation can help ensure that AI systems reflect diverse perspectives and promote equitable outcomes.

Promote Fairness, Accountability, and Social Inclusion

Developers, policymakers, and organizations can embed principles of fairness, transparency, and accountability throughout the AI lifecycle. Doing so can help ensure that technological innovation contributes to social inclusion, public trust, justice, and sustainable development.

CONCLUSION

Artificial intelligence presents enormous opportunities for innovation, economic growth, improved service delivery, and societal development. However, its increasing use across critical sectors also raises important concerns around fairness, transparency, accountability, privacy, and inclusion. As AI continues to shape decision-making processes, there is a growing need for governance frameworks that promote responsible innovation while protecting the rights and interests of individuals and communities.

For Nigeria and other African countries, effective AI governance may be strengthened by combining global best practices with local realities, values, and development priorities. Addressing challenges such as digital inequality, limited regulatory capacity, and weak institutional readiness could help ensure that the benefits of AI are distributed fairly and responsibly across society.

Ultimately, the future of AI is likely to be shaped by the extent to which human-centred principles remain at the heart of innovation. By fostering fairness, transparency, accountability, and inclusive participation, AI can serve as a valuable tool for advancing sustainable development, strengthening public trust, and improving societal well-being.

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