



Veritatis Gaudium:

Multidisciplinary Journal of Postgraduate Studies

College of Postgraduate Studies,
Veritas University, Abuja, Nigeria

ISSN: 3043 - 5285

Volume 1, Number 5, September, 2026

DOI: 10.13140/RG.2.2.17243.12322

DIGITAL TRANSFORMATION AND THE FUTURE OF AFRICAN KNOWLEDGE: INDIGENOUS INTELLECTUAL TRADITIONS IN THE AGE OF ARTIFICIAL INTELLIGENCE

Sadiya Abubakar, PhD

Department of Mass Communication, Baze University, Abuja,

sadiya.abubakar@bazeuniversity.edu.ng

<https://prcid.org/0009-0008-7277-5127>

&

Michael Paul Pilani, PhD

Department of Theology, Veritas University, Abuja

pilanimaria@gmail.com

<https://orcid.org/0000-0001-6549-6201>

&

Roberts Anya Nkata, PhD

Department of Political Science and Diplomacy, Veritas University, Abuja

robertsa@veritas.edu.ng

<https://prcid.org/0000-0002-1464-7935>

&

Stephen Odunayo Ekerin, PhD

Department of Theology, Veritas University Abuja

ekerinstephen@gmail.com

&

Mike Boni Bazza, PhD

Department of History and International Relations, Veritas University Abuja

danbazza68@gmail.com

<https://prcid.org/0000-0002-8634-1791>

&

Donatus Peter Ochai PHD

Department of Educational Foundations, Veritas University Abuja

donatusp@veritas.edu.ng

<https://orcid.org/0009-0001-6365-1581>

&

Okwuchi Flora Chibuzor, PhDs

Department of Biochemistry, Veritas University Abuja

ugoflora80@gmail.com

Orcid ID: 0000-0002-9178-8109

&

Chinwe Jemimah Ukpai

Department of Human Anatomy, Veritas University Abuja

ukpaic@veritas.edu.ng

<https://orcid.org/0009-0005-5843-3479>

&

Timothy Dokpesi Adidi, PhD

Department of Philosophy, Veritas University Abuja

adidit@veritas.edu.ng

Abstract

The rapid expansion of artificial intelligence is transforming how knowledge is produced, stored, transmitted and accessed worldwide. Dominant approaches to AI development frequently privilege Western epistemological assumptions and technologically advanced knowledge systems while giving limited attention to African intellectual traditions. This paper examines the contribution of African indigenous knowledge systems to the development of more culturally responsive and socially sustainable approaches to artificial intelligence. The study employs qualitative conceptual and documentary analysis, drawing on recent scholarship on African epistemology, indigenous knowledge, artificial intelligence and sustainable development, and places African intellectual traditions in dialogue with Islamic and Christian understandings of knowledge, responsibility and human community. Quran 49:13 presents human diversity as a basis for mutual knowledge and recognition, while Quran 96:1 to 5 places knowledge and learning at the centre of human development. Biblical perspectives are drawn from Proverbs 1:7, which connects knowledge with wisdom and responsible living, and 1 Corinthians 12:12 to 27, which presents diversity and interdependence as constitutive of a functioning community. The paper argues that sustainable AI development in Africa requires more than technological infrastructure, and instead requires epistemic inclusion, linguistic diversity, cultural sensitivity and recognition of locally generated knowledge. It proposes an African-centred approach to AI development that integrates indigenous knowledge, community participation, multilingualism and ethical responsibility, and concludes that African intellectual traditions should be treated as resources for shaping responsible technological futures rather than merely as cultural heritage.

Keywords: Artificial intelligence; African knowledge systems; indigenous knowledge; epistemology; digital transformation; sustainable development

1. Introduction

Artificial intelligence systems, particularly large language models and other data-intensive technologies, are trained overwhelmingly on data drawn from a narrow set of languages and cultural contexts, with English and a small number of other high-resource languages dominating the training corpora used to build the most widely deployed systems. This asymmetry has direct epistemic consequences. Decolonial scholarship on AI argues that the field has largely been built upon Western rationalist and individualist conceptions of knowledge and intelligence, to the exclusion of other worldviews, and that this exclusion produces AI systems that are not merely technically limited in

their coverage of underrepresented languages and contexts but epistemologically narrow in the kinds of knowledge they recognise as valid.

