

Impact of AI and Digital Transformation towards the African Union's Agenda 2063**Dr Tabani Moyo**

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Abstract

The conceptual research explores digital transformation and AI within the African Union's Agenda 2063. It aims to analyse how emerging technologies influence AU Agenda 2063 and to offer recommendations to the multilateral organisation, academia, and others. The study introduces an Intersectionality Digital Transformation Model for the African Union's Agenda 2063, an original addition to the AU's knowledge base that utilises intersectional digital transformation and artificial intelligence. The conceptual method and desktop research comparison reveal that digital transformation, artificial intelligence development, and implementation lack organisation or coordination. The report suggests adopting a unified AI development and deployment strategy rooted in African values and capable of addressing African concerns.

Key Words: Digital Transformation, AI, Intersectionality Approach, Agenda 2063, SDGs

Background to the study

The study examines the intersection of digital transformation and AI to guide the African Union's Agenda 2063, a framework for economic and social change spanning fifty years. It is crucial to critically assess the technological landscape in which this ambitious agenda is being realised, recognising the potential of technological advances to promote development across various sectors, while accounting for barriers and disparities in access and adoption that might hinder its success (Vedaste & Muzee, 2018). This contemporary industry centres around digital transformation, generating new ideas, transforming business models, and integrating data and technology. It impacts many value chains and workflows (Mbae et al., 2025). The objectives of Agenda 2063 require this shift, especially for environmental protection, economic growth, and social progress (Kazim, 2021). Developing strong digital infrastructure, such as fibre-optic broadband, data centres, and cloud computing services, is essential to ensure that all Africans can actively engage in the digital economy.

Digital literacy and skill development are also vital. When considering technology's role in Agenda 2063, remember Africa's ongoing infrastructure development. Most adjustments occurred during colonial periods to acquire resources and control territory (Chiyemura et al., 2022). Fragmented and inadequate infrastructure networks continue to hinder economic growth due to this historical background (Ahmed, 2004). We need strategic infrastructure investments that prioritise sustainability, inclusion, and regional integration to address these issues.

Agenda 2063 & AI for the African Union

African AI development ethics are crucial. They necessitate a carefully designed strategy that considers the continent's moral, legal, and social contexts (Ndembi et al., 2025). This policy should encompass principles of equity, transparency, accountability, and human rights to ensure AI systems benefit society and minimise harm (Morley et al., 2021). AI systems can sometimes reinforce biases, particularly against marginalised groups (Huriye, 2023). Therefore, inclusive approaches that promote diversity and representation must be implemented to address these biases in data collection, algorithm development, and model training (Odero et al., 2024).

As AI becomes more widespread, the absence of clear moral guidelines could hinder African countries (Kwarkye, 2025). Several African governments have enacted laws and promoted public-private partnerships to foster ethical AI. They have also provided financial incentives to invest in technology (Diallo et al., 2024).

To oversee AI use in Africa, robust data protection, privacy, security policies, and mechanisms to hold individuals accountable and resolve issues are essential. Africa's cultural and legal contexts must be considered when developing these frameworks. They should be created by governments, civil society, and industry (Gwagwa et al., 2020). Without proper precautions, AI systems might violate laws or ethical standards (Townsend et al., 2023). A human-centred approach to AI ethics and governance can enhance morality and trust in AI. By prioritising ethics and implementing strict regulations, Africa can harness AI for the benefit of its people. This approach supports the continent's efforts to achieve Agenda 2063 and SDGs.

Afrocentric digital transformation and AI development focus on African perspectives, values, and knowledge in creating, developing, and using digital technologies and AI applications. Technology is influenced by culture and context; therefore, this approach ensures that digital solutions are relevant, appropriate, and advantageous for African communities (Mienye et al., 2024). Decolonising data and algorithms, challenging Western biases, and integrating local data and knowledge into AI research are its primary aims. Epistemic injustice should also be addressed through indigenous ethical frameworks like Ubuntu (Yilma, 2025). It also seeks to educate Africans on how to use technology and improves their capacity to participate in the digital economy and develop AI solutions.

Developing suitable laws and frameworks can assist Anglophone Africa's education and business sectors in adopting AI, thereby reducing the skills gap. It also involves investing in digital infrastructure and offering free internet access to all Africans to fully benefit from the digital era. By adopting an Afrocentric approach, Africa can leverage digital transformation and AI to address its challenges and achieve its development objectives. This strategy will help preserve its culture and strengthen its international identity. It highlights the importance of empowering African researchers, developers, and entrepreneurs to create AI solutions tailored to the continent's specific needs and contexts (Ayana et al., 2024).

Digital transformation can enhance public services in developing nations. It can improve workflows and value chains through digital tools and modernised business models (Mbae et al., 2025). This involves creating new business models, adopting digital platforms, integrating data and technology, and transforming business practices (Mbae et al., 2025). AI-powered digital transformation is reshaping businesses, simplifying decision-making, and generating new ideas. This enables firms to compete and respond to market changes (Aldoseri et al., 2024).

AI and digital transformation.

Agenda 2063 must carefully integrate AI to stimulate continental growth (D'Souza et al., 2024). We require strong ethical standards and guidelines to develop and use AI fairly, transparently, and responsibly (Radanliev, 2025; Zhang & Zhang, 2023). These frameworks should address data ownership, privacy, and security. They must also outline how multidisciplinary teams should utilise AI (Pesapane et al., 2021). Stakeholder involvement in

AI innovation ensures solutions reflect the social, cultural, and economic needs of African communities (Agbozo & Spassov, 2018). Ethical considerations should include data governance, algorithm transparency, and accountability to minimise biases and promote equitable AI use (Nazer et al., 2023; Panch, 2019). These standards must also tackle algorithmic bias, which occurs when AI systems trained on historical data worsen inequalities. Data collection and algorithm development should involve all relevant parties (Pham, 2021; Zou & Schiebinger, 2021). To maximise AI's potential, we need to change our methods, which often produce biased systems (Okolo, 2022). Development should incorporate ethical AI principles to prevent disparities (Dankwa-Mullan et al., 2021). Fairness is essential in AI projects. It includes evaluating datasets for representativeness and monitoring AI systems after deployment to ensure they account for race, sex, and gender, preventing distributional shifts (Gurevich et al., 2022). Community and policymaker engagement is vital in AI system design, implementation, and governance to align with societal values and goals (Olawade et al., 2024). Distributing AI-driven technologies must prioritise equitable resource allocation and universal access, particularly in low-income and developing nations (Akinrinmade et al., 2023). Community involvement in AI co-design can reduce bias and ensure AI benefits everyone, especially marginalised groups (Bazzano et al., 2025; Nazer et al., 2023).

Problem Statement

AI and digital transformation in Africa have been studied primarily from the global North, where the technology has grown rapidly; hence, the same lenses have been used to analyse African contexts. Analytical frameworks for technology assessment need to adapt to reflect African realities (Nazer et al., 2023; Bazzano, 2025). The intersectionality of technology and societal development has been examined in a fragmented manner (Moyo et al, 2022). The intersectionality approach provides a comprehensive, Afrocentric perspective that is currently lacking in the literature.

This issue sustains technology's global north biases if left unaddressed. It reinforces new technology-centric colonialism (Zou & Schiebinger, 2021; Cachat-Rosset & Klarsfeld, 2023; Ayana et al., 2024).

A comprehensive framework is established by analysing digital transformation and artificial intelligence in relation to Agenda 2063 of the African Union. It addresses complex digital disparities (Grenshaw, 1989) and incorporates uneven technology and innovation adoption through the diffusion of innovation model (Rogers, 1962). The study also utilises the Capacity approach (Sen, 1999) within the Ubuntu/Afrocentric perspective to foster community-centred digital transformation by developing technology skills for creating and applying solutions.

Research Questions

- Can AI-driven digital transformation assist AU in protecting the environment and promoting economic growth?
- How can AI improve African public services and ensure equitable access?
- How can AI and digital transformation boost Africa's inclusive economic growth?
- How can African nations balance the potential benefits of AI in public health with the need to protect privacy and data security and ensure ethical and human rights-compliant AI applications?

- What policies and international partnerships support responsible AI development and use in Africa?

Literature Review

AI must be developed, deployed, and used safely, ethically, and responsibly to be effective (Nibigira et al., 2024). Identifying barriers to AI adoption in Africa and establishing rules and frameworks to overcome them is crucial (Sinde et al., 2023). To close Africa's AI governance gap, the global dialogue on responsible AI should include African perspectives and principles (Morley et al., 2021). Therefore, African nations should collaborate regionally and continentally to share best practices and maximise AI use (Diallo et al., 2025). Given the current lack of responsible AI in business and academia, Anglophone African countries are not yet fully prepared to benefit from AI (Sinde et al., 2023). Other countries need tailored strategies due to limited AI expertise and standards. Progress must respect human rights, social norms, and legal frameworks to develop a technologically advanced, ethically sound, and socially responsible AI landscape (Morley et al., 2021). While African governments, institutions, and organisations aim to use AI to boost economic growth, they often lack access to high-quality AI tools (Nibigira et al., 2024).

Understanding how social and political identities intersect to produce discrimination and privilege in the context of AI and digital transformation requires an understanding of intersectionality theory.

