

## **Ethical Leadership and Artificial Intelligence Governance: Comparative Perspectives and Implications for Africa's Development**

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### **Abstract**

The rise of Artificial Intelligence (AI) presents both transformative opportunities and significant ethical challenges for leadership and governance in Africa. This study examined ethical leadership and governance in the AI era, employing a comparative approach with a focus on Africa's development trajectory. Employing a documentary research design and secondary sources of data, thematic analysis was employed as the analytical technique. Thematic Analysis is among the most widely used qualitative data analysis techniques, providing a framework for data analysis based on the identification, analysis, and interpretation of patterns of meaning present in datasets. The analysis demonstrates that while AI has enormous potential to enhance public service delivery, governance effectiveness, and socioeconomic transformation, its use in African contexts is constrained by weak regulatory capability, fragmented governance frameworks, and insufficient ethical monitoring. A comparative analysis of global AI governance models reveals that institutional arrangements and leadership ideals are crucial in determining whether AI systems exacerbate inequality, bias, and democratic weaknesses or promote accountability, inclusivity, and public trust. The study recommended that African governments should invest in moral AI research and build regulatory sandboxes for controlled experimentation and policy development. Interdisciplinary advisory boards, including ethicists, technologists, and community representatives, should be institutionalised to guide AI governance.

**Keywords:** Artificial Intelligence; Transformational Leadership; Ethical Governance; Development Policy; Digital Equity.

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## INTRODUCTION

Advances in artificial intelligence (AI) are propelling the Fourth Industrial Revolution, which is drastically altering political systems, labour markets, economics, and social relationships. This technical advancement arrives in Africa at a pivotal moment, presenting both enormous development challenges and previously unheard-of growth prospects (Siebrito & van de Heyde, 2019; Tarr, 2021; Bashir, Dahlman, Kanehira, & Tilmes, 2021; Melles, 2024). Although artificial intelligence (AI) has the potential to improve service delivery, increase agricultural productivity, fortify healthcare systems, modernize education, and encourage creative entrepreneurship (Butt, 2024), its disruptive nature also poses significant ethical, social, and governance challenges, especially in areas with underdeveloped regulatory frameworks and institutional capacities (Sousa, Pani, Dal Mas, & Sousa, 2024; Khatoon, & Velidandi, 2025).

Artificial Intelligence (AI) has rapidly infiltrated political, economic, and social institutions, transforming leadership and governance (Osimen, Fulani, Chidozie, & Dada, 2024). While AI offers efficiency improvements, it also raises ethical questions about accountability, transparency, bias, data protection, and human rights (Ayeni et al., 2025). As a result, it is becoming increasingly recognised that AI governance is a normative and political process influenced by institutional capabilities and leadership principles (Floridi et al., 2018; Mittelstadt, 2019; Corrêa et al., 2023). Different governance models, such as China's state-centric framework, the US market-driven approach, and the EU's rights-based regulation, are revealed by comparative experiences and represent the reality of the Global North (Al-Maamari, 2025). AI raises governance concerns related to insufficient regulation and ethical oversight, while also presenting development prospects in Africa (UNDP, 2023; World Bank, 2024). AI could perpetuate exclusion and inequality in the absence of moral leadership (Yilma, 2025; Adeniyi & Okusi, 2024).

Good governance and ethical leadership have become essential preconditions for negotiating this challenging environment (Gkikas, 2023; Jain & Roy, 2024; Murari & Parmar, 2025). Transparent, inclusive, and accountable leadership is crucial in the African context to ensure that AI technologies are utilised for social justice, human dignity, and economic efficiency, while also promoting social justice and human dignity (Kaakandikar, 2025; Efthymiou, Egleton, & Psomiadi, 2025). AI adoption has the potential to exacerbate existing disparities, facilitate authoritarian monitoring, and erode democratic processes if not accompanied by robust ethical oversight and governance. On the other hand, Africa can guide AI innovation in ways that uphold human rights, advance equity, and spur sustainable development if it has principled governance institutions in place (Garcia, 2024; Ntuli, 2024).

Although artificial intelligence is increasingly being utilised in Africa's development and governance sectors, institutional governance frameworks and ethical leadership remain weak, dispersed, and poorly coordinated (Daly et al., 2019; Batool et al., 2025). Deploying AI increases the risk of exclusion, algorithmic bias, data dependency, and democratic erosion because it often occurs in environments with weak accountability, limited regulatory capacity, and severe socioeconomic disparities. AI governance models currently in use are often introduced to Africa without sufficient adaptation to local leadership realities, ethical traditions, and development aspirations. These models primarily originated from contexts in the Global North. Furthermore, the majority of research on AI ethics and governance remains Western-centric, failing to incorporate African perspectives and treating development, leadership, and governance as distinct analytical fields. In response, this study adopts a comparative and integrative approach to investigate AI governance and ethical leadership in Africa, offering unique, context-sensitive insights and a normative framework that aligns with Africa's trajectory towards sustainable development.

## Artificial Intelligence and Its Impact on Governance

It is becoming more widely acknowledged that artificial intelligence (AI) is a revolutionary force in governance and public administration (Phuangthuean & Nuansang, 2024; Mahant, 2025). Artificial Intelligence (AI) is defined as the emulation of human intelligence processes by machines, especially computer systems. This includes a variety of technologies such as robotics, computer vision, natural language processing, and machine learning (Perez, Deligianni, Ravi, & Yang, 2018;

Soori, Arezoo, & Dastres, 2023; Jaboob, Durrah, & Chakir, 2024). AI can enhance service delivery, improve administrative efficiency, and support evidence-based policymaking in the governance context (Phuangthuean & Nuansang, 2024; Vatamanu & Tofan, 2025). However, its use also presents serious moral, legal, and political issues, especially in countries where democratic institutions are still in development (Vatamanu & Tofan, 2025).

The use of AI in data-driven decision-making is one of the most prominent effects on governance (Mendhe, 2025; Dunleavy & Margetts, 2025; Gomes & Cardoso, 2025). Real-time processing of massive volumes of data by AI systems enables governments to identify trends, forecast outcomes, and tailor public services to meet the unique needs of their constituents (Yerlikaya & Erzurumlu, 2021; Damar, Aydin, Nihal Cagle, Özoguz, Ömer Köse, & Özen, 2024). Raji & Sholademi (2024) state that predictive analytics can be applied to social welfare to maximise resource allocation, healthcare to predict illness outbreaks, and policing to identify criminal hotspots.