For Africa, and for Nigeria specifically, this asymmetry compounds a longer history of epistemic marginalisation in which indigenous knowledge systems, including oral traditions, community-based agricultural and ecological knowledge, and traditional systems of governance and dispute resolution, have often been excluded from formal educational curricula and from the technical systems now being built to support development. A systematic review of the intersection between indigenous knowledge systems and AI finds that decolonial, indigenous-centred critique must be embedded in AI development to avoid the risk of AI systems reproducing colonial patterns of knowledge exclusion, and specifically notes the absence of literature addressing generative AI's engagement with indigenous knowledge as of its 2023 search cutoff, suggesting that this remains an underexplored area even as generative AI adoption accelerates across Africa.

At the same time, a growing body of scholarship argues that this exclusion is not inevitable and that indigenous and African epistemologies can substantively reshape AI development toward more ethical and contextually appropriate outcomes. Research on decolonising AI with indigenous and African epistemologies argues that incorporating relational epistemologies from these traditions can fundamentally reshape AI development, producing systems that are more context aware, culturally adaptive and ultimately more robust because they draw on a wider foundation of human experience and values than Western rationalist traditions alone provide. A related contribution in the journal *AI and Society* develops a framework for embedding indigenous epistemologies throughout the AI development lifecycle, informed by principles of participatory design and co-creation with indigenous stakeholders, with demonstrated relevance to natural language processing, content moderation and healthcare applications.

This paper extends this emerging literature by asking what specific contribution African indigenous knowledge systems, understood in dialogue with Islamic and Christian intellectual traditions that have long shaped African religious and educational life, can make to more culturally responsive and socially sustainable AI development in Nigeria. The paper does not treat African traditional knowledge as a static heritage to be preserved in isolation from contemporary technology, nor does it treat Islamic and Christian scholarship on knowledge as external impositions on African intellectual life, since both traditions have been indigenised and deeply integrated into Nigerian society over many centuries. Instead, the paper treats all three sources, African indigenous epistemology, Islamic scholarship on knowledge, and Christian scholarship on knowledge and community, as constitutive elements of a genuinely African intellectual landscape relevant to AI development.

This transition from a Western-dominated to a more pluralistic model of AI development can itself be read through indigenous African hermeneutical resources. A semiotic hermeneutic of the biblical image of new wine and new wineskins, applied to the philosophy of development in Africa, argues that authentic African development requires new interpretive containers capable of holding genuinely African content, rather than pouring African knowledge into structures designed elsewhere (Kanu & Pilani, 2024). Applied to AI, this suggests that epistemic inclusion cannot be achieved simply by adding African data to existing architectures, but requires rethinking the architectures themselves in light of African ways of knowing.

The specific objectives of this paper are to review recent literature on AI, knowledge production and epistemic justice, to examine African indigenous knowledge systems as sources of epistemology relevant to AI development, to analyse Islamic and Christian perspectives on knowledge and community as complementary resources, and to synthesise these materials into a framework for an African-centred approach to responsible AI. The paper is guided by the following questions. How does current AI scholarship understand the relationship between AI and epistemic justice? What do

African indigenous knowledge systems offer as an epistemological resource for AI development? What do Islamic and Christian perspectives on knowledge contribute to this discussion? How can these resources be combined into a practical framework applicable to Nigeria's digital transformation agenda?

The paper proceeds as follows. Section two reviews the literature on AI and knowledge production, African indigenous epistemology, and the relevant Islamic and Christian material. Section three describes the qualitative documentary methodology. Section four presents the results, analysing each source in turn before synthesising an integrated framework. Section five discusses implications for sustainable development in Africa. Section six concludes with recommendations.

2. Conceptual and Literature Framework

2.1 Artificial intelligence as a knowledge technology

AI systems function not merely as tools but as technologies of knowledge production, since the data used to train them, and the design choices made by their developers, shape what counts as valid, retrievable and actionable knowledge within a given system. Scholarship on epistemic justice and AI argues that indigenous knowledge systems, embodying centuries of cumulative experiential wisdom rooted in ecological, spiritual and communal contexts, remain systematically marginalised within dominant technological and scientific paradigms, and that this marginalisation requires urgent critical interrogation as AI becomes integral to global systems of governance, development and resource allocation. This framing is important because it positions the exclusion of indigenous knowledge from AI systems not as a peripheral technical gap to be closed through better data collection alone, but as a structural feature of how contemporary AI systems are conceived and built.