This framework assists scholars and policymakers in recognising and minimising AI's impacts on marginalised populations, ensuring that AI technologies foster equity and inclusivity (Vargas, 2024). It can evaluate fairness, ethics, and bias in AI development and implementation. It also clarifies AI-identity relationships (Tadimalla & Maher, 2024). Achieving this requires a decolonial AI governance framework that enables nations in the Global South to challenge Western biases and develop solutions (Ayana et al., 2024). Decolonisation demonstrates how colonialism has led to biased AI solutions and unequal access based on gender, race, location, income, and other social factors (Ayana et al., 2024). Incorporating indigenous knowledge into AI helps reduce bias. Culturally sensitive, contextually relevant technology honours indigenous perspectives (Ofosu-Asare, 2024). This involves applying inclusive AI design principles, engaging diverse stakeholders, and addressing biases and unfairness (Roshanaei et al., 2023). Through a decolonial approach, AI communities can ensure that future technologies are ethical, particularly when supporting vulnerable groups (Mohamed et al., 2020).

Techno- neocolonialism—where wealthy nations profit from AI while the Global South falls behind—must end (Kponyo et al., 2024). Similar to colonialism, control over talent, data, and computer infrastructure remains concentrated in the hands of a few (Kponyo et al., 2024). Concentration of resources hampers AI adoption in new countries (Kponyo et al., 2024). Fairness, respect, and ethics must be prioritised in collaborative AI frameworks to ensure benefits for all. This will dismantle technology- and neocolonialist- exploitation relationships (Kponyo et al., 2024). AI colonisation deepens global socioeconomic inequality by enriching transnational elites while dehumanising labour- intensive populations in the Global South (Regilme, 2024). Without addressing issues of fairness, justice, and ethical AI, these tools could exacerbate inequality and produce unequal outcomes (Dankwa- Mullan et al., 2021). A new form of digital and environmental exploitation—AI colonialism—favours the Global North and harms the Global South (Regilme, 2024; Kponyo et al., 2024). Ignoring non-

dominant languages and indigenous knowledge worsens educational inequalities (Nyaaba et al., 2024). Controlling data through GenAI can benefit powerful nations and deepen existing inequalities (Nyaaba et al., 2024). We must oppose top-down AI policies that prioritise domestic industries (Kak, 2020). Doing so will help address colonial injustices. The world must confront the moral issues surrounding AI. Ethical guidelines should incorporate diverse perspectives (Xue & Pang, 2022). These measures can assist developing countries in balancing accessibility and governance while reducing risks associated with AI innovation (Mugurtay, 2025). Promoting local AI innovation and participation is essential to tackling these challenges. Such strategies will enable the Global South to become both an AI producer and consumer (Kponyo et al., 2024; Kak, 2020). We need to invest in education, infrastructure, and equitable development policies to ensure AI benefits everyone (Kponyo et al., 2024).

This involves correcting power imbalances in agenda-setting, ensuring AI is controlled by the people, and supporting community-led governance to guarantee AI benefits society (Leslie et al., 2024). This mitigates the prioritisation by corporations that exploit workers in the Global South, support responsible AI development, and penalise unethical behaviour in digital value networks (Nwachukwu et al., 2023; Regilme, 2024)

Conceptual Framework: Intersectional Digital Transformation and Artificial Intelligence for the African Union Agenda 2063

The conceptual framework is based on Intersectionality Theory (Crenshaw, 1989), which recognises overlapping social identities such as gender, class, ethnicity, disability, and religion, among others. This supports the idea that technology development and progress should ensure that AI and digital policies do not reinforce inequalities. The second core theory is Diffusion of Innovations (Rogers, 1962), which explores how AI and digital solutions spread across African countries. It helps evaluate challenges such as infrastructure, literacy, legislation, and enablers of technology diffusion, including local innovation, collaborations, and partnerships. The Capability Approach (Sen, 1999; Nussbaum, 2011) emphasises the importance of enhancing human capabilities like education, health, and economic opportunities through AI and digital tools. This involves measuring human progress through empowerment, not just access. Ubuntu Philosophy/Afro-centric approaches are centred on ensuring AI and digital transformation prioritise community, ethics, and inclusion. This encourages a community-focused, rather than profit-driven, approach to implementing technology. This is illustrated in Figure 1, the Conceptual Framework below.

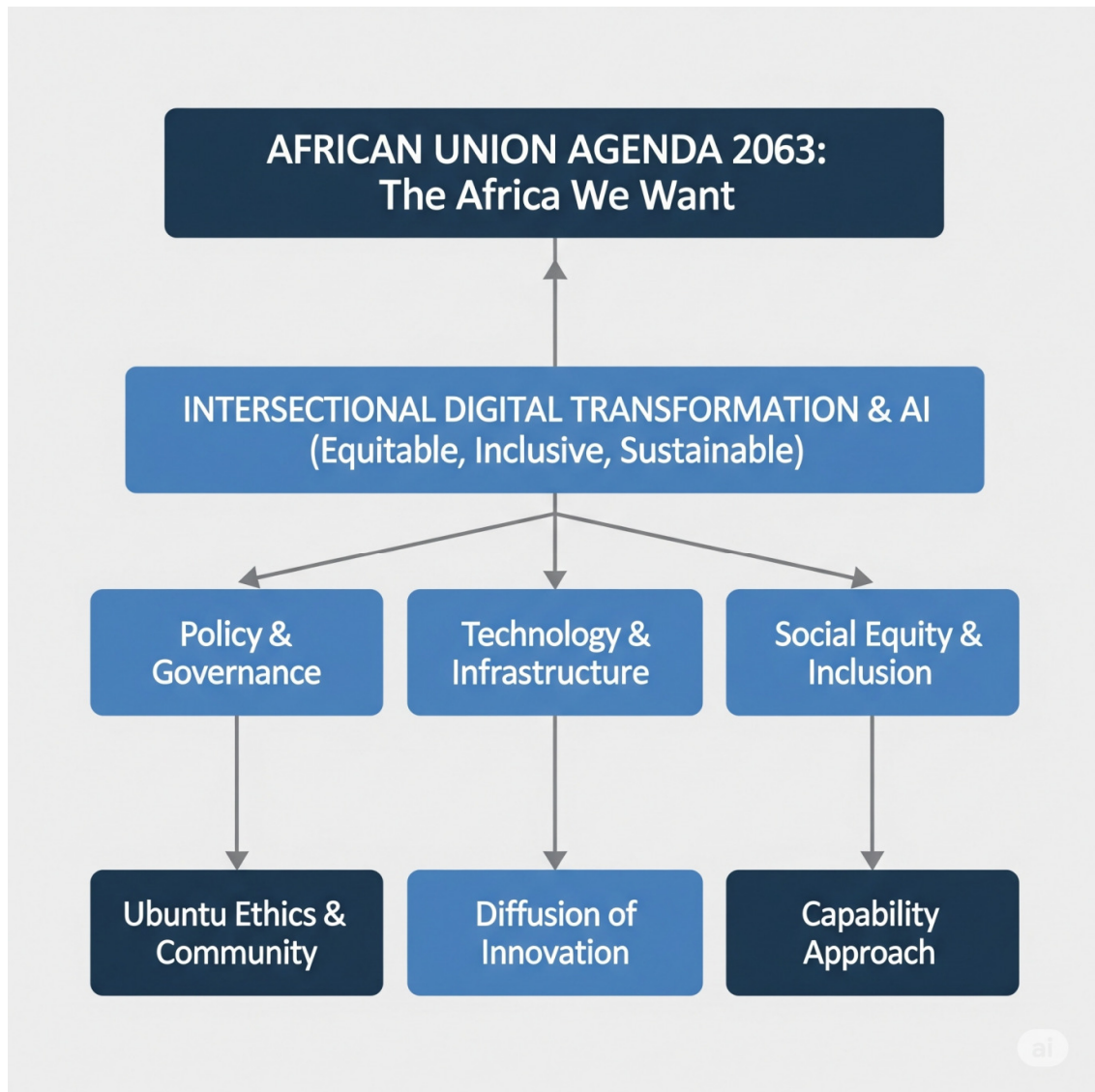


Fig 1 : Conceptual Framework: Intersectional Digital Transformation and Artificial Intelligence for the African Union Agenda 2063 (Researchers' Construction 2025)

African Union Agenda 2063

Artificial intelligence and digital transformation can support the African Union's Agenda 2063 in achieving its key goals, especially in promoting good governance, economic growth, and improving human capital across the continent. To realise "The Africa We Want" (Samarawickrama, 2022), we need AI to enhance public services, increase transparency, and engage citizens. From a pan-African perspective, adopting an intersectionality approach to analysing this technology's societal impact offers a comprehensive understanding.

AI and intersectional digital transformation

Digital inequalities are multidimensional (Crenshaw, 1989), so an intersectionality approach is necessary to fully grasp the complexity by considering all aspects of technology, especially

when analysing Agenda 2063 and its aims from an equitable, inclusive, and sustainable perspective.

Policy and Governance

Using an intersectional perspective, we should prioritise gender-responsive and disability-inclusive digital strategies when developing AI. This aligns with African Union Agenda 2063 Aspiration 6.

Tech and Infrastructure

The conceptual framework highlights that technology and innovation are adopted unevenly, necessitating localised innovation. Diffusion theory can enhance Swahili NLP for East Africa (Rogers, 1962).

An equal and inclusive society

The Diffusion of Innovation (Rogers, 1962) framework illustrates how technology and innovation adoption vary in Africa and underscores the necessity to promote AI adoption.

Ubuntu values and community

Ubuntu emphasises openness and community involvement to address the "black box problem" of AI systems, especially in critical areas like healthcare, where not understanding how AI makes decisions can hinder accountability (Ferlito et al., 2024). Community engagement and bottom-up emancipatory logic are crucial to the design, implementation, and use of AI systems, ensuring the inclusion and appreciation of diverse perspectives (Ferlito et al., 2024; Amugongo, 2023). An Ubuntu-inspired framework fosters AI transparency, covering technical aspects, stakeholders, contextual variables, and societal implications (Ferlito et al., 2024). This philosophical foundation notably contrasts with Western ethical frameworks, which often prioritise individual autonomy and well-being, underscoring the need for culturally sensitive approaches to AI ethics in Africa (Mahamadou et al., 2024).