AI enables digital governance platforms, including intelligent infrastructure management, virtual assistants for public service access, and automated administrative systems (Zhang & Lu, 2021; Garg, 2021). Estonia, Hungary, Serbia, and other nations have already adopted AI-enabled e-governance solutions that enhance transparency, reduce the likelihood of corruption, and expedite bureaucratic processes (Androutsopoulou, Carayannis, Askounis, & Zotas, 2025; Singh, Jain, Wongmahesak, & Chandra, 2025). E-government has the capability of completing maximum tasks within minimal time (Chukwudi, Bello, & Adesemowo, 2023). Such AI applications provide a path toward more transparent and citizen-centred governance models for African nations, where public sector inefficiencies and lack of accountability are significant issues (Milakovich, 2021).

AI incorporation into governance procedures is not risk-free, though (Unver, 2024; Kiilu, 2025; Vatamanu & Tofan, 2025). The decline of democratic accountability is a significant concern. The government has the responsibility to work against such democratic decline and ensure protection in society (Chidiozie, Chukwudi, Aje, & Osimen, 2024). Outsourcing decision-making to opaque algorithms weakens the public's capacity to object to or question government actions. Because many AI systems are "black boxes," it can be challenging to trace the decision-making process, which can erode the credibility of public institutions (Kiilu, 2025). AI can be used as a weapon for political repression, social manipulation, and mass surveillance in the absence of clear regulatory frameworks, particularly in authoritarian regimes (Bukhari & Anwar, 2025; Mahapatra, 2025).

If AI is used uncontrolled, it could exacerbate already-existing inequities and reinforce authoritarian tendencies in Africa, where governance issues, including weak institutional capacity, limited digital infrastructure, and inadequate legal safeguards, persist. In multicultural societies, *algorithmic bias*, the phenomenon where AI systems reproduce or magnify societal prejudices included in training data, is especially troubling (Aragani, Anumolu, & Selvakumar, 2025). Marginalising disadvantaged populations and limiting civic engagement are two consequences of the concentration of AI technologies in the hands of a strong government (Kiilu, 2025; Lalenis, 2025). The government must devise strategies to achieve success and stability in its environment (Chukwudi, Gberevbie, Abaslim, & Imhonopi, 2019).

## METHODOLOGY

The research design adopted for the study was documentary, a qualitative methodological approach that entails the investigation of numerous forms of documents, including books, newspaper articles, academic journal articles, and institutional reports. (Morgan, 2022). The research utilised secondary sources of data, which comprise information that has already been gathered, recorded, and published by other academics, organisations, and institutions. The analytical technique employed was thematic analysis. Thematic Analysis is among the most widely used qualitative data analysis techniques, providing a framework for data analysis based on the identification, analysis, and interpretation of patterns of meaning present in datasets in a structured and flexible manner (Ahmed et al., 2025).

Above all, thematic analysis was adopted in this study to explore the comparative implications of ethical values and artificial intelligence on Africa's development trajectory.



## **RESULTS AND DISCUSSION**

### **Conceptual and Theoretical Framework (Transformational Leadership Theory)**

In the world, according to O'Lemmon (2022), harnessing AI technologies presents both a new and undiscovered opportunity and a threat. Saba and Ngapah (2024) state that the BRICS countries, including Brazil, Russia, India, China, and South Africa, are leading the way in this radical economic transformation of the nation. According to Radanliev, Santos, Brandon-Jones, and Joinson (2024), the policies embraced by these countries are influential on the future of AI and AI social impacts, including the displacement of workers and the digital divide alongside ethics, privacy, and transparency of AI algorithms.

Today, given the constant technological changes we experience, exploring ethical leadership in the context of AI is particularly important. Because AI plays a role in business, government, and healthcare, having ethical leaders is particularly crucial (Uddin, 2023). One of these topics is algorithmic bias, also known as data privacy, and the changes society faces because of decisions made possible by algorithms. Part of their work involves ensuring that AI systems are correctly implemented and impartial (Uddin, 2023). It is worth noting that the type of leadership determines the success of any society (Abaslim, Gberekvie, Osibanjo, 2019).

Whittlestone, Nyrup, Alexandrova, Dihal, & Cave (2019) highlight that ethical leadership helps ensure that AI's positive effects predominate and that adverse outcomes are mitigated. It emphasises that leaders in AI should be mindful, check the impact of their decisions on society, and help grow a workplace where ethics are valued and every person is responsible. Davenport and Kirby (2016) believe that ethical leaders help direct both firms and society in utilising artificial intelligence for the benefit of society.

Ciulla (2020), basing on the concepts of virtue ethics and deontological theory, ethical leadership entails that the leaders should be guided by integrity and fair play in the deployment of AI in such a way that the systems deployed are directed by the good of the society instead of focusing on profit or efficiency as explained by Aristotelian models transformed to technology where phronesis (practical wisdom) is the driving force of ethical AI governance.

Sharma and Sharma (2025) stated that the spread of AI in Brazil has given rise to a variety of ethical issues. Facial recognition technologies are characterised by algorithmic bias, which, in the case of Afro-Brazilians, is predominantly inappropriate. The use of smart city surveillance is often not transparent, which creates a risk to privacy. These issues highlight the need to strike a balance between innovation and justice, equity, and human rights. Sharma and Sharma (2025) further noted that the application of AI in South Africa raises ethical concerns, such as algorithm bias, which may exacerbate racial, gender, and economic disparities. The use of AI in the recruitment process, credit rating, and surveillance is a recreation of past discrimination and suppression of civil rights. There are significant ethical concerns surrounding the use of AI in Egypt. These are the dangers to freedom of speech and privacy, including poor data protection and state surveillance facilitated by face recognition technologies.

In theory, it highlights that leaders should be cautious about the moral challenges they face due to the use of intelligent machines and AI (Mittelstadt, Allo, Taddeo, Wachter, & Floridi, 2016). As such, leaders should ensure that AI systems uphold transparency, justice, and responsibility by applying principles from ethics and technology (O'Neill, 2016). This is about reducing biased outcomes in algorithms, protecting personal data, and following the rules of human dignity and responsibility. Sharma and Sharma (2025) provide an example of applying Global Governance Theory to highlight the roles of state and non-state actors in shaping norms and policies when issues of transnational concern arise. This view provides a holistic understanding of how BRICS+ countries are adapting or differ in their adoption of AI governance.