2.2 Digital inequalities and epistemic marginalisation

Research on indigenous peoples and AI, reviewing literature from 2012 to 2023, documents a range of harms associated with this marginalisation, including biased or culturally inappropriate outputs from generative AI systems asked to represent indigenous content, and unresolved questions about indigenous data sovereignty when AI systems are trained on cultural material without appropriate community consent. The same review notes that these risks are compounded by the physical and material dimensions of AI infrastructure, since a related study on epistemic decolonisation and African traditional medicine observes that AI systems depend on vast quantities of data and mineral resources, many of which are extracted from African economies, so that African resources are exploited to build AI infrastructure from which African epistemologies are simultaneously excluded, a pattern the authors describe as reinscribing colonial patterns of dispossession and epistemic exclusion.

2.3 African indigenous knowledge systems

African indigenous knowledge systems are characterised by strong communal and oral foundations, in which knowledge is transmitted through proverbs, storytelling, apprenticeship and participation in communal life rather than through standalone textual documentation. Environmental and agricultural knowledge, accumulated over generations of close observation of local ecosystems, has historically supported sustainable land use practices adapted to specific local conditions, often with greater ecological sensitivity than externally imposed agricultural models. Scholarship on decolonial approaches to AI in African education contexts argues for recognising and resisting the epistemic marginalisation of these traditions, proposing that AI can be leveraged to support culturally responsive education, including mathematics education grounded in African contexts, and to promote what this literature terms epistemological justice, provided that AI systems are designed to incorporate rather than displace indigenous knowledge frameworks.

Symbolic and artistic traditions constitute a further, often overlooked, dimension of African indigenous knowledge relevant to AI. Analysis of the Arewa symbol in Hausa material culture

demonstrates how visual and material symbols function as a language of transcendence, encoding spiritual and cosmological meaning that exceeds what verbal description alone can convey (Kanu, Pilani, & Kanu, 2026). Such symbolic systems, whether expressed through textile motifs, architectural forms or ritual objects, constitute a mode of knowledge transmission that current AI systems, oriented overwhelmingly toward text and speech, are poorly equipped to recognise. An African centred approach to AI must therefore extend epistemic inclusion beyond linguistic corpora to the visual and material archives through which much indigenous knowledge is stored.

2.4 Islamic perspectives on knowledge

Quran 96:1 to 5, traditionally understood as among the earliest revealed verses, commands the Prophet to read or recite in the name of the Lord who created, and states that God taught by the pen and taught humanity what it did not know, establishing knowledge and learning as central to the Islamic understanding of human development from the very foundation of the religion. This textual centring of knowledge acquisition has historically supported a rich tradition of Islamic scholarship across West Africa, including centres of learning that predate and coexist with the introduction of Western-style education in the region. Quran 49:13, already discussed in relation to human equality in the companion paper on AI and human dignity, is equally relevant here in its own right, since its account of human diversity divided into nations and tribes explicitly for mutual acquaintance and recognition establishes a theological basis for valuing diverse knowledge traditions as a means of deeper mutual understanding rather than as competing claims to be resolved through the dominance of one tradition over others.

2.5 Biblical perspectives on knowledge and community

Proverbs 1:7 states that the fear of the Lord is the beginning of knowledge, positioning knowledge within a framework of humility and responsible orientation toward wisdom rather than as a purely technical or instrumental capacity divorced from ethical formation. This framing resonates with African indigenous conceptions of knowledge as embedded within communal and moral life rather than abstracted from it. 1 Corinthians 12:12 to 27 develops an extended metaphor of the community as a single body composed of many different parts, each necessary and none capable of claiming self-sufficiency, arguing explicitly that diversity and interdependence are constitutive of a functioning community rather than obstacles to its unity. Applied to knowledge systems, this passage supports an argument that a genuinely comprehensive approach to knowledge, including AI-mediated knowledge, requires the participation of diverse epistemic communities rather than the dominance of any single tradition, whether Western, Islamic, Christian, or African indigenous, treated in isolation.