Innovation, diffusion, and capacity

The intricate relationship between the Diffusion of Innovation theory and the Capability Approach in digital transformation and the widespread use of AI, especially concerning Agenda 2063 goals. AI can boost economic transformation in developing countries, but it also raises issues of fair access and responsible deployment (Distor et al., 2023; Lipcsey, 2024). AI technologies can either accelerate development or increase inequalities in low- and middle-income countries, depending on how they are shared and the level of local skills (Lipcsey, 2024). Different countries adopt AI at varied rates, which is notable. Low-income nations often struggle to capitalise on their advantages, widening technological gaps (Khan et al., 2024; Lipcsey, 2024). In Africa, AI could address social and economic challenges, but infrastructure and cultural barriers limit its usage (Gikunda, 2024). Despite these obstacles, Africa's rapid adoption of AI signals a period of transformation, with new technologies helping to resolve social and economic issues and support development projects (Gikunda, 2024; Mienye et al., 2024). AI investments may divert funds from essential services, worsening inequality and deepening technological dependency in resource-limited African economies (Frimpong, 2025). A robust public policy framework based on sequential readiness, strategic alignment, ethical governance, and capacity building can mitigate risks, promote fair AI deployment, and foster a digital social contract among stakeholders (Frimpong, 2021). Effective policy frameworks must address both the technical and social dimensions of AI dissemination to ensure equitable benefits and prevent power imbalances

(Gikunda, 2024). Governance of AI diffusion in low- and middle-income countries needs scrutiny to ensure a just distribution of economic gains and to prevent further marginalisation and deterioration (Lipcsey, 2024). This analysis will explore macro-level questions regarding optimal diffusion rates, the feasibility of bridging development gaps between low- and middle-income countries and developed nations, and the relative advantages of different diffusion methods (Lipcsey, 2024).

Methodology

This paper examines the advantages and disadvantages of Agenda 2063, as well as digital solutions to current issues (Vedaste & Muzee, 2018). It will evaluate the contributions of AI and digital technologies to the Sustainable Development Goals and explore their future potential (Palomares et al., 2021). AI-based frameworks can help society, the environment, and the economy achieve sustainable development (Hasan et al., 2023). The research also aims to understand how underserved groups use and perceive AI. The conceptual analysis approach provided valuable insights (Hasas et al., 2024). The objective is to close the digital gap and accelerate the digital transformation of strategic value chains (Mbae et al., 2025).

Theoretical and policy implications of using these technologies for sustainable and inclusive growth are explored through qualitative and comparative methods. It reviews studies, papers, and academic journals to identify relevant topics, research gaps, and emerging trends for the study (Siqueira et al., 2024). AI in South African healthcare and its issues are analysed (Niyitunga, 2023). AI can also enhance social, economic, and environmental sustainability (Năstasă et al., 2024).

Results and Discussion.

These studies demonstrate that digital transformation facilitates increased connectivity, information sharing, and idea generation across the continent, accelerating progress towards goals. The digital divide, data privacy concerns, and job losses may hinder these advancements (Nalubega & Uwizeyimana, 2024). We must ensure equitable access to technology, safeguard digital rights, and provide training to address these challenges (Kazim, 2021). Many government departments in Uganda utilise AI to enhance efficiency, accuracy, and citizen services (Nalubega & Uwizeyimana, 2024). Africa is recognising that digitalisation is vital for sustainable growth (Nalubega & Uwizeyimana, 2024). To fully benefit from AI, Africa must overcome resource limitations and the fact that most AI tools are developed in Western countries.

AI investments in resource-constrained African economies involve ethical, financial, and geopolitical trade-offs (Frimpong, 2025). This study can enhance AI in farming, aiding sustainable growth in Africa's agriculture (Gikunda, 2024). Information technology can support universities in providing equal access and treatment. A healthy and skilled workforce is essential for Africa's socio-economic development (Lusigi, 2019). Ajani et al. (2024) suggest giving teachers more diverse assignments and using AI to personalise learning to improve college education. Technocrats, lawmakers, teachers, and students must collaborate to maximise AI in education. They also face challenges with infrastructure, resources, and regulations (Ojha et al., 2023; Agarwal & Vj, 2024). Africa needs more data scientists and increased funding for bioinformatics, data science, computational biology, genomics, and applied mathematics to address these issues (Owoyemi et al., 2020). African schools must incorporate AI into their curricula to tackle these problems. People should be encouraged to

develop creativity, knowledge, and skills for the future (Ayanwale et al., 2022). Machine learning could help address issues such as overcrowded classrooms, school transportation, excessive teacher workload, and a shortage of research-experienced faculty in Africa (Fomunyam, 2020). These digital technologies can complement Africa's traditional knowledge (Fomunyam, 2020). Discussions on machine learning are vital for resolving these issues and elevating African higher education to international standards (Fomunyam, 2020). Achieving this requires careful curriculum planning and ethical considerations (Maphalala & Ajani, 2025).

Technology updates and AI training for teachers (O'Dea & O'Dea, 2023). There are also solutions for overcrowded classrooms, limited access, excessive teaching duties, insufficient research-experienced staff, and poor ICT infrastructure (Fomunyam, 2020). AI supports learning, comprehension, and development (Julien, 2024). AI-driven tools can enhance education by personalising lessons and adapting tests to student performance (Alotaibi, 2024; Adewale et al., 2024).

AI's Contribution to AU Agenda 2063 AI enhances productivity, accuracy, and creativity across various sectors, positively impacting the economy and environment.

National, regional, continental, and international policies are essential to help African businesses and communities maximise AI benefits and minimise risks (Gwagwa et al., 2020). AI requires a well-educated local workforce, robust infrastructure, representative datasets, and government support (Okolo et al., 2022). These factors hinder Africans' access to AI solutions (Okolo et al., 2022). AI can enhance health, peace, and wealth by addressing changes in the job market, gender equality, and cultural and linguistic diversity (Ade-Ibijola & Okonkwo, 2023). To foster growth in Africa, the African Union aims to promote trustworthy, responsible, and people-centred AI (Nibigira et al., 2024). Governments, universities, and businesses must collaborate to develop an AI ecosystem for Africa (Sinde et al., 2023; Mienye, 2024).

Regional and continental coalitions can help African nations share AI policy best practices and accelerate policymaking (Diallo et al., 2025). Drones can inspect electrical lines, and AI can help farmers grow more with less water (Sinde et al., 2023). AI can address problems and support sustainable development across the continent in many ways (Nibigira et al., 2024). Morality, society, and law must govern AI to ensure it is ethical. Fairness, transparency, accountability, privacy, and human rights must be upheld (Morley et al., 2021). According to Morley et al. (2021), African moral values and traditions influence AI development and management. AI will be deployed throughout Africa by the African Union Development Agency (Distor et al., 2023). Countries, including those in Africa, are establishing AI programmes, innovation hubs, and attracting foreign investment to compete in the digital economy (Frimpong, 2025). African governments, businesses, and educational institutions are implementing AI to boost economic growth, improve service delivery, and drive social and economic development (Nibigira et al., 2024). Despite these initiatives, AI knowledge, skills, and capabilities remain limited, hindering sustainable utilisation of AI solutions (Sinde et al., 2023). These challenges underscore the need for African governments to support the adoption of AI and address technical issues (Isagah & Musabila, 2020). Several AI and machine learning ideas have been proposed for African governments (Isagah & Musabila, 2020). AI has the potential to enhance healthcare diagnosis, treatment, and monitoring across Africa, as well as coordinate public health efforts (Etori et al., 2023; Ndembi, 2025). Agriculture can become more sustainable through AI's precision farming, crop monitoring,

and all-weather strategies (Gikunda, 2024). Responsible AI developers and users can minimise negative impacts on workers and employers, enabling Africans to adopt AI without sacrificing rural jobs (Gwagwa et al., 2021). Medical professionals should consider ethical principles such as autonomy, beneficence, non-maleficence, and fairness when employing AI (Farhud & Zokaei, 2021). As many African nations draft new data protection laws, safeguarding data privacy and security must take priority (Alaran et al., 2025). Data-driven e-government necessitates clear privacy standards, transparent AI decision-making, and robust technical infrastructure (Agbozo & Spassov, 2018). These measures help ensure fair AI use and uphold human rights (Bajpai & Wadhwa, 2021). Addressing algorithmic bias, cybersecurity challenges, workforce adoption, and ethical considerations is essential for successful AI-enhanced governance (Vatamanu & Tofan, 2025). AI in the public sector must be strategically implemented to promote innovation and democracy (Vatamanu & Tofan, 2025).

Policy reforms, capacity-building initiatives, and intelligent investments are vital to tackling these issues. African nations should establish competitive policies aligned with the intersectionality framework. This will ensure they actively shape AI to their needs and values (Kwarkye, 2025). We must address matters related to data, governance, infrastructure, technical skills, and justice to use AI ethically and responsibly (Olawade et al., 2023). To maximise global knowledge and resources, countries must collaborate (Göktaş & Grzybowski, 2025). Designing public health AI technologies with community involvement can reduce health disparities and promote fairness (Bazzano et al., 2025). Public health officials should study data science and ethics to ensure the fair use of AI systems and to combat algorithmic biases and discrimination protecting vulnerable groups (Anjaria et al., 2023). AI-driven development and deployment require robust laws on data ownership, privacy, sharing, cybersecurity, and accountability (Pesapane et al., 2021). To ensure AI benefits all, these frameworks must consider the social, economic, and cultural contexts of African communities (Fisher & Rosella, 2022; Selten & Klievink, 2023; Tjondronegoro, 2024; Zhang & Zhang, 2023).