### **The Role of Ethical Leadership in Managing Artificial Intelligence**

Uddin reports in 2023 that ethical leadership is now highly significant in the era of artificial intelligence, as it affects numerous practical issues. With AI being increasingly used in all fields, including our daily lives, leaders face numerous challenging questions about how to utilise AI ethically. A firm commitment to transparency, fairness, and accountability is what marks ethical

leadership. Actively involving ethicists and AI experts is crucial for leaders when making AI technology (Bryson & Winfield, 2017).

As artificial intelligence transforms the way things are done, a wide range of opportunities and ethical leadership issues emerge. Leaders are responsible for directing businesses and teams using a solid set of moral principles. This also means utilising AI in ways that align with ethical beliefs and social values (Uddin, 2023; Treviño, den Nieuwenboer, & Kish-Gephart, 2014).

### Transformational Leadership Theory

Consisting of four important areas called idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration, Transformational Leadership Theory explains how great leaders perform (Bass & Riggio, 2006). They illustrate a way of leading that moves beyond basic exchanges by encouraging integrity, original ideas, and emotional awareness, all of which are skills rapidly needed for handling AI technologies. Since corruption, weak institutions, and inequality are common challenges in Africa, transformational leadership shows a way to achieve ethical and sustainable governance. Transformational leadership respects what is proper and equitable, urging transparency and the responsible use of new technology (Mayer, Aquino, Greenbaum, & Kuenzi, 2010) as well as leadership focused on change, responsible governance, and the use of artificial intelligence. According to the framework, ethical governance practices are enhanced by transformational leadership, which, in turn, facilitates the advancement of artificial intelligence. Ethical governance plays a crucial role in helping AI support development success without exacerbating inequality (Asongu & Nwachukwu, 2019).

This theory has been criticised for its identification of leaders as charismatic, which is viewed as trivialising effectiveness in leadership because it has ignored other factors that affect leaders. At the same time, they play their roles (Yukl, 1999). Despite the criticisms, it is fitted for underpinning this study.

### Ethical Leadership in the Age of AI

The emergence of artificial intelligence (AI) has profoundly changed the leadership environment, particularly in the public sector, where choices have a direct impact on the lives of citizens and the outcomes of society (Anshari, Hamdan, Ahmad, & Ali, 2025; Ghosh, Saini, & Barad, 2025). Ethical leadership is more important than ever in this age of rapid digital change (Kumar, Verma, & Mirza, 2024) to direct the proper development and application of AI technologies (Mujtaba, 2025). The practice of leading with integrity, justice, openness, and accountability is known as ethical leadership. These values are essential to ensuring that AI advances the common good rather than sustaining injustice, harm, and marginalisation (Kandasamy, 2024).

The ethical use of automated decision-making, algorithmic bias, data privacy, and digital exclusion are just a few of the new issues that ethical leadership in the AI environment needs to address (Kandasamy, 2024). Leaders dealing with these difficulties need to be not only technically proficient but also morally and socially sound. In contrast to traditional leadership, which prioritises political expediency or financial gain, ethical leadership in the AI era places a strong emphasis on advancing justice and equity in technical innovation, human rights, and long-term social well-being.

One of the key responsibilities of ethical leaders is to ensure transparency and accountability in the use of AI (Herrera-Poyatos, Del Ser, de Prado, Wang, Herrera-Viedma, & Herrera, 2025). In governance, transparency is crucial for maintaining public trust, particularly when AI is employed in sensitive areas such as voter profiling, social welfare distribution, and law enforcement (Chandra, 2025; Adeleke, 2025). Therefore, ethical leaders must advocate for policies that require algorithmic accountability and public oversight (Ware, 2025).

Furthermore, ethical leadership demands inclusive policymaking. AI systems can inadvertently reinforce existing social and economic inequalities if their design and deployment are not inclusive (Judijanto, Mudinillah, Rahman, & Joshi, 2025). Leaders must ensure that diverse voices, particularly those from marginalised communities, are included in discussions around AI governance and governance in general. This is especially important in Africa, where disparities in digital access, education, and economic resources are significant.



## **Comparative Perspective and Implications for Africa's Development Trajectory**

Artificial intelligence methods have brought significant progress to education, science, health care, and climate change (Mulamula, 2024). For some time, many people have expressed concerns that AI might enable governments to keep a close watch on their citizens through a wide-scale monitoring program. There is a common concern that robots might replace average workers, that autonomous war machines could endanger society when they fall into the wrong hands, that their progress may be unaccountable, and that AI innovations could, by accident, transmit bias and adversely impact the fairness of society (Mulamula, 2024). With the global development of AI, its impact on both society and the economy is more significant than ever, particularly in regions with a range of challenges and opportunities (Aderibigbe, Aderibigbe, Oheneh, Nwaobia, Gidiagba, & Ani, 2023). The adoption of Artificial Intelligence (AI) in global development is transforming industries, enhancing productivity, and fostering innovative new approaches. Although many advanced nations are leveraging AI, implementing and adopting these technologies in developing countries is not always straightforward and presents new opportunities (Aderibigbe et al., 2023). Artificial Intelligence (AI) is rising around the globe, transforming many parts of modern society with information (Mannuru, Shahriar, Teel, Wang, Lund, Tijani, Pohboon, Agbaji, Alhassan, Galley, & Kousari, 2023). Artificial Intelligence has changed from being a small sector to having widespread adoption, adaptation, and influence, thanks to machine learning algorithms, neural networks, and strong computers (Gupta, Srivastava, Sahu, Tiwari, Ambasta& Kumar, 2021; Zhang et al., 2021; Aderibigbe et al., 2023; Ukoba & Jen, 2022; Sanni, Adeleke, Ukoba, Ren, & Jen, 2024). AI is reshaping the global technology landscape, and its trends in developing countries reflect a diverse range of influences (Pan, 2016).

Leaders are now facing a significant challenge in managing the ethical implications of artificial intelligence. Leaders are expected to support fair, transparent, and impartial development and application of AI, preventing algorithmic bias and maintaining the privacy of data (Uddin, 2023). The reason for this alignment is to guarantee that artificial intelligence supports good changes and, at the same time, respects ethical standards and principles (Brown & Treviño, 2006).

At this point, with the advent of artificial intelligence, leaders must follow strong ethical norms and regulations. To ensure that AI technologies align with societal values and beliefs, policymakers must address the ethical issues associated with them (Uddin, 2023). Treviño and Nelson argue that ethical leaders greatly influence how a company develops its ethical culture. Uddin (2023) points out, and Ferrell and Fraedrich (2019) affirm, that ethical leadership contributes to an organisation's ethical structure by addressing challenging situations and promoting ethical behaviour among all employees. When there are clear rules for building, using, and making decisions with AI, this helps prevent harm and creates trust and accountability.