2.6 Relating decolonial AI theory to religious epistemology

It is worth clarifying the relationship between the secular decolonial AI literature reviewed above and the religious material examined in this paper, since the two are not always brought into direct conversation in existing scholarship. Decolonial AI theory, exemplified by Mohamed, Png and Isaac's influential account of decolonial AI as sociotechnical foresight, focuses primarily on power relations between historically colonising and colonised societies and on the political economy of data extraction and AI infrastructure. Religious epistemology, by contrast, grounds its account of knowledge in theological claims about the nature of God, revelation and human community. This paper treats these two bodies of thought as complementary rather than competing. The decolonial literature supplies a structural analysis of why African knowledge has been marginalised in AI development, while the religious material supplies a positive account of why diverse knowledge traditions, including African indigenous knowledge, deserve recognition on their own terms rather than merely as a corrective to historical injustice. Combining both is important for a Nigerian audience, since a purely structural decolonial critique risks appearing as an external political framework, whereas grounding the same conclusions in widely shared Islamic and Christian commitments to the value of knowledge and human diversity can build broader domestic support for the practical reforms both literatures recommend.

2.7 African traditional legal systems as indigenous jurisprudence

Beyond ecological and symbolic knowledge, African indigenous knowledge systems include sophisticated traditional legal and dispute resolution mechanisms that have historically maintained social order without codified statutory law. A comparative study of African traditional legal systems and Mosaic jurisprudence finds structural parallels between customary African adjudication, with its emphasis on restorative justice and community mediation, and the case-based jurisprudence of the Mosaic legal tradition, suggesting both share an underlying commitment to restoring communal harmony rather than assigning punitive liability (Pilani, Kanu, Onukwuba, & Okonkwo, 2026). This is relevant to AI development because emerging AI-enabled legal and dispute resolution tools in Nigeria risk encoding only statutory and common law categories, marginalising customary adjudicative reasoning that continues to govern dispute resolution in many rural and peri-urban communities.

3. Methodology

This study adopts a qualitative conceptual research design based on documentary and textual analysis, appropriate to a research problem requiring the comparative synthesis of ideas across AI scholarship, African indigenous epistemology, and Islamic and Christian textual sources, rather than the collection of new field data. The methodology proceeds in three stages. The first stage involved a review of recent scholarship, largely published between 2023 and 2026, on AI and epistemic justice, decolonial AI theory, and African knowledge systems, drawing on sources including AI and Society, Royal Society Open Science, and systematic reviews of indigenous knowledge and AI research. The second stage involved close reading of the selected Quranic and biblical passages identified above, informed by established Islamic and Christian scholarship on knowledge and community, in order to situate these texts within their own interpretive traditions rather than reading them in isolation. The third stage involved thematic synthesis of recurring concepts, namely epistemic inclusion, linguistic diversity, communal participation and knowledge sovereignty, across the AI literature, the African indigenous knowledge literature, and the religious material, into an integrated framework. The principal limitation of this approach, as with the companion papers in this set, is its reliance on interpretive judgement in selecting and connecting sources, mitigated by drawing on multiple independent and recent sources for each major claim.

4. Results and Discussion

4.1 Epistemic exclusion in current AI systems

The literature reviewed above converges on the finding that current AI systems, including the most widely used generative AI models, systematically underrepresent African languages, cultural contexts and knowledge traditions in their training data and design assumptions. This underrepresentation has practical consequences for Nigerian users, since AI systems trained predominantly on Western and English language data may perform poorly on tasks involving Nigerian languages, may misrepresent or flatten the diversity of Nigerian cultural and religious practice, and may fail to recognise locally generated knowledge, including indigenous agricultural and medical knowledge, as legitimate input to AI-assisted decision-making in areas such as agriculture extension services or public health communication.