Governance frameworks at team, organisational, and industry levels are essential for developing ethically sound AI systems (Batoool et al., 2024). AI systems should be continuously monitored, reviewed, and adapted to reduce risks and optimise performance (Choung et al., 2023; Situmeang, 2024). Public companies should establish independent data science departments or integrate them into operational divisions to balance structural stability with AI innovation (Selten & Klievink, 2023). These frameworks should prioritise transparency and explainability to ensure AI systems are designed for diverse populations, to eliminate bias and promote inclusivity (Abujaber & Nashwan, 2024; Zou & Schiebinger, 2021). Cultural, political, and historical factors—including colonialism—must shape ethical considerations (Mahamadou et al., 2024). These rules should ensure AI is fair, safe, easy to use, helpful, and free of bias. Privacy remains critical (Tierney et al., 2021; Dankwa-Mullan, 2021). The ethical framework should regulate data handling and guarantee informed consent by clearly informing people how their data will be utilised, including by AI. This will help reduce data breaches and unauthorised access, and safeguard privacy (Abujaber & Nashwan, 2024; Singh & Keche, 2025).

Integrated framework and contributing model

The model, "An Intersectionality Digital Transformation and AI for the African Union Agenda 2063," guides the development, implementation, and evolution of technology through an Ubuntu/Afrocentric perspective. The framework states that Agenda 2063's digital

transformation in Africa is inclusive, informed by intersectionality theory, adaptable, empowering, and culturally sovereign, rooted in Ubuntu philosophy or an Afrocentric worldview. The table and diagram in Table 1 and Figure 2 illustrate this.

Table 1: An Intersectionality Digital Transformation & AI Model for the African Union Agenda 2063

Theory	Key Insights	Role in Digital Transformation and Artificial Intelligence	AU Agenda 2063 Alignment	Policy Implications
Intersectionality (Crenshaw, 1989)	Digital disparities are multi-dimensional	Identifies marginalized groups in tech access	Inclusive development (Aspiration 6)	Inclusive AI Policies: Use intersectionality to design gender-responsive, disability-inclusive digital strategies.
Diffusion of Innovation (Rogers, 1962)	Adoption of technology and innovation is unequal	Optimises AI adoption rates across Africa	Infrastructure & innovation (Aspiration 7)	Localised Innovation: Apply diffusion theory to tailor AI solutions (E.g Swahili NLP for East Africa).
Capability approach (Sen, 1999; Nussbaum, 2011)	Technology must enhance human freedoms as a whole	Measures real freedoms enabled by digital tools	Prosperity & well-being (Aspiration 1)	Human-Centric Tech: Leverage the Capability Approach to prioritise education and healthcare AI.
Ubuntu Philosophy/Afrocentric Approach	Ensures digital transformation is community-centered	Ensures culturally rooted, equitable AI governance	Pan-Africanism (Aspiration 5)	Ethical AI Frameworks: Ground AI ethics in Ubuntu to prevent exploitation and data colonialism.

Figure 1 is a summation of Table 1 on the relationship among the theories and aspirations of the African Union's Agenda 2063

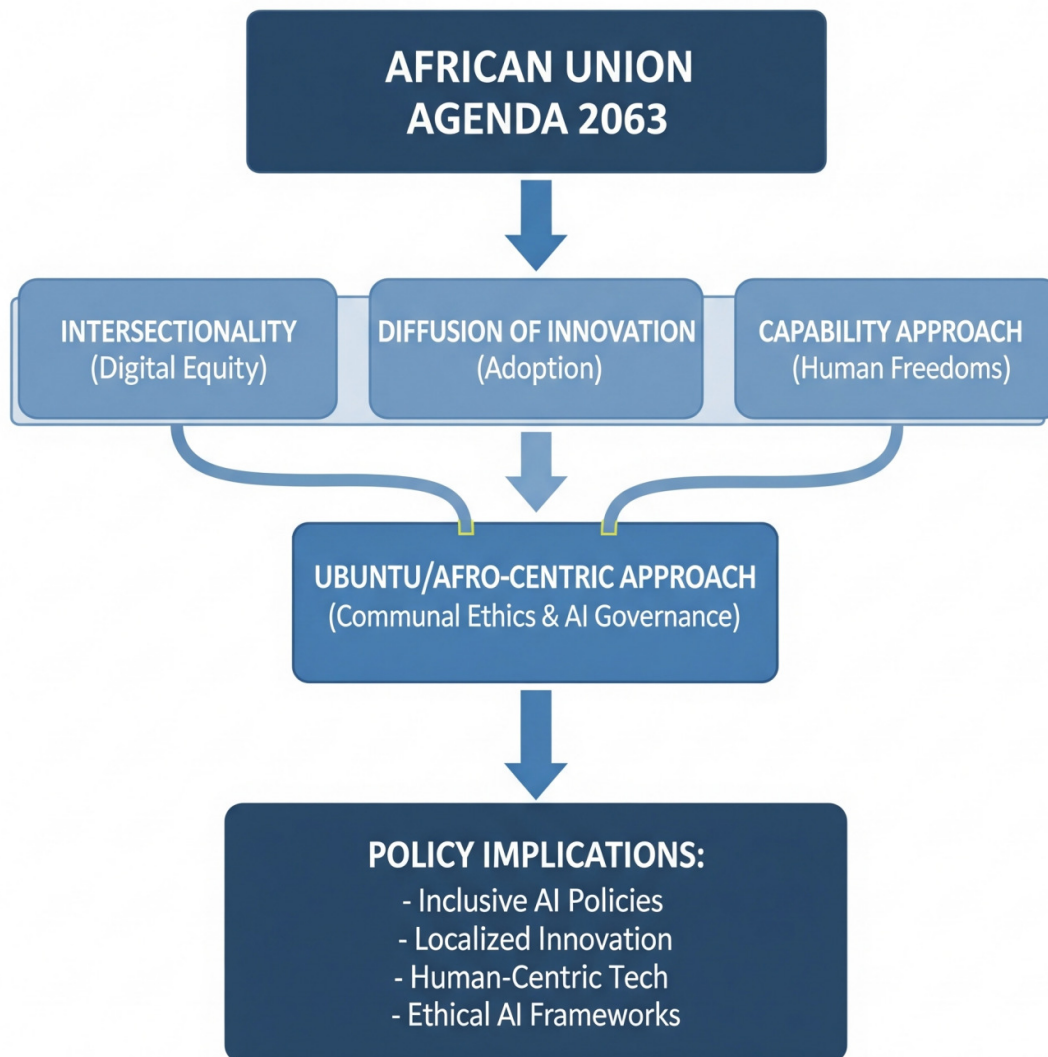


Figure 2: Diagrammatic illustration of the Intersectionality Digital Transformation & AI Model for the African Union Agenda 2063 (Researchers' Construction)

Recommendations for Achieving Agenda 2063 through Digital Transformation and AI

Agenda 2063 requires strong policy frameworks, targeted investments in digital infrastructure, and human capital development to achieve its ambitious goals. To enable widespread adoption of AI in key sectors, we must build resilient digital ecosystems and train a skilled workforce to responsibly develop, implement, and oversee these advanced technologies (Gikunda, 2024).

Addressing the ethical implications and the risk of exacerbating pre-existing inequalities, especially in healthcare, requires a proactive approach to developing AI solutions that are inclusive and equitable for African populations (Qoseem et al., 2024; Jeyaraman, 2023).

Bridge the digital health gap by directing AI-powered healthcare solutions to communities in need and helping to prevent health disparities (Qoseem et al., 2024).

Agenda 2063 requires strong policy frameworks, targeted investments in digital infrastructure, and human capital development to achieve its ambitious goals. To enable widespread adoption of AI in key sectors, we must build resilient digital ecosystems and train a skilled workforce to responsibly develop, implement, and oversee these advanced technologies (Gikunda, 2024).

Inclusive Digital Development

There is a need for inclusive digital policies that address access, cost, and digital literacy to ensure fair AI adoption. This allows everyone to benefit from the digital transformation (Okolo et al., 2022). These policies must also tackle financial constraints, low digital literacy, and limited public sector human capital. Additionally, AI investments should avoid cutting essential services or exacerbating inequalities (Frimpong, 2025; Ochasi et al., 2024).

To ensure AI development aligns with African needs and prevents data exploitation, policy frameworks must prioritise local data ownership and sovereignty (Diallo et al., 2025). This requires strong laws and regulations to protect personal and group data, as well as a space for ethical and African-valued AI innovation (Moorosi, 2024).

Such policies should also encourage governments, universities, and businesses to collaborate on culturally relevant AI solutions for African problems. This will enable technological progress to stimulate the economy. This requires a comprehensive policy development strategy that considers the socio-economic conditions of African regions to promote digital inclusion and minimise AI implementation risks.

These policies must also address algorithmic bias and the lack of diverse datasets, which can severely impair the fairness and reliability of AI systems in African contexts (Pasipamire & Muroyiwa, 2024; Ochasi et al., 2024). Data, infrastructure, and political and economic resources are also lacking in African countries. To ensure fair AI development and use, policies must be country-specific (Diallo et al., 2025). This requires a shift from "readiness" assessments to assessments that accurately reflect African nations' AI capabilities and circumstances (Diallo et al., 2025).