Mubangizi (2024) noted that enhanced decision-making, risk management, and compliance in the U.S., Europe, and China are attributed to strong infrastructure and proper regulations; however, these effects are minimal in other parts of the world. Mubangizi (2024) noted that while digital infrastructure, AI professionals, and uncertain laws often hinder AI development in Kenya, the country's expanding digital economy presents numerous opportunities. Studies show that while advanced countries make greater use of AI, developing countries are slower in their adoption (Phuangthuean & Nuansang, 2024; Vatamanu & Tofan, 2025).

According to a report by PwC (2020), 72% of U.S. Fortune 500 companies now utilise AI in their corporate governance. The use of AI has strengthened risk controls, enhanced board decision-making, and simplified adherence to regulations. According to Rosati and Rossi (2021), governance is the field where AI is most commonly used by European companies, primarily for meeting stringent regulations such as the GDPR. They have made it easier for companies in finance and healthcare to comply with regulations. In a 2019 report, EY noted that AI is being adopted in Canadian corporate governance, as 60% of companies utilise AI to enhance board management and reduce errors in financial statements. PwC's 2021 study revealed that only 25% of companies in South Africa use AI for governance. Mauritius, Egypt, and Kenya are currently leading the way, thanks to their early policy documents on AI. The AI strategy introduced in 2018 by Mauritius aims to utilise AI to enhance the traditional economy and create new areas for development.

African countries, including Ethiopia, Ghana, Morocco, Rwanda, South Africa, Tunisia, and Uganda, have begun defining their AI plans. In Africa, Ghana and Uganda have been developing Ethical Policy Frameworks for AI, aiming to establish local AI policy frameworks (Arakpogun, Elsahn, Olan, 2021). Overall, Africa is just beginning to establish its AI policy and governance systems. Nevertheless, more programmes are being organised to meet the challenges and make the most of AI across the continent. Many African countries are keen on making responsible AI rules that will support sustainable growth and benefit all people living on the continent (Gwagwa, Kraemer-Mbula, Rizk, Rutenberg, DeBeer, 2020). Switzerland, as an illustration of a European country outside the EU, has chosen to focus its national regulation of AI on the US in several ways. This means they are aware that they must lead the way in technology and innovation, while also considering responsible AI development. The United States addresses both AI safety concerns and broader issues, including privacy, equality, civil rights, consumer and worker protection, and ensuring fair competition. Using a holistic approach, the primary goals are to maximise the benefits of AI and mitigate the risks (Robles & Mallinson, 2023). Brazil's laws include rules for data privacy, cybercrime, and cybersecurity.

Since most people in Kenya struggle to access healthcare, AI is playing a significant role in developing medical services in the country (Ade Ibijola & Okonkwo, 2023). The company uses artificial intelligence to enhance the analysis of medical imaging. The application of this technology helps detect diseases early, allowing for faster action. With its portable diagnostics, Ilara Health facilitates the delivery of healthcare services in remote areas with limited medical facilities and resources (Aderibigbe et al., 2023). Rwanda is utilising AI in schools to enhance the learning process for students (Harerimana & Mtshali, 2020). The primary intention of AI in education in Rwanda is to address learning inequalities and enhance student learning outcomes (Aderibigbe et al., 2023). The implementation of AI often requires new strategies to maintain fairness, manage biases, and keep clients' information safe and secure (Aderibigbe et al., 2023). AI is transforming various aspects of society, including healthcare, education, agriculture, and finance, and is beneficial in addressing a wide range of concerns due to its numerous applications (Aderibigbe et al., 2023).

## CONCLUSION

This study examined ethical leadership and governance in the AI era, employing a comparative approach with a focus on Africa's development trajectory. Ethical leadership in the AI era must be both proactive and predictive. As technology rapidly evolves, African leaders cannot afford to be reactive; instead, they must anticipate challenges and establish preventive measures. This aligns with the assumptions of transformational leadership theory, which emphasises integrity, new ideas, and the achievements of progressive leaders in the era of technological innovation. The continent faces unique opportunities and challenges in implementing ethical AI, complicated by governance deficiencies, institutional weaknesses, and underdeveloped legal frameworks. Nevertheless, Africa's rich philosophical heritage, including Ubuntu ethics, communal responsibility, and shared values, offers a strong foundation for crafting a locally rooted and globally relevant ethical framework for AI governance. Ethical leadership fosters transparency, inclusion, and social justice, whereas a lack of it exacerbates inequality and undermines democratic values.

The analysis demonstrates that while AI has enormous potential to enhance public service delivery, governance effectiveness, and socioeconomic transformation, its use in African contexts is constrained by weak regulatory capability, fragmented governance frameworks, and insufficient ethical monitoring. A comparative analysis of global AI governance models reveals that institutional arrangements and leadership ideals are crucial in determining whether AI systems exacerbate inequality, bias, and democratic weaknesses or promote accountability, inclusivity, and public trust. The study also concludes that the unquestioning application of Global North-centric AI governance models to Africa runs the risk of overlooking regional ethical customs, leadership realities, and development agendas, which would undermine their legitimacy and efficacy.

The study contributes to the body of knowledge by conceptually integrating AI governance and ethical leadership as mutually reinforcing factors of development outcomes rather than treating them as distinct variables. By highlighting African governance experiences and ethical



perspectives within the comparative AI governance discussion, the study broadens theoretical understanding of responsible AI beyond dominant Western paradigms. It also offers valuable insights by publishing a context-sensitive framework that aligns institutional accountability, moral leadership, and AI governance with Africa's long-term socioeconomic transformation and sustainable development goals.

The findings have significant implications for legislators, public sector leaders, and development practitioners. To ensure that AI promotes inclusive growth and democratic accountability in Africa, it is imperative to invest in adaptable regulatory institutions, strengthen ethical leadership capacities, and incorporate local ethical principles into AI governance frameworks. Additionally, technology companies and international development partners should encourage locally based, participatory approaches to ethical AI, rather than relying on one-size-fits-all governance models.