4.2 Data sovereignty and consent

The systematic review of indigenous peoples and AI discussed above raises pointed questions about data sovereignty that are directly relevant to African indigenous knowledge, including how principles of indigenous data sovereignty should apply to the training of generative AI systems on cultural material, and how consent processes can be meaningfully implemented when knowledge is held communally rather than by identifiable individual rights holders. These questions are not resolved in the current literature, and this paper does not claim to resolve them, but their prominence in existing scholarship supports the argument that AI governance frameworks in Nigeria must engage directly

with questions of communal data rights over indigenous cultural and ecological knowledge, rather than applying data protection frameworks designed primarily around individual personal data.

4.3 Material and resource dimensions of exclusion

The observation that AI infrastructure depends on mineral resources disproportionately extracted from African economies, while African epistemologies remain excluded from AI system design, adds an important material dimension to what might otherwise appear to be a purely conceptual or cultural argument about epistemic justice. This dual pattern, in which Africa supplies raw material inputs to AI infrastructure while receiving comparatively little epistemic recognition or economic benefit from the resulting systems, mirrors historical patterns of colonial resource extraction and lends urgency to calls within the literature for African participation in AI development to extend beyond passive data contribution or resource supply toward active roles in system design, governance and benefit sharing.

4.4 Quranic foundations for valuing diverse knowledge

Quran 96:1 to 5's foundational emphasis on reading, writing and learning provides a strong internal Islamic warrant for taking knowledge production seriously as a religious as well as intellectual obligation, supporting engagement with contemporary knowledge technologies such as AI rather than a posture of avoidance. At the same time, Quran 49:13's framing of human diversity as created for mutual recognition offers a specifically pluralist warrant for valuing African indigenous knowledge alongside, rather than as inferior to, knowledge derived from other traditions, since the verse explicitly rejects a hierarchy of human worth based on tribal or ethnic origin. Applied to AI development, this suggests that Islamic scholarship in Nigeria, which has itself preserved centuries of locally generated knowledge through traditions such as Ajami scholarship using Arabic script to write African languages, can be understood as itself a form of African indigenous knowledge deserving inclusion in AI training data and design considerations, rather than as an external tradition separate from African epistemology.

4.5 Christian foundations for interdependent knowledge

Proverbs 1:7's grounding of knowledge in humility before a higher wisdom offers a corrective to technological approaches that treat AI-generated output as inherently authoritative or superior to traditional or experiential knowledge, since a posture of humility requires ongoing openness to correction from sources outside any single knowledge system, including AI systems themselves. 1 Corinthians 12:12 to 27's body metaphor, emphasising that no single part of a community can claim self-sufficiency, offers a similarly strong warrant for a pluralist approach to AI-mediated knowledge, one in which African indigenous knowledge, Islamic scholarship, Christian theological reflection and Western scientific and technical knowledge are treated as interdependent contributors to a fuller picture of reality rather than as competitors in which one tradition's dominance necessarily excludes the others.

4.6 Towards an African-centred framework for responsible AI

Synthesising these results, the paper proposes an African-centred framework for responsible AI built on four elements, namely epistemic inclusion, linguistic diversity, communal participation and knowledge sovereignty. Epistemic inclusion, informed by the epistemic justice literature and by 1 Corinthians 12:12 to 27, requires that African indigenous knowledge, together with Islamic and Christian scholarly traditions rooted in Africa, be actively incorporated into AI training data and design processes rather than treated as marginal or supplementary. Linguistic diversity, informed by the documented underrepresentation of African languages in AI training data, requires sustained investment in natural language processing resources for Nigerian and other African languages. Communal participation, informed by the participatory design literature and by Quran 49:13's mutual recognition principle, requires that African communities, including custodians of indigenous knowledge, participate directly in AI design processes rather than being consulted only after systems are built. Knowledge sovereignty, informed by the data sovereignty literature and by Quran 96:1 to

5's framing of knowledge as a serious obligation, requires that African communities retain meaningful control over how their knowledge, whether ecological, medical, linguistic or religious, is used to train and inform AI systems, including the right to withhold consent for uses judged inappropriate or exploitative.

4.7 Distinguishing preservation from active resource

A recurring risk identified in the literature is that African indigenous knowledge may be treated by AI developers as a static cultural artefact to be digitised and archived, a form of preservation that, while valuable, differs significantly from treating that knowledge as an active and ongoing resource capable of shaping present and future technological design. The framework proposed here explicitly favours the latter approach, consistent with the argument advanced across the literature reviewed that African intellectual traditions should not be treated merely as cultural heritage but as potential resources for shaping responsible technological futures, requiring ongoing collaboration with living knowledge holders rather than one time data collection from historical records alone.