This tailored approach recognises the continent's unique development path and aims to create inclusive, socially beneficial, and locally relevant AI ecosystems (Diallo et al., 2025). This approach recognises that AI may worsen inequalities or be used for surveillance, but careful rules and public involvement can mitigate these issues (Kwarkye, 2025).

A decolonial perspective in global AI governance enables countries from the Global South to spearhead solution development and eliminate Western-centric cognitive biases (Ayana et al., 2024). Indigenous knowledge systems and African communitarian ethics, such as the Ubuntu philosophy, should be incorporated into AI policy development, in line with this decolonial approach. This ensures AI solutions are culturally relevant and aligned with African values (Mensah & Wynsberghe, 2025). Rather than merely adapting eurocentric AI ethics frameworks, which often overlook African voices and ethical traditions, this approach actively prioritises African perspectives and core values in responsible AI development (Mensah & Wynsberghe, 2025). Such a shift would guarantee that AI policies reflect the lived experiences of diverse African social groups and support the creation of African sustainability transitions instead of eurocentric models (Mensah & Wynsberghe, 2025).

Integration is vital because the predominant AI ethics discourse frequently neglects African narratives and values, leading to algorithmic colonisation and epistemic injustice (Yilma, 2025; Zimba et al., 2025).

Thus, African ethical frameworks such as Ubuntu must be employed to tackle AI risks and challenges, especially in Sub-Saharan Africa, where technological exclusion might be more pronounced (Gwagwa et al., 2022). The common reference to Ubuntu as the basis for African AI ethics often fails to offer a clear or practical structure for "African AI ethics" (Yilma, 2025). This illustrates that philosophical ideas are not easily transformed into policy, highlighting the need for greater academic and practical engagement to implement indigenous ethical frameworks within AI governance structures (Yilma, 2025). It requires integrating African moral perspectives and embedding them into policy recommendations, beyond Ubuntu, to represent the continent's diverse moral philosophies (Mahamadou et al., 2024). Since AI's creation and disposal impact African communities, notably women, unequally, ethical frameworks must address its environmental and social repercussions (Mensah & Wynsberghe, 2025). Therefore, robust regulations are essential to ensure that AI development and deployment align with social justice and environmental sustainability, particularly within vulnerable communities.

Promoting AI innovation and research

This requires a collaborative effort to establish local AI research ecosystems that emphasise indigenous knowledge and practises to develop locally relevant AI solutions that address African challenges (Mienye et al., 2024). We must invest in local talent, infrastructure, and research institutions to enable African scientists and engineers to lead AI innovation. African ethical paradigms, especially Ubuntu, can also challenge the Eurocentric bias that dominates global AI ethics discourse, helping to prevent epistemic injustice and ensuring that AI development aligns with African cultural contexts (Yilma, 2025; Gwagwa et al., 2022). This approach involves training AI models on diverse African datasets to reflect the continent's linguistic and cultural diversity and to mitigate biases that might exacerbate inequalities (Mahamadou et al., 2024).

This philosophy of communalism, interconnectedness, and collective welfare underpins AI health research ethics (Odero et al., 2024). It ensures that healthcare AI respects community values, promotes unity, and serves the common good. This is overlooked in Western individualistic ethical models (Odero et al., 2024). It also ensures that AI-driven health research benefits communities fairly, considers local contexts, and is sustainable. Current frameworks emphasise individualism too much (Odero et al., 2024). It supports human-centered AI in partnership with communities to ensure that technological advances meet societal needs and uphold human rights (Ochasi et al., 2024). Building African healthcare AI development and deployment capacity is morally necessary. This involves investing in young African entrepreneurs and researchers to close AI ownership and progress gaps (Ochasi et al., 2024). This capacity building must explicitly embrace Ubuntu to ensure AI systems are designed, implemented, and used with fairness, community welfare, respect for humanity, and trust—resulting in more inclusive AI systems that provide equitable healthcare for all (Amugongo et al., 2023). Ubuntu's principles can emphasise community engagement and grassroots liberatory practices in AI development, promoting transparency and candour about algorithmic constraints to enhance collective accountability (Ferlito et al., 2024).

This comprehensive approach ensures ethical and culturally appropriate data collection, access, and use for healthcare AI in Africa, transcending Western notions of individual autonomy (Mahamadou et al., 2024). It promotes a communitarian view of data ethics, which recognises that personal goals are often community goals (Mahamadou et al., 2024). This requires reevaluating ethical frameworks to include more expansive and inclusive views that recognise the communal nature of identity and well-being (Ferlito et al., 2024). Based on African communalism, this model emphasises the common good and the shared responsibility of all parties involved in shaping AI in healthcare to benefit everyone (Ferlito et al., 2024; Mahamadou, 2024). This approach takes a holistic view of data governance and ethical AI, transcending individualistic frameworks that often overlook African societies' complex social connections (Mahamadou et al., 2024).

By advocating for local data sovereignty and fair benefit-sharing, Ubuntu can combat data colonialism, another significant ethical concern (Mahamadou et al., 2024). This approach directly tackles issues of data ownership, privacy, and bias in AI systems, particularly in the Global South, where healthcare access remains more challenging (Mahamadou et al., 2024). Ubuntu's principles can enhance healthcare data governance and ensure that AI progress benefits African communities (Ferlito et al., 2024) (Mahamadou et al., 2024). It also clarifies and promotes responsible AI solutions, which fosters community trust and encourages more people to adopt beneficial technologies (Ferlito et al., 2024). This integration transforms AI into both a social force and a technological tool, supporting the African Union's Agenda 2063 vision of a prosperous, open continent. By extending the Western individualistic model to incorporate community consent, this philosophical foundation offers a robust framework for data ethics in healthcare AI, particularly regarding informed consent. This method ensures that data collection and utilisation align with community values and expectations (Mahamadou et al., 2024).

This broader perspective on informed consent aligns with the African maxim "I am, because we are," where individual identity is linked with the collective, contrasting with Western "Cogito ergo sum" (Mahamadou et al., 2024). It indicates that in African communal cultures, obtaining consent from community leaders or elders alongside individuals adds an extra layer of protection and helps prevent unnecessary harm (Mahamadou et al., 2024). Although complex, this dual consent approach respects relational autonomy common in many African societies and offers a more ethically sound framework for healthcare AI data governance than purely individualistic models (Mahamadou et al., 2024). It also helps reduce risks related to data misuse, unauthorised sharing, and re-identification, which are significant concerns in AI development and deployment (Mahamadou et al., 2024). Furthermore, this collective consent fosters trust and engagement within communities, supporting the development of ethical and sustainable AI that genuinely benefits the public rather than solely individual interests (Ferlito et al., 2024).

Enhancing Regional and Continental Collaboration

This collaboration is essential for standardising data protection laws across African countries, ensuring that the varying legal frameworks, which currently exist in 35% of African nations without data protection laws, do not hinder the development of ethical AI and data sharing for health initiatives (Mahamadou et al., 2024). Aligning these legal systems would support cross-border data transfer rules and uniform definitions in data, addressing current inconsistencies that obstruct effective AI integration (Mahamadou et al., 2024). This includes creating consistent regulatory frameworks that consider both individual privacy and communal values, a vital step given the diverse legal and cultural contexts across the

continent (Mahamadou et al., 2024). Such harmonisation is crucial for establishing strong ethical guidelines for data sharing that balance AI's scientific progress with the need to protect participants' privacy and confidentiality, especially in low-resource settings (Mahamadou et al., 2024). These frameworks should also encourage fair data governance, ensuring the benefits of AI-driven advances are shared equally across all populations, with particular attention to vulnerable groups (Seastedt et al., 2022).

Interoperable digital systems are needed for comprehensive data exchange and integration across national health infrastructures (Rizig et al., 2025). This synergy can also help address data colonialism by ensuring that data collected in Africa remains under African control, promoting data sovereignty and equitable AI development partnerships.

This approach also supports the development of interoperable digital systems, vital for enabling comprehensive data exchange and integration across various national infrastructures (Rizig et al., 2025). This synergy can also help tackle data colonialism by ensuring that data collected in Africa remains under African control, thereby promoting data sovereignty and equitable partnerships in AI development (Mahamadou et al., 2024). These collaborative efforts are essential for addressing the ethical challenges associated with data, particularly regarding data privacy, informed consent, and algorithmic bias, which are increasingly recognised as critical issues globally (Adebamowo et al., 2023; Mahamadou et al., 2024). Such initiatives are vital for establishing robust frameworks to govern data research across Africa, especially considering the rapid advancements in the field and the substantial ethical governance risks involved (Adebamowo et al., 2023). This is particularly relevant given that existing research ethics regulations, while foundational, may need to be modified to encompass the novel methods and technologies inherent in research (Adebamowo et al., 2023).

Conclusion

The research identified various challenges associated with traditional evaluation methods for technological development in Africa. It proposed a framework that is both context-aware and context-driven, supporting the AU Agenda 2063. Consequently, the study fills a knowledge gap by suggesting an integrated approach to Africa's digital transformation, focusing on the development and application of AI through inclusive, context-aware, and human-centric methods, thereby advancing the AU Agenda 2063 vision of equitable development. By centring intersectionality, diffusion of innovation, and capabilities within an Afro-centric approach/ubuntu, the paper argues that technology development and deployment should go beyond techno-solutionism and prioritise systematic empowerment and societal development. Africa's digital transformation should be intersectional, inclusive, and grounded in Ubuntu ethics. Despite ongoing challenges such as algorithmic bias, uneven adoption, and ethical dilemmas, the AU has the potential to guide AI governance by prioritising human dignity, equity, and collective progress.