Future studies should investigate empirically how ethical leadership affects AI governance outcomes in the public administration, healthcare, security, and education sectors of African states. The operationalisation of indigenous ethical philosophies within AI governance frameworks may be further clarified through comparative case studies, longitudinal analysis, and interdisciplinary approaches. Such studies would advance knowledge of context-sensitive ethical AI and aid in the development of governance models that utilise AI to promote fair and sustainable development in Africa.

## **RECOMMENDATIONS**

African governments should invest in moral AI research and build regulatory sandboxes for controlled experimentation and policy development. Interdisciplinary advisory boards, including ethicists, technologists, and community representatives, should be institutionalised to guide AI governance. Leaders must be trained to recognise ethical risks early on and act decisively to prevent harm. Ethical AI implementation must draw on Afrocentric value systems to enhance relevance and acceptance. Organisational leadership across the continent should undergo ethics capacity-building programmes to ensure that fairness, transparency, and justice become foundational pillars in the deployment of AI.

## **POLICY STATEMENT**

To ensure equitable and sustainable AI development in Africa, national and regional policies must integrate ethical leadership frameworks grounded in African philosophical traditions. These policies should prioritise the inclusion of community voices, safeguard against the misuse of surveillance and algorithmic bias, and address the challenges of job displacement. A continent-wide ethics strategy, driven by collaboration among policymakers, civil society, and the tech industry, should also be developed and institutionalised to ensure that AI becomes a force for inclusive growth, democratic strengthening, and socially responsible innovation.

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There are no competing interests of any kind for the writers.

## **REFERENCES**

Abasilim, U. D; Gberekpie, D.E., Osibanjo, O. A (2019).Leadership Styles and Employees' Commitment: Empirical Evidence From Nigeria. *Sage Open*. 9(3), 10.1177/2158244019866287

Ade-Ibijola, A., & Okonkwo, C. (2023). Artificial Intelligence in Africa: Emerging Challenges. In Responsible AI in Africa: Challenges and Opportunities (pp. 101-117). Cham: Springer International Publishing.

Adeleke, F. (2025). Reinstating trust in elections in the era of artificial intelligence and emerging technologies: *data & Policy*, 7, e38.

Adeniyi, A. C., & Okusi, O. (2024). Ethical AI governance, financing, and human well-being in the 21st century. *African Journal of Humanities and Contemporary Education Research*, 17(1), 193-205.

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Aderibigbe, A. O., Ohenen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, 4(3), 185-199.

Ahmed, S. K., Mohammed, R. A., Nashwan, A. J., Ibrahim, R. H., Abdalla, A. Q., Ameen, B. M. M., & Khidhir, R. M. (2025). Using thematic analysis in qualitative research. *Journal of Medicine, Surgery, and Public Health*, 6, 100198.

Al-Maamari, A. (2025). *Between innovation and oversight: A cross-regional study of AI risk management frameworks in the EU, U.S., UK, and China*. arXiv. <https://arxiv.org/abs/2503.05773>

Androutsopoulou, M., Carayannis, E. G., Askounis, D., & Zotas, N. (2025). Towards AI-Enabled Cyber-Physical Infrastructures—Challenges, Opportunities, and Implications for a Data-Driven eGovernment Theory, Policy, and Practice. *Journal of the Knowledge Economy*, 1-38.

Anshari, M., Hamdan, M., Ahmad, N., & Ali, E. (2025). Public service delivery, artificial intelligence and the sustainable development goals: trends, evidence and complexities. *Journal of Science and Technology Policy Management*, 16(1), 163-181.

Aragani, V. M., Anumolu, V. R., & Selvakumar, P. (2025). Democratization in the Age of Algorithms: Navigating Opportunities and Challenges. *Democracy and Democratization in the Age of AI*, 39-56.

Arakpogun EO, Elsahn Z, Olan F, ElsahnF. (2021) Artificial intelligence in Africa: challenges and opportunities. In: Hamdan A, Hassanien AE, Razzaque A, Alareeni B, editors. The fourth industrial revolution: implementation of artificial intelligence for growing business success. Berlin: Springer International Publishing; 2021. p. 375-88. [https://doi.org/10.1007/978-3-030-62796-6\\_22](https://doi.org/10.1007/978-3-030-62796-6_22).

Asongu, S. A., & Nwachukwu, J. C. (2019). Technological forecasting and economic development in Africa: The role of governance dynamics. *Technological Forecasting and Social Change*, 146, 533-542. <https://doi.org/10.1016/j.techfore.2019.05.001>

Ayeni, E. O., Okafor, C. O., Amadi, J. O., Odey, C. O., Sani, K., Olorundare, A. S., & Edegbo, J. S. (2025). Interrogating the Dynamics of Bad Citizens and the Challenges of Peacebuilding in Nigeria: A Case of# EndBadGovernance Protest. *African Renaissance*, 22(4), 153.

Bashir, S., Dahlman, C., Kanehira, N., & Tilmes, K. (2021). *The converging technology revolution and human capital: Potential and implications for South Asia*. World Bank Publications.

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Psychology Press.

Batool, A., Zowghi, D., & Bano, M. (2025). AI governance: a systematic literature review. *AI and Ethics*, 1-15.

Brown, M. E., & Treviño, L. K. (2006). Ethical Leadership: A Review and Future Directions. *The Leadership Quarterly*, 17, 595-616. <https://doi.org/10.1016/j.lequa.2006.10.004>

Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical Leadership: A Social Learning Perspective for Construct Development and Testing. *Organizational Behavior and Human Decision Processes*, 97, 117-134. <https://doi.org/10.1016/j.obhdp.2005.03.002>

Bryson, J. J., & Winfield, A. F. (2017). Standardizing Ethical Design for Artificial Intelligence and Autonomous Systems. *Computer*, 50, 116-119. <https://doi.org/10.1109/MC.2017.154>

Bukhari, M., & Anwar, S. (2025). The Influence of AI on Models of Governance in Authoritarian and Democratic Systems. *Journal of Political Stability Archive*, 3(1), 887-902.

Butt, J. S. (2024). The role of artificial intelligence (AI) in productivity & economic growth in Nordic welfare states. *Acta Universitatis Danubius. Œconomica*, 20(2), 50-72.

Chandra, S. (2025). Exploring the Role of Artificial Intelligence in Governance: Enhancing the Resilience of Legal Systems, Mitigating Corruption, and Reinforcing Democratic Setup. In *Artificial Intelligence in Peace, Justice, and Strong Institutions* (pp. 141-168). IGI Global Scientific Publishing.