4.8 Practical indicators for implementation

Translating the four elements of the proposed framework into practice requires indicators capable of guiding research funding and institutional review. For epistemic inclusion, a practical indicator is the proportion of an AI system's training or evaluation data drawn from African-generated sources, including indigenous knowledge repositories developed with community consent, rather than exclusively from international datasets. For linguistic diversity, a practical indicator is the number and quality of natural language processing resources, including annotated corpora and evaluation benchmarks, available for major Nigerian languages such as Hausa, Yoruba and Igbo, as well as for other Nigerian languages that remain even less well resourced. For communal participation, a practical indicator is whether a documented, funded mechanism exists for compensating and crediting indigenous knowledge holders and community researchers who contribute to AI training data or system design, rather than treating their contribution as an uncompensated extraction of raw material. For knowledge sovereignty, a practical indicator is whether communities retain a documented right to review and withdraw consent for the use of their cultural or ecological knowledge in AI systems after initial data collection, consistent with the ongoing consent principles increasingly discussed in indigenous data sovereignty scholarship. These indicators are offered as a foundation for future research and institutional policy rather than as an exhaustive audit framework.

4.9 Just labour and the ethics of AI-enabled knowledge work

The practical indicators proposed above, particularly the requirement that indigenous knowledge holders be compensated rather than treated as a source of raw data, raise broader questions about the ethics of labour within an AI-driven knowledge economy. A biblical perspective on ethics, artificial intelligence and entrepreneurship argues that just labour requires that value created through human knowledge and effort be fairly recognised and rewarded, and cautions against models that extract value from knowledge contributors without commensurate return (Pilani, 2025). Applied here, this reinforces the argument that data annotation, cultural consultation and knowledge documentation contributed by African communities to AI systems should be treated as skilled labour deserving fair compensation, rather than as an informal contribution absorbed without cost by technology companies and research institutions.

5. Implications for Sustainable Development in Africa

The framework proposed in this paper has direct implications for Nigeria's digital transformation agenda and for its progress toward relevant sustainable development goals. In agriculture, AI systems designed to support smallholder farmers can be significantly improved by incorporating indigenous ecological knowledge regarding local soil conditions, crop varieties and weather patterns, rather than relying solely on generic agronomic models developed for different ecological contexts. This agricultural dimension also intersects with contemporary security and environmental challenges.

Research on the perceived impact of farmers-herders conflict on food availability in North Central Nigeria finds that recurrent conflict between farming and pastoralist communities disrupts planting, harvesting and distribution cycles, weakening the very indigenous agricultural knowledge systems that a culturally responsive AI framework would seek to incorporate (Kanu, Pilani, Kanu, & Bazza, 2025). AI systems supporting Nigerian agriculture should therefore be sensitive to conflict dynamics as well as to ecological knowledge itself. A complementary biblical perspective on environmental stewardship and the dignity of labour, drawn from Genesis 2:4b to 15, argues that human dominion over land is a stewardship mandate rather than a licence for exploitation, and that agricultural labour deserves protection as dignified work rather than treatment as a low status occupation (Pilani, 2024). Read together, these perspectives suggest that an African centred AI framework for agriculture must be paired with policy attention to land conflict and to the social status of agricultural labour.

In education, AI tools deployed in Nigerian classrooms should be evaluated for their capacity to support rather than displace indigenous languages and locally relevant curricular content, consistent with the culturally responsive education literature discussed above. In health, AI diagnostic and public health communication tools should be designed to engage constructively with existing community health knowledge and practice, including the role of religious and traditional health practitioners, rather than assuming that AI-mediated biomedical information will simply displace existing knowledge systems. In cultural preservation, AI-supported digitisation of oral traditions, indigenous languages and religious scholarship, including Ajami manuscripts, can support the framework's epistemic inclusion goal, provided that digitisation projects are conducted in partnership with, and under conditions of consent from, the communities whose knowledge is being recorded, consistent with the data sovereignty concerns raised above.