References

- Abujaber, A. A., & Nashwan, A. J. (2024). Ethical framework for artificial intelligence in healthcare research: A path to integrity. *World Journal of Methodology*, 14(3). <https://doi.org/10.5662/wjm.v14.i3.94071>
- Ade-Ibijola, A., & Okonkwo, C. W. (2023). Artificial Intelligence in Africa: Emerging Challenges. In *Social and cultural studies of robots and AI* (p. 101). Springer International Publishing. https://doi.org/10.1007/978-3-031-08215-3_5
- Adebamowo, C., Callier, S., Akintola, S., Maduka, O. C., Jegede, A. S., Arima, C. G., Ogundiran, T. O., & Adebamowo, S. N. (2023). The promise of data science for health research in Africa [Review of *The promise of data science for health research in Africa*]. *Nature Communications*, 14(1). Nature Portfolio. <https://doi.org/10.1038/s41467-023-41809-2>
- Adewale, M. D., Azeta, A. A., Abayomi-Alli, A., & Sambo-Magaji, A. (2024). Impact of artificial intelligence adoption on students' academic performance in open and distance learning: A systematic literature review. *Heliyon*, 10(22). <https://doi.org/10.1016/j.heliyon.2024.e40025>
- Agarwal, P., & Vij, A. (2024). Assessing the Challenges and Opportunities of Artificial Intelligence in Indian Education. *International Journal for Global Academic & Scientific Research*, 3(1), 36. <https://doi.org/10.55938/ijgasr.v3i1.71>
- Agbozo, E., & Spassov, K. (2018). Establishing Efficient Governance through Data-Driven e-Government. 662. <https://doi.org/10.1145/3209415.3209419>
- Ajani, O. A., Akintolu, M., & Afolabi, S. O. (2024). The emergence of artificial intelligence in the higher education. *International Journal of Research in Business and Social Science* (2147-4478), 13(8), 157. <https://doi.org/10.20525/ijrbs.v13i8.3507>, 5173. <https://doi.org/10.36922/aih.5173>
- Akinrinmade, A. O., Adebile, T. M., Ezuma-Ebong, C., Bolaji, K., Ajufo, A., Adigun, A. O., Mohammad, M., Dike, J. C., & Okobi, O. E. (2023). Artificial Intelligence in Healthcare: Perception and Reality [Review of Artificial Intelligence in Healthcare: Perception and Reality]. *Cureus*. Cureus, Inc. <https://doi.org/10.7759/cureus.45594>
- Alaran, M., Lawal, S. K., Jiya, M. H., Egya, S. A., Ahmed, M. M., Abdulsalam, A., Haruna, U. A., Musa, M. K., & Lucero-Prisno, D. E. (2025). Challenges and opportunities of artificial intelligence in African health space. *Digital Health*, 11. <https://doi.org/10.1177/20552076241305915>
- Alaran, M., Lawal, S. L. S., Jiya, M. H., Egya, S. A., Ahmed, M. M., Abdulsalam, A., Haruna, U. A., Musa, M. K., & Lucero-Prisno, D. E. (2025). Challenges and opportunities of artificial intelligence in African health space. *Digital Health*, 11. <https://doi.org/10.1177/20552076241305915>
- Aldoseri, A., Al-Khalifa, K. N., & Hamouda, A. M. S. (2024). Methodological Approach to Assessing the Current State of Organizations for AI-Based Digital Transformation. *Applied System Innovation*, 7(1), 14. <https://doi.org/10.3390/asi7010014>
- Alotaibi, N. S. (2024). The Impact of AI and LMS Integration on the Future of Higher Education: Opportunities, Challenges, and Strategies for Transformation. *Sustainability*, 16(23), 10357. <https://doi.org/10.3390/su162310357>
- Amugongo, L. M., Bidwell, N. J., & Corrigan, C. C. (2023). Invigorating Ubuntu Ethics in AI for healthcare: Enabling equitable care. *2022 ACM Conference on Fairness, Accountability, and Transparency*, 583. <https://doi.org/10.1145/3593013.3594024>
- Ayana, G., Dese, K., Nemomssa, H. D., Habtamu, B., Mellado, B., Badu, K., Yamba, E. I., Faye, S. L., Ondua, M., Nsagha, D. S., Nkweteyim, D., & Kong, J. D. (2024). Decolonizing global AI governance: assessment of the state of decolonized AI governance in Sub-Saharan Africa. *Royal Society Open Science*, 11(8). <https://doi.org/10.1098/rsos.231994>
- Ayana, G., Dese, K., Nemomssa, H. D., Habtamu, B., Mellado, B., Badu, K., Yamba, E. I., Faye, S. L., Ondua, M., Nsagha, D. S., Nkweteyim, D., & Kong, J. D. (2024). Decolonizing global AI governance: assessment of the state of decolonized AI governance in Sub-Saharan Africa. *Royal Society Open Science*, 11(8). <https://doi.org/10.1098/rsos.231994>
- Ayanwale, M. A., Sanusi, I. T., Adelana, O. P., Aruleba, K., & Oyelere, S. S. (2022). Teachers' readiness and intention to teach artificial intelligence in schools. *Computers and Education Artificial Intelligence*, 3, 100099. <https://doi.org/10.1016/j.caeai.2022.100099>
- Bajpai, N., & Wadhwa, M. (2021). Artificial Intelligence and Healthcare in India. <https://doi.org/10.7916/d8-v30w-7139>
- Bazzano, A. N., Mantsios, A., Mattei, N., Kosorok, M. R., & Culotta, A. (2025). AI Can Be a Powerful Social Innovation for Public Health if Community Engagement Is at the Core. *Journal of Medical Internet Research*, 27. <https://doi.org/10.2196/68198>

- Cachat-Rosset, G., & Klarsfeld, A. (2023). Diversity, Equity, and Inclusion in Artificial Intelligence: An Evaluation of Guidelines. *Applied Artificial Intelligence*, 37(1). <https://doi.org/10.1080/08839514.2023.2176618>
- Choung, H., David, P., & Seberger, J. S. (2023). A multilevel framework for AI governance. arXiv (Cornell University). <https://doi.org/10.48550/arxiv.2307.03198>
- D'Souza, R., Mathew, M., Mishra, V., & Surapaneni, K. M. (2024). Twelve tips for addressing ethical concerns in the implementation of artificial intelligence in medical education. *Medical Education Online*, 29(1). <https://doi.org/10.1080/10872981.2024.2330250>
- Dankwa-Mullan, I., Scheufele, E., Matheny, M. E., Quintana, Y., Chapman, W. W., Jackson, G. P., & South, B. R. (2021). A Proposed Framework on Integrating Health Equity and Racial Justice into the Artificial Intelligence Development Lifecycle. *Journal of Health Care for the Poor and Underserved*, 32, 300. <https://doi.org/10.1353/hpu.2021.0065>
- Diallo, K., Smith, J. W., Okolo, C. T., Nyamwaya, D., Kgomo, J., & Ngamita, R. (2025). Case studies of AI policy development in Africa. *Data & Policy*, 7. <https://doi.org/10.1017/dap.2024.71>
- Diallo, K., Smith, J. W., Okolo, C. T., Nyamwaya, D., Kgomo, J., & Ngamita, R. (2025). Case studies of AI policy development in Africa. *Data & Policy*, 7. <https://doi.org/10.1017/dap.2024.71>
- Distor, C. B., Ruas, I. C., Isagah, T., & Dhaou, S. B. (2023). Emerging technologies in Africa: Artificial Intelligence, Blockchain, and Internet of Things applications and way forward. 33. <https://doi.org/10.1145/3614321.3614326>
- Distor, C. B., Ruas, I. C., Isagah, T., & Dhaou, S. B. (2023). *Emerging technologies in Africa: Artificial Intelligence, Blockchain, and Internet of Things applications and way forward*. 33. <https://doi.org/10.1145/3614321.3614326>
- Etori, N. A., Temesgen, E., & Gini, M. (2023). What We Know So Far: Artificial Intelligence in African Healthcare. arXiv (Cornell University). <https://doi.org/10.48550/arxiv.2305.18302>
- Farhud, D. D., & Zokaie, S. (2021). Ethical Issues of Artificial Intelligence in Medicine and Healthcare. In *Iranian Journal of Public Health*. Knowledge E. <https://doi.org/10.18502/ijph.v50i11.7600>
- Ferlito, B., Segers, S., Proost, M. D., & Mertes, H. (2024). Responsibility Gap(s) Due to the Introduction of AI in Healthcare: An Ubuntu-Inspired Approach. *Science and Engineering Ethics*, 30(4). <https://doi.org/10.1007/s11948-024-00501-4>
- Frimpong, V. (2025). Artificial Intelligence Investment in Resource-Constrained African Economies: Financial, Strategic, and Ethical Trade-Offs with Broader Implications. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.5263624>
- Gikunda, K. (2024). Empowering Africa: An In-depth Exploration of the Adoption of Artificial Intelligence Across the Continent. arXiv (Cornell University). <https://doi.org/10.48550/arxiv.2401.09457>
- Göktaş, P., & Grzybowski, A. (2025). Shaping the Future of Healthcare: Ethical Clinical Challenges and Pathways to Trustworthy AI. *Journal of Clinical Medicine*, 14(5), 1605. <https://doi.org/10.3390/jcm14051605>
- Gurevich, E., Hassan, B. E., & Morr, C. E. (2022). Equity within AI systems: What can health leaders expect? *Healthcare Management Forum*, 36(2), 119. <https://doi.org/10.1177/08404704221125368>
- Gwagwa, A., Kazim, E., & Hilliard, A. (2022). The role of the African value of Ubuntu in global AI inclusion discourse: A normative ethics perspective [Review of *The role of the African value of Ubuntu in global AI inclusion discourse: A normative ethics perspective*]. *Patterns*, 3(4), 100462. Elsevier BV. <https://doi.org/10.1016/j.patter.2022.100462>
- Gwagwa, A., Kazim, E., Kachidza, P., Hilliard, A., Siminyu, K., Smith, M. L., & Shawe-Taylor, J. (2021). Road map for research on responsible artificial intelligence for development (AI4D) in African countries: The case study of agriculture [Review of Road map for research on responsible artificial intelligence for development (AI4D) in African countries: The case study of agriculture]. *Patterns*, 2(12), 100381. Elsevier BV. <https://doi.org/10.1016/j.patter.2021.100381>
- Gwagwa, A., Kraemer-Mbula, E., Rizk, N., Rutenberg, I., & Beer, J. de. (2020). Artificial Intelligence (AI) Deployments in Africa: Benefits, Challenges and Policy Dimensions. *The African Journal of Information and Communication (AJIC)*, 26. <https://doi.org/10.23962/10539/30361>
- Hasan, Md. T., Shamael, M. N., Akter, A., Islam, R., Mukta, Md. S. H., & Islam, S. (2023). An Artificial Intelligence-based Framework to Achieve the Sustainable Development Goals in the Context of Bangladesh. arXiv (Cornell University). <https://doi.org/10.48550/arxiv.2304.11703>
- Hasas, A., Hakimi, M., Shahidzay, A. K., & Fazil, A. W. (2024). AI for Social Good: Leveraging Artificial Intelligence for Community Development. *Journal of Community Service and Society Empowerment*, 2(2), 196. <https://doi.org/10.59653/jcsse.v2i02.592>
- Isagah, T., & Musabila, A. (2020). Recommendations for artificial intelligence implementation in African governments. 82. <https://doi.org/10.1145/3428502.3428512>