Chidozie, F., Chukwudi, C. E., Aje, O. O., & Osimen, G. U. (2024). Boko Haram insurgency: Tactics and evolving operational strategies in Northern Nigeria. *Research Journal in Advanced Humanities*, 5(2). <https://doi.org/10.58256/5cj8g27>

Chukwudi, C. E., Bello, W. & Adesemowo, M. M. (2023) E-Government and Democracy: A Boost to Sustainable Development. JPPUMA: Jurnal Ilmu Pemerintahan dan Sosial Politik UMA (*Journal of Governance and Political Social UMA*), 11(2), 110-118, DOI: 10.31289/jppuma.v11i2.10651

Chukwudi, C. E., Gberekvie, D. E., Abaslim, U. D., & Imhonopi, D. (2019). IPOB Agitations for Self-Determination and the Response of the Federal Government of Nigeria: Implications for Political Stability. *Academic Journal of Interdisciplinary Studies*, 8(3). <https://doi.org/10.36941/ajis-2019-0016>

Ciulla, J. B. (2020). *The Search for Ethics in Leadership*. Springer.

Corrêa, N. K., Galvão, C. T., Santos, J. W., Pinheiro, L., Duran, F., & Novais, P. (2023). Worldwide AI ethics: A review of 200 guidelines and recommendations for AI governance. *Patterns*, 4(10), 100857. <https://doi.org/10.1016/j.patter.2023.100857>

Corrêa, N. K., Galvão, C., Santos, J. W., Del Pino, C., Pinto, E. P., Barbosa, C., ... & de Oliveira, N. (2023). Worldwide AI ethics: A review of 200 guidelines and recommendations for AI governance. *Patterns*, 4(10).



Daly, A., Hagendorff, T., Hui, L., Mann, M., Marda, V., Wagner, B., ... & Witteborn, S. (2019). Artificial intelligence governance and ethics: global perspectives. *arXiv preprint arXiv:1907.03848*.

Damar, M., Aydin, Ö., Nihal Cagle, M., Özoguz, E., Ömer Köse, H., & Özen, A. (2024). Navigating the digital frontier: transformative technologies reshaping public administration. *EDPACS*, 69(9), 41-69.

Davenport, T. H., & Kirby, J. (2016). *Only Humans Need Apply: Winners and Losers in the Age of Smart Machines*. HarperBusiness.

Dunleavy, P., & Margetts, H. (2025). Data science, artificial intelligence, and the third wave of digital era governance. *Public Policy and Administration*, 40(2), 185-214.

Efthymiou, I. P., Egleton, T. E., & Psomiadi, A. (2025). The Role of Artificial Intelligence in Humanitarian Aid for Achieving Sustainable Development Goals. In *Cases on AI-Driven Solutions to Environmental Challenges* (pp. 43-72). IGI Global Scientific Publishing.

Eke, D. (2024). Ethics and governance of Neurotechnology in Africa: lessons from AI. *JMIR Neurotechnology*, 3(1), e56665.

Ernst & Young (EY). (2019). *AI in corporate governance: Navigating European regulatory frameworks*. EY Global Report.

Ferrell, O. C., & Fraedrich, J. (2019). Business Ethics: Ethical Decision Making and Cases. Cengage Learning.

Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Vayena, E. (2018). AI4People—An ethical framework for a good AI society. *Minds and Machines*, 28(4), 689-707. <https://doi.org/10.1007/s11023-018-9482-5>

García, D. (2024). *The AI military race: Common good governance in the age of artificial intelligence*. Oxford University Press.

Garg, P. K. (2021). Overview of artificial intelligence. In *Artificial Intelligence* (pp. 3-18). Chapman and Hall/CRC.

Ghosh, A., Saini, A., & Barad, H. (2025). *Artificial intelligence in governance: recent trends, risks, challenges, innovative frameworks, and future directions*. AI & SOCIETY, 1-23.

Gkikas, D. C., Theodoridis, P. K., & Gkikas, M. C. (2023). Artificial intelligence (AI) use for e-governance in agriculture: Exploring the bioeconomy landscape. In *Recent Advances in Data and Algorithms for e-Government* (pp. 141-172). Cham: Springer International Publishing.

Gomes, P. M., & Cardoso, T. (2025). AI-Driven Transformation in Public Governance. In *Public Governance Practices in the Age of AI* (pp. 81-108). IGI Global Scientific Publishing.

Gupta, R., Srivastava, D., Sahu, M., Tiwari, S., Ambasta, R.K., & Kumar, P. (2021). Artificial intelligence to deep learning: a machine intelligence approach for drug discovery. *Molecular Diversity*, 25, 1315-1360.

Gwagwa A, Kraemer-Mbula E, Rizk N, Rutenberg I, DeBeer J. (2020) Artificial intelligence (AI) deployments in Africa: benefits, challenges and policy dimensions. *Afr J Informat Commun.* 2020; 26:1-28. <https://doi.org/10.23962/10539/30361.5>

Harerimana, A., & Mtshali, N.G. (2020). Conceptualisation of e-learning in nursing education in the context of Rwanda. *Journal of Nursing Education and Practice*, 10(6), 26.

Herrera-Poyatos, A., Del Ser, J., de Prado, M. L., Wang, F. Y., Herrera-Viedma, E., & Herrera, F. (2025). Responsible Artificial Intelligence Systems: A Roadmap to Society's Trust through Trustworthy AI, Auditability, Accountability, and Governance. *arXiv preprint arXiv:2503.04739*.

IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems (2019). Ethically Aligned Design: A Vision for Prioritizing Human Well-Being with Autonomous and Intelligent Systems.

IMF. (2025, October 13). IMF's Georgieva says countries lack a regulatory, ethical foundation for AI. *Reuters*. Available at: <https://www.reuters.com/business/imfs-georgieva-says-countries-lack-regulatory-ethical-foundation-ai-2025-10-13/>

Jaboor, A., Durrah, O., & Chakir, A. (2024). Artificial intelligence: An overview. *Engineering applications of artificial intelligence*, 3-22.

Jain, P., & Roy, A. (2024). Catalysts of Innovation: Advancing India's Future Through Investments in Basic Science. In *Unleashing the Power of Basic Science in Business* (pp. 91-117). IGI Global.

Jobin, A., Ienca, M., Vayena, E., & Elger, B. S. (2019). The Global Landscape of AI Ethics Guidelines. *Nature Machine Intelligence*, 1, 389-399. <https://doi.org/10.1038/s42256-019-0088-2>

Judijanto, L., Mudinillah, A., Rahman, R., & Joshi, N. (2025). AI and Social Equity: Challenges and Opportunities in the Age of Automation. *Journal of Social Science Utilizing Technology*, 3(1), 42-51.