5.1 Anatomical knowledge and the embodied dimension of indigenous medicine

The framework's implications for health become more concrete alongside a specific and well-documented body of African indigenous medical practice, namely traditional bone setting. Traditional bonesetters remain the first point of contact for most fracture patients in many parts of Nigeria, with a large share of rural patients presenting to a bonesetter before, or instead of, an orthodox hospital (Onuminya, 2004). Their practice is a form of embodied anatomical knowledge, transmitted through apprenticeship and repeated manual palpation rather than formal study of skeletal or vascular anatomy, with diagnosis made by touch and observed deformity rather than radiographic imaging. This mode of knowledge production sits within the communal, oral and experiential epistemology described elsewhere in this paper, and its persistence reflects the same patterns of trust and cultural fit argued for above. At the same time, the absence of formal anatomical and radiological training is directly implicated in complications, including malunion and, in severe cases, limb threatening gangrene, documented among traditional bonesetters in southwest and southeastern Nigeria (OlaOlorun, Oladiran, & Adeniran, 2001; Udoson, Otei, & Onuba, 2006). This combination of high trust and real clinical risk illustrates the balance an African centred AI framework must strike in health: rather than bypassing bonesetters through purely biomedical AI tools, a more promising direction is AI supported anatomical training and decision support, developed in partnership with bonesetters, that closes specific vascular and structural knowledge gaps without displacing the apprenticeship based skill and trust that sustains this indigenous health system.

5.2 Language technology and national digital strategy

Nigeria's digital transformation strategy, including its National Artificial Intelligence Strategy, sets out ambitions for AI adoption across sectors but currently gives limited explicit attention to language technology as a foundation for genuinely inclusive AI. Given that a large share of Nigeria's population is more fluent in Hausa, Yoruba, Igbo or one of the country's many other languages than in English, the absence of robust AI language tools for these languages represents a direct barrier to the epistemic inclusion goal proposed in this paper, since AI systems that cannot understand or generate content in a user's primary language cannot meaningfully incorporate that user's indigenous

knowledge or serve their information needs. Investment in Nigerian language AI resources should therefore be understood not as a narrow technical specialisation but as a foundational requirement for the sustainable development goals that Nigeria's AI strategy already claims to pursue.

5.3 Institutional partnerships between universities and knowledge communities

Achieving communal participation and knowledge sovereignty in practice will require Nigerian universities to develop institutional partnerships with communities that hold relevant indigenous knowledge, moving beyond the traditional model in which researchers extract knowledge from communities for academic publication with limited benefit returned to the community itself. Postgraduate research programmes, including the kind of research showcased at this conference, are well positioned to pioneer such partnerships, provided that ethical review processes for AI and indigenous knowledge research are strengthened to require documented community consent and benefit sharing arrangements as a condition of research approval.

5.4 Continental institutions and African Union frameworks for AI governance

Because AI governance challenges extend beyond the capacity of any single Nigerian institution, the framework proposed here also has implications for continental bodies such as the African Union. Reading the African Union's engagement with global challenges through Genesis 11:1 to 9, the account of the tower of Babel and the confusion of languages, one analysis argues that the Union is positioned to address the fragmentation of knowledge and technological capacity across the continent by fostering the coordinated, mutually intelligible cooperation the Babel narrative shows was lost (Anthony & Michael, 2026). A related analysis applies the same narrative specifically to the Union's response to climate change, pandemics and migration, arguing that such transnational challenges, like the AI epistemic exclusion problem examined here, require continental rather than purely national coordination (Kanu, Pilani, & Nwadiolor, 2026). A complementary study reads the Union's peace and integration initiatives through Ecclesiastes 4:12, the image of a three-stranded cord not easily broken, arguing that durable cooperation depends on states, civil society and religious communities working in visible interdependence (Kanu, Pilani, & Nwadiolor, 2025). Together, these analyses suggest that the framework's elements cannot be secured through national policy alone, and that African Union-level coordination offers a plausible institutional home for standard-setting on indigenous knowledge and AI across the region.