- Julien, G. (2024). How Artificial Intelligence (AI) impacts inclusive education. *Educational Research and Reviews*, 19(6), 95. <https://doi.org/10.5897/err2024.4404>
- Kak, A. (2020). "The Global South is everywhere, but also always somewhere." 307. <https://doi.org/10.1145/3375627.3375859>
- Kazim, F. A. (2021). Digital Transformation in Communities of Africa. *International Journal of Digital Strategy Governance and Business Transformation*, 11(1), 1. <https://doi.org/10.4018/ijdsGBT.287100>
- Khan, M. S., Umer, H., & Faruq, F. (2024). Artificial intelligence for low income countries. *Humanities and Social Sciences Communications*, 11(1). <https://doi.org/10.1057/s41599-024-03947-w>
- Kponyo, J. J., Fosu, D., OWUSU, F. E. B., ALI, M. I., & Ahiamadzor, M. M. (2024). Techno-neocolonialism: an emerging risk in the artificial intelligence revolution. *Trayectorias Humanas Trascontinentales*, 18. <https://doi.org/10.25965/trahs.6382>
- Kwarkye, T. G. (2025). "We know what we are doing": the politics and trends in artificial intelligence policies in Africa. *Canadian Journal of African Studies / Revue Canadienne Des Études Africaines*, 1. <https://doi.org/10.1080/00083968.2025.2456619>
- Leslie, D. M., Ashurst, C., Menéndez, N., Griffiths, F., Jayadeva, S., Jorgensen, M., Katell, M., Krishna, S. B. M., Kwiatkowski, D., Martins, C. I., Mahomed, S., Mougán, C., Pandit, S., Richey, M. W., Sakshaug, J. W., Vallor, S., & Vilain, L. (2024). 'Frontier AI,' Power, and the Public Interest: Who Benefits, Who Decides? *Harvard Data Science Review*. <https://doi.org/10.1162/99608f92.4a42495c>
- Lipsey, R. A. (2024). AI Diffusion to Low-Middle Income Countries; A Blessing or a Curse? *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2405.20399>
- Lusigi, A. (2019). Higher Education, Technology, and Equity in Africa. *New Review of Information Networking*, 24(1), 1. <https://doi.org/10.1080/13614576.2019.1608576>
- Mahamadou, A. J. D., Ochasi, A., & Altman, R. B. (2024). Data Ethics in the Era of Healthcare Artificial Intelligence in Africa: An Ubuntu Philosophy Perspective. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2406.10121>
- Mahamadou, A. J. D., Ochasi, A., & Altman, R. B. (2024a). *Data Ethics in the Era of Healthcare Artificial Intelligence in Africa: An Ubuntu Philosophy Perspective*. <https://doi.org/10.48550/ARXIV.2406.10121>
- Mahamadou, A. J. D., Ochasi, A., & Altman, R. B. (2024b). Data Ethics in the Era of Healthcare Artificial Intelligence in Africa: An Ubuntu Philosophy Perspective. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2406.10121>
- Maphalala, M. C., & Ajani, O. A. (2025). Leveraging artificial intelligence as a learning tool in higher education. *Interdisciplinary Journal of Education Research*, 7(1). <https://doi.org/10.38140/ijer-2025.vol7.1.01>
- Mbae, B. B., Dick-Sagoe, C., Odoom, D., & Adams, I. (2025). Digital Transformation and E-Service Delivery in African Public Sector Organisations: Insights into Botswana's Ministry of Agriculture. *Deleted Journal*, 4(2). <https://doi.org/10.1007/s44206-025-00186-7>
- Mensah, M., & Wynsberghe, A. van. (2025). Sustainable AI meets feminist African ethics. *AI and Ethics*, 5(4), 4293. <https://doi.org/10.1007/s43681-025-00705-9>
- Mienye, I. D., Sun, Y., & Ileberi, E. (2024). Artificial intelligence and sustainable development in Africa: A comprehensive review [Review of Artificial intelligence and sustainable development in Africa: A comprehensive review]. *Machine Learning with Applications*, 100591. Elsevier BV. <https://doi.org/10.1016/j.mlwa.2024.100591>
- Mohamed, S., Png, M.-T., & Isaac, W. (2020). Decolonial AI: Decolonial Theory as Sociotechnical Foresight in Artificial Intelligence. *Philosophy & Technology*, 33(4), 659. <https://doi.org/10.1007/s13347-020-00405-8>
- Moorosi, N. (2024). Better data sets won't solve the problem — we need AI for Africa to be developed in Africa. *Nature*, 636(8042), 276. <https://doi.org/10.1038/d41586-024-03988-w>
- Morley, J., Elhalal, A., Garcia, F., Kinsey, L., Mökander, J., & Floridi, L. (2021). Ethics as a Service: A Pragmatic Operationalisation of AI Ethics. *Minds and Machines*, 31(2), 239. <https://doi.org/10.1007/s11023-021-09563-w>
- Morley, J., Murphy, L., Mishra, A., Joshi, I., & Karpathakis, K. (2022). Governing Data and Artificial Intelligence for Health Care: Developing an International Understanding. *JMIR Formative Research*, 6(1). <https://doi.org/10.2196/31623>
- Mugurtay, N. (2025). The Janus Face of Innovation: Global Disparities and Divergent Options. *arXiv*. <https://doi.org/10.48550/ARXIV.2503.07676>
- Nalubega, T., & Uwizeyimana, D. E. (2024). Artificial intelligence technologies usage for improved service delivery in Uganda. *Africa's Public Service Delivery and Performance Review*, 12(1). <https://doi.org/10.4102/apsdpr.v12i1.770>