Kaakandikar, R. (2025). *Ethical and Inclusive Upskilling for the AI Revolution*. Available at SSRN 5169844.

Kandasamy, U. C. (2024). Ethical Leadership in the Age of AI: Challenges, Opportunities, and Framework for Ethical Leadership. *arXiv preprint arXiv:2410.18095*.

Kandasamy, U.C. (2024). *Ethical Leadership in the Age of AI: Challenges, Opportunities, and Framework for Ethical Leadership*. Retrieved from <https://arxiv.org/html/2410.18095v2>

Khatoon, U. T., & Veliandi, A. (2025). An Overview of the Role of Government Initiatives in Nanotechnology Innovation for Sustainable Economic Development and Research Progress. *Sustainability*, 17(3), 1250.

Kiulu, T. K. (2025). Challenges of Democratization in the Age of AI: Navigating Governance, Equity, and Ethical Dilemmas. In *Democracy and Democratization in the Age of AI* (pp. 203-234). IGI Global Scientific Publishing.

Kiulu, T. K. (2025). Challenges of Democratization in the Age of AI: Navigating Governance, Equity, and Ethical Dilemmas. In *Democracy and Democratization in the Age of AI* (pp. 203-234). IGI Global Scientific Publishing.

Kumar, S., Verma, A. K., & Mirza, A. (2024). *Digital Transformation, Artificial Intelligence and Society*. Springer.

Lalenis, K. (2025). *Democratic Theory, Urban Planning Ideology, and Public Participation in the Era of Artificial Intelligence*.

Mahant, R. (2025). Artificial Intelligence in Public Administration: A Disruptive Force for Efficient E-Governance. *Artificial Intelligence*, 19(01).

Mahapatra, S. (2025). Ethical Governance of AI and the Prevention of Digital Authoritarianism in South and Southeast Asia.

Mannuru, N. R., Shahriar, S., Teel, Z. A., Wang, T., Lund, B. D., Tijani, S., ... & Vaidya, P. (2025). Artificial intelligence in developing countries: The impact of generative artificial intelligence (AI) technologies for development. *Information development*, 41(3), 1036-1054.

Mayer, D. M., Aquino, K., Greenbaum, R. L., & Kuenzi, M. (2010). Who displays ethical leadership, and why does it matter? *An examination of antecedents and consequences of ethical leadership*. *Academy of Management Journal*, 55(1), 151-171. <https://doi.org/10.5465/amj.2010.0556>

Melles, M. (2024). *Transforming Foundations: Structural Change and Development Dynamics in Sub-Saharan Africa (1960–2024)* (Vol. 1, No. 114). Lund University.

Mendhe, V. (2025). Digital Transformation Through AI: Redefining Efficiency In Public And Enterprise Sectors.

Milakovich, M. E. (2021). *Digital governance: Applying advanced technologies to improve public service*. Routledge.

Mittelstadt, B. D. (2019). Principles alone cannot guarantee ethical AI. *Nature Machine Intelligence*, 1(11), 501-507. <https://doi.org/10.1038/s42256-019-0114-4>

Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The Ethics of Algorithms: Mapping the Debate. *Big Data & Society*, 3. <https://doi.org/10.1177/2053951716679679>

Morgan, H. (2022). Conducting a Qualitative Document Analysis. *The Qualitative Report*, 27(1), 64-77. <https://doi.org/10.46743/2160-3715/2022.5044>

Mubangizi, J. C. (2024). Artificial intelligence, human rights, and sustainable development: An African perspective. *Perspectives of Law and Public Administration*, 13(3), 374-389.

Mubangizi, J. C. (2024). Artificial intelligence, human rights, and sustainable development: An African perspective. *Perspectives of Law and Public Administration*, 13(3), 374-389.

Mujtaba, B. G. (2025). Human-AI Intersection: Understanding the Ethical Challenges, Opportunities, and Governance Protocols for a Changing Data-Driven Digital World. *Business Ethics and Leadership*, 9(1), 109-126.

Mulamula, X. R. (2024). *The role of the board in governance of artificial intelligence ethics—a case for JSE-listed companies* (Doctoral dissertation, University of Pretoria).

Murari, U. K., & Parmar, H. (2025). Leveraging Artificial Intelligence for Rural Development: Opportunities and Challenges in the Indian Context. *AI Strategies for Social Entrepreneurship and Sustainable Economic Development*, 265-284.

Nkohkwo, Q. N., & Islam, M. S. (2013). Challenges to the successful implementation of e-government initiatives in sub-Saharan Africa: A literature review. *Electronic Journal of e-Government*, 11(1), 253-267.

Ntuli, L. F. (2024). Governance, Legacy and Digitisation in Contextualising Systems Approaches for Local Knowledge and Values Preservation. A Case Study of South Africa. *Governance*, 26(2).

O'Neill, C. (2016). Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. Crown.

O'Lemmon, M. (2022). "The Worst Mistake 2.0? The Digital Revolution and the Consequences of Innovation." *AI & Society* 1-10. <https://doi.org/10.1007/s00146-022-01599-5>

Osimen, G. U., Fulani, O. M., Chidiozie, F., & Dada, D. O. (2024). The weaponisation of artificial intelligence in modern warfare: Implications for global peace and security. *Research Journal in Advance Humanity*, 5(3), Pp 24-36. DOI: <https://doi.org/10.58256/g2p9tf63>

Pan, Y. (2016). Heading toward artificial intelligence 2.0. *Engineering*, 2(4), 409-413.

Perez, J. A., Deligianni, F., Ravi, D., & Yang, G. Z. (2018). Artificial intelligence and robotics. *arXiv preprint arXiv:1803.10813*, 147, 2-44.

Phuangthuean, P., & Nuansang, J. (2024). The transforming public administration: The role of AI in shaping the future. *Journal of Social Science and Multidisciplinary Research (JSSMR)*, 1(3), 21-41.

PwC. (2020). *AI in corporate governance: Trends in North America*. PwC Global Corporate Governance Report.

PwC. (2021). *AI and corporate governance in Africa: Challenges and opportunities*. PwC Global Report. <https://www.pwc.com>

Radanliev, P., O. Santos, A. Brandon-Jones, and A. Joinson. (2024). "Ethics and Responsible AI Deployment." *Frontiers in Artificial Intelligence* 7: 1377011. <https://doi.org/10.3389/frai.2024.1377011>.