- Năstasă, A., Dumitra, T.-C., & Grigorescu, A. (2024). Artificial intelligence and sustainable development during the pandemic: An overview of the scientific debates. *Heliyon*, 10(9). <https://doi.org/10.1016/j.heliyon.2024.e30412>
- Nazer, L., Zatarah, R., Waldrip, S., Ke, J. X. C., Moukheiber, M., Khanna, A. K., Hicklen, R. S., Moukheiber, L., Moukheiber, D., Ma, H., & Mathur, P. (2023). Bias in artificial intelligence algorithms and recommendations for mitigation [Review of Bias in artificial intelligence algorithms and recommendations for mitigation]. *PLOS Digital Health*, 2(6). Public Library of Science. <https://doi.org/10.1371/journal.pdig.0000278>
- Ndembi, N., Rammer, B., Fokam, J., Dinodia, U., Tessema, S. K., Nsengimana, J. P., Mwangi, S., Adzogenu, E., Dongmo, L., Rees, B. I., O'Connor, B., Crowell, T. A., James, W. H., Colizzi, V., Ngongo, A. N., & Kaseya, J. (2025). Integrating artificial intelligence into African health systems and emergency response: Need for an ethical framework and guidelines. *Journal of Public Health in Africa*, 16(1). <https://doi.org/10.4102/jphia.v16i1.876>
- Nibigira, N., Havyarimana, V., & Xiao, Z. (2024). Artificial Intelligence Adoption for Cybersecurity in Africa. *Journal of Information Security*, 15(2), 134. <https://doi.org/10.4236/jis.2024.152009>
- Nwachukwu, N. M., Roberts, J. S., & Montoya, L. N. (2023). The Glamorisation of Unpaid Labour: AI and its Influencers. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2308.02399>
- Nyaaba, M., Wright, A. D., & Choi, G. L. (2024). Generative AI and Digital Neocolonialism in Global Education: Towards an Equitable Framework. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2406.02966>
- O'Dea, X., & O'Dea, M. (2023). Is Artificial Intelligence Really the Next Big Thing in Learning and Teaching in Higher Education? A Conceptual Paper. *Journal of University Teaching and Learning Practice*, 20(5). <https://doi.org/10.53761/1.20.5.05>
- Ochasi, A., Mahamadou, A. J. D., & Altman, R. B. (2024). Justice in Healthcare Artificial Intelligence in Africa. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2406.10653>
- Odero, B., Nderitu, D., & Samuel, G. (2024). The Ubuntu Way: Ensuring Ethical AI Integration in Health Research. *Wellcome Open Research*, 9, 625. <https://doi.org/10.12688/wellcomeopenres.23021.1>
- Ofori-Asare, Y. (2024). Cognitive imperialism in artificial intelligence: counteracting bias with indigenous epistemologies. *AI & Society*. <https://doi.org/10.1007/s00146-024-02065-0>
- Ojha, S., Narendra, A., Mohapatra, S., & Misra, I. (2023). From Robots to Books: An Introduction to Smart Applications of AI in Education (AIEd). *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2301.10026>
- Okolo, C. T., Aruleba, K., & Obaido, G. (2022). Responsible AI in Africa—Challenges and Opportunities. In *Social and cultural studies of robots and AI* (p. 35). Springer International Publishing. https://doi.org/10.1007/978-3-031-08215-3_3
- Olawade, D. B., Wada, O. J., David-Olawade, A. C., Kunonga, E., Abaire, O. J., & Ling, J. (2023). Using artificial intelligence to improve public health: a narrative review [Review of Using artificial intelligence to improve public health: a narrative review]. *Frontiers in Public Health*, 11. Frontiers Media. <https://doi.org/10.3389/fpubh.2023.1196397>
- Olawade, D. B., Wada, O. Z., David-Olawade, A. C., Fapohunda, O., Ige, A. O., & Ling, J. (2024). Artificial intelligence potential for net zero sustainability: Current evidence and prospects. *Next Sustainability*, 4, 100041. <https://doi.org/10.1016/j.nxsust.2024.100041>
- Owoyemi, A., Owoyemi, J., Osiyemi, A., & Boyd, A. (2020). Artificial Intelligence for Healthcare in Africa. *Frontiers in Digital Health*, 2. <https://doi.org/10.3389/fdgh.2020.00006>
- Palomares, I., Martínez-Cámara, E., Montes, R., García-Moral, P., Chiachío, M., Chiachío, J., Alonso, S., Melero, F. J., Molina, D., Fernández, B. C., Santaella, C. M., Marchena, R., Vargas, J. P. de, & Herrera, F. (2021). A panoramic view and swot analysis of artificial intelligence for achieving the sustainable development goals by 2030: progress and prospects. *Applied Intelligence*, 51(9), 6497. <https://doi.org/10.1007/s10489-021-02264-y>
- Panch, T., Mattie, H., & Atun, R. (2019). Artificial intelligence and algorithmic bias: implications for health systems [Review of Artificial intelligence and algorithmic bias: implications for health systems]. *Journal of Global Health*, 9(2). Edinburgh University Global Health Society. <https://doi.org/10.7189/jogh.09.020318>
- Pesapane, F., Bracchi, D. A., Mulligan, J. F., Линников, A. C., Maslennikov, O. V., Lanzavecchia, M. B., Tantrige, P., Stasolla, A., Biondetti, P., Giuggioli, P. F., Cassano, E., & Carrafiello, G. (2021). Legal and Regulatory Framework for AI Solutions in Healthcare in EU, US, China, and Russia: New Scenarios after a Pandemic. *Radiation*, 1(4), 261. <https://doi.org/10.3390/radiation1040022>
- Pham, T. D. (2025). Ethical and legal considerations in healthcare AI: innovation and policy for safe and fair use [Review of Ethical and legal considerations in healthcare AI: innovation and policy for safe and fair use]. *Royal Society Open Science*, 12(5). Royal Society. <https://doi.org/10.1098/rsos.241873>

- Radanliev, P. (2025). AI Ethics: Integrating Transparency, Fairness, and Privacy in AI Development. *Applied Artificial Intelligence*, 39(1). <https://doi.org/10.1080/08839514.2025.2463722>
- Regilme, S. S. F. (2024). Artificial Intelligence Colonialism: Environmental Damage, Labor Exploitation, and Human Rights Crises in the Global South. *The SAIS Review of International Affairs*, 44(2), 75. <https://doi.org/10.1353/sais.2024.a950958>
- Rizig, M., McLaughlin, C., Narayan, V. A., Salama, M., Udeh-Momoh, C., Rwafa-Madzvamutse, C. R., Gichu, M., Ojagbemi, A., Guerchet, M., Bitanihirwe, B. K. Y., Mbakile-Mahlanza, L., Gyasi, R. M., Mostert, C. M., Awadelkareem, M. A., Fall, M., Njamnshi, A. K., Akinyemi, R., Kalaria, R. N., Gouider, R., ... Vradenburg, G. (2025). Strengthening Africa's brain health and economic resilience [Review of *Strengthening Africa's brain health and economic resilience*]. *Nature Medicine*. Nature Portfolio. <https://doi.org/10.1038/s41591-025-03863-9>
- Roshanaei, M., Olivares, H., & Lopez, R. R. (2023). Harnessing AI to Foster Equity in Education: Opportunities, Challenges, and Emerging Strategies. *Journal of Intelligent Learning Systems and Applications*, 15(4), 123. <https://doi.org/10.4236/jilsa.2023.154009>
- Samarawickrama, M. (2022). AI Governance and Ethics Framework for Sustainable AI and Sustainability. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2210.08984>
- Seastedt, K. P., Schwab, P., O'Brien, Z., Wakida, E. K., Herrera, K., Marcelo, P. G., Agha-Mir-Salim, L., Borrat, X., Ndulue, E. B., Marcelo, A., & Celi, L. A. (2022). Global healthcare fairness: We should be sharing more, not less, data [Review of *Global healthcare fairness: We should be sharing more, not less, data*]. *PLOS Digital Health*, 1(10). Public Library of Science. <https://doi.org/10.1371/journal.pdig.0000102>
- Sinde, R., Diwani, S. A., Leo, J., Kondo, T. S., Elisa, N., & Matogoro, J. (2023). AI for Anglophone Africa: Unlocking its adoption for responsible solutions in academia-private sector. *Frontiers in Artificial Intelligence*, 6. <https://doi.org/10.3389/frai.2023.1133677>
- Singh, M. P., & Keche, Y. N. (2025). Ethical Integration of Artificial Intelligence in Healthcare: Narrative Review of Global Challenges and Strategic Solutions [Review of Ethical Integration of Artificial Intelligence in Healthcare: Narrative Review of Global Challenges and Strategic Solutions]. *Cureus*. Cureus, Inc. <https://doi.org/10.7759/cureus.84804>
- Situmeang, S. M. T., Harliyanto, R., Zulkarnain, P. D., Mahdi, U., & Nugroho, T. (2024). The Role of Artificial Intelligence in Criminal Justice. *Global International Journal of Innovative Research*, 2(8), 1966. <https://doi.org/10.59613/global.v2i8.264>
- Tadimalla, S. Y., & Maher, M. L. (2024). Implications of Identity of AI: Creators, Creations, and Consequences. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2403.07924>
- Tjondronegoro, D. W. (2024). Strategic AI Governance: Insights from Leading Nations. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2410.01819>
- Townsend, B., Sihlahla, I., Naidoo, M., Naidoo, S., Donnelly, D., & Thaldar, D. (2023). Mapping the regulatory landscape of AI in healthcare in Africa [Review of *Mapping the regulatory landscape of AI in healthcare in Africa*]. *Frontiers in Pharmacology*, 14. Frontiers Media. <https://doi.org/10.3389/fphar.2023.1214422>
- Vargas, N. C. (2024). Exploiting the margin: How capitalism fuels AI at the expense of minoritized groups. *AI and Ethics*. <https://doi.org/10.1007/s43681-024-00502-w>
- Vatamanu, A. F., & Tofan, M. (2025). Integrating Artificial Intelligence into Public Administration: Challenges and Vulnerabilities. *Administrative Sciences*, 15(4), 149. <https://doi.org/10.3390/admsci15040149>
- Vedaste, N., & Muzee, H. (2018). A critical review of Agenda 2063: Business as usual? [Review of A critical review of Agenda 2063: Business as usual?]. *African Journal of Political Science and International Relations*, 12(8), 142. Academic Journals. <https://doi.org/10.5897/ajpsir2018.1114>
- Xiao, Y., & Li, X. (2025). The impact of artificial intelligence-driven ESG performance on sustainable development of central state-owned enterprises listed companies. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-93694-y>
- Xue, L., & Pang, Z. (2022). Ethical governance of artificial intelligence: An integrated analytical framework. *Journal of Digital Economy*, 1(1), 44. <https://doi.org/10.1016/j.jdec.2022.08.003>
- Yilma, K. (2025). Ethics of AI in Africa: Interrogating the role of Ubuntu and AI governance initiatives. *Ethics and Information Technology*, 27(2). <https://doi.org/10.1007/s10676-025-09834-5>
- Zhang, J., & Zhang, Z. (2023). Ethics and governance of trustworthy medical artificial intelligence. *BMC Medical Informatics and Decision Making*, 23(1). <https://doi.org/10.1186/s12911-023-02103-9>
- Zimba, M., Jouini, M., & Ndaka, A. (2025). *Context-Aware Africa-Led Designing of Responsible Artificial Intelligence Technologies* (p. 145). https://doi.org/10.1007/978-3-031-75674-0_7
- Zou, J., & Schiebinger, L. (2021). Ensuring that biomedical AI benefits diverse populations [Review of Ensuring that biomedical AI benefits diverse populations]. *EBioMedicine*, 67, 103358. Elsevier BV. <https://doi.org/10.1016/j.ebiom.2021.103358>