Raji, I., & Sholademi, D. B. (2024). Predictive Policing: The Role of AI in Crime Prevention. *International Journal of Computer Applications Technology and Research*. 13(10), 66 - 78, 2024. DOI:10.7753/IJCATR1310.1006

Rosati, F., & Rossi, L. (2021). AI in European corporate governance: Regulatory challenges and opportunities. *Journal of Corporate Governance in Europe*, 10(3), 87-99.

Saba, C. S., and N. Ngepah (2024). "The Impact of Artificial Intelligence (AI) on Economic Growth in BRICS: Does the Moderating Role of Governance Matter?" *Research in Globalization* 100213. <https://doi.org/10.1016/j.resglo.2024.100213>.

Sangwa, S., Ngobi, D., Ekosse, E., & Mutabazi, P. (2025). AI governance in African higher education: Status, challenges, and a futureproof policy framework. Available at SSRN 5386204. <https://ssrn.com/abstract=5386204> or <http://dx.doi.org/10.2139/ssrn.5386204>

Sanni, O., Adeleke, O., Ukoba, K., Ren, J., & Jen, T.C. (2024). Prediction of inhibition performance of agro-waste extract in simulated acidizing media via machine learning. *Fuel*, 356, 129527.

Sharma, A. K., & Sharma, R. (2025). Governance in the age of artificial intelligence: A comparative analysis of policy framework in BRICS nations. *AI Magazine*, 46(2), e70010.

Siebrits, A., & van de Heyde, V. (2019). Towards the sustainable development goals in Africa: the African space-education ecosystem for sustainability and the role of educational technologies. In *Embedding Space in African Society: The United Nations Sustainable Development Goals 2030 Supported by Space Applications* (pp. 127-180). Cham: Springer International Publishing.

Singh, B., Jain, A., Wongmahesak, K., & Chandra, S. (2025). Reimagining Democracy in the Digital Era: Transformative Role of Artificial Intelligence in Modern Governance. In *Democracy and Democratization in the Age of AI* (pp. 1-18). IGI Global Scientific Publishing.

Soori, M., Arezoo, B., & Dastres, R. (2023). Artificial intelligence, machine learning, and deep learning in advanced robotics: a review. *Cognitive Robotics*, 3, 54-70.

Sousa, M. J., Pani, S., Dal Mas, F., & Sousa, S. (Eds.). (2024). *Incorporating AI technology in the service sector: innovations in creating knowledge, improving efficiency, and elevating the quality of life*. CRC Press.

Stahl, B. C., Leach, T., Oyeniji, O., & Ogoh, G. (2023). AI policy as a response to AI ethics? Addressing ethical issues in the development of AI policies in North Africa. In *Responsible AI in Africa: Challenges and opportunities* (pp. 141-167). Cham: Springer International Publishing.

Tarr, M. (2021). *The impact of disruptive technologies on the growth and development of small businesses in South Africa* (Doctoral dissertation, Cape Peninsula University of Technology).

Timean, A., & Maduka, O. J. (2025). Leadership Challenges in Implementing AI Governance Frameworks in Sub-Saharan African Healthcare Systems: A Conceptual Analysis. *Journal of Business and Policy Studies*, 9(10), 5646-5656

Treviño, L. K., & Nelson, K. A. (2021). *Managing Business Ethics: Straight Talk about How to Do It Right*. John Wiley & Sons.

Treviño, L. K., den Nieuwenboer, N. A., & Kish-Gephart, J. J. (2014). (Un)Ethical Behavior in Organizations. *Annual Review of Psychology*, 65, 635-660. <https://doi.org/10.1146/annurev-psych-113011-143745>

Uddin, A. A. (2023). The era of AI: Upholding ethical leadership. *Open Journal of Leadership*, 12(4), 400-417.

Ukoba, K., Jen, T. C., Ukoba, K., & Jen, T. C. (2022). Biochar and application of machine learning: A review. *Biochar-Productive Technologies, Properties, and Application*.

UNDP. (2023). *Human development report 2023/2024: Breaking the gridlock—Reimagining cooperation in a polarized world*. United Nations Development Programme.

Unver, M. B. (2024). AI governance: Compromising democracy or democratising AI?. In *TPRC 2024, The Research Conference on Communications, Information & Internet Policy*.

Vatamanu, A. F., & Tofan, M. (2025). Integrating Artificial Intelligence into Public Administration: Challenges and Vulnerabilities. *Administrative Sciences*, 15(4), 149.

Vatamanu, A. F., & Tofan, M. (2025). Integrating Artificial Intelligence into Public Administration: Challenges and Vulnerabilities. *Administrative Sciences*, 15(4), 149.

Ethical Leadership and Governance in the Era of Artificial Intelligence: Implications for Africa's Development Trajectory,

Ware, A. (2025). What an AI-Driven World with No Ethical Standards and Government Oversight Will Look Like in the Year 2030. *Available at SSRN 5114134*.

Whittlestone, J., Nyrup, R., Alexandrova, A., Dihal, K., & Cave, S. (2019). Ethical and Social Implications of Algorithms, Data, and Artificial Intelligence: A Roadmap for Research. *IEEE Security & Privacy*, 17, 64-74.

World Bank. (2024). *Digital transformation for inclusive growth in Africa*. World Bank Publications.

Yerlikaya, S., & Erzurumlu, Y. Ö. (2021). Artificial intelligence in the public sector: A framework to address opportunities and challenges. *The fourth industrial revolution: Implementation of artificial intelligence for growing business success*, 201-216.

Yilma, K. (2025). Ethics of AI in Africa: Interrogating the role of Ubuntu and AI governance initiatives. *Ethics and Information Technology*, 27(2), 24. <https://doi.org/10.1007/s10676-025-09834-5>

Yukl, G. (1999). An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. *The Leadership Quarterly*, 10(2), 285-305. [https://doi.org/10.1016/S1048-9843\(99\)00013-2](https://doi.org/10.1016/S1048-9843(99)00013-2)

Zhang, C., & Lu, Y. (2021). Study on artificial intelligence: The state of the art and prospects. *Journal of Industrial Information Integration*, 23, 100224.

Zhang, W., Li, H., Li, Y., Liu, H., Chen, Y., & Ding, X. (2021). Application of deep learning algorithms in geotechnical engineering: a short critical review. *Artificial Intelligence Review*, 1-41