6. Conclusion and Recommendations

This paper has argued that sustainable and culturally responsive AI development in Nigeria requires more than technological infrastructure, and depends significantly on epistemic inclusion, linguistic diversity, communal participation and knowledge sovereignty. Drawing on recent scholarship on epistemic justice and decolonial AI theory, on African indigenous knowledge systems, and on Quran 49:13 and 96:1 to 5 alongside Proverbs 1:7 and 1 Corinthians 12:12 to 27, the paper proposed an African-centred framework for responsible AI and traced its implications for agriculture, education, health and cultural preservation in Nigeria.

The paper recommends that Nigerian universities and research institutions, including Ahmadu Bello University, invest in natural language processing research for Nigerian languages as a strategic priority within the national AI research agenda. It recommends that AI systems deployed in agriculture, education and health in Nigeria be developed in active partnership with custodians of relevant indigenous and religious knowledge, rather than through purely top-down technical design. It recommends that Nigerian data protection and AI governance frameworks explicitly address questions of communal data sovereignty over indigenous cultural and ecological knowledge, extending beyond the individual-focused data protection model currently in place. Finally, it recommends further empirical and participatory research, going beyond the conceptual scope of this paper, to document specific African indigenous knowledge systems relevant to AI development in Nigeria and to test participatory design methodologies for their incorporation into AI systems.

References

- Anthony, K. I., & Michael, P. P. (2026). Role of African Union in addressing global challenges through the lens of Genesis (11:1–9): Theological and socio-political insights. *JANUS.NET, e-journal of International Relations*, 17(1), 356–552. <https://doi.org/10.26619/1647-7251.17.1.27>
- Artificial intelligence and epistemic justice: A decolonial turn through indigenous knowledge systems. (2026). *AI and Society*. <https://doi.org/10.1007/s00146-026-02936-8>
- Ayana, G., Dese, K., Nemomssa, H. D., Habtamu, B., Mellado, B., Badu, K., Yamba, E., Faye, S. L., Ondua, M., & Nsagha, D. (2024). Decolonizing global AI governance: Assessment of the state of decolonized AI governance in Sub-Saharan Africa. *Royal Society Open Science*, 11(8), 231994.
- Cognitive imperialism in artificial intelligence: Counteracting bias with indigenous epistemologies. (2024). *AI and Society*. <https://doi.org/10.1007/s00146-024-02065-0>
- Decolonizing AI with indigenous and African epistemologies. (2024). *London Journal of Undergraduate Research*.
- Ghosh, A., et al. (2024). Biases of generative AI to non-Indigenous non-Western societies through a decolonial lens. *AI Ethics Review*.
- Kanu, A. I., Pilani, M. P., Kanu, C. C., & Bazza, M. B. (2025). Perceived impact of farmers-herders conflict on food availability in North Central Nigeria. *Journal of Home Economics Research*, 32(2), 126–136.
- Kanu, I. A., & Pilani, M. P. (2024). Semiotic hermeneutic of “new wine, new wineskins”: Symbols, philosophy of development and Africa. *Dialogue and Universalism*, 35(2), 151–164. <https://doi.org/10.5840/du202434225>
- Kanu, I. A., Pilani, M. P., & Kanu, E. U. (2026). Arewa symbol as a language of transcendence: Exploring the intersection of art and spirituality. *Journal of African Languages and Literary Studies*, 7(2), 99–111. <https://doi.org/10.31920/2633-2116/2026/v7n2a5>
- Kanu, I. A., Pilani, M. P., & Nwadiador, K. L. (2025). African Union’s peace and integration initiatives in the light of Ecclesiastes (4:12): Intersection of politics and biblical wisdom. *Journal of African Union Studies*, 14(3), 161–179. <https://doi.org/10.31920/2050-4306/2025/14n3a8>
- Kanu, I. A., Pilani, M. P., & Nwadiador, K. L. (2026). Exploring the African Union’s response to climate change, pandemics, and migration challenges through the prism of Genesis 11:1–9: Theological and socio-political insights. *Journal of African Union Studies*, 15(1), 25–43. <https://doi.org/10.31920/2050-4306/2026/v15n2a2>
- Kanu, I. A. & Ndubisi, J. O. E. (2022). “Artificial intelligence and socio-economic development in Africa.” *OCHENDO: An African Journal of Innovative Studies*. 3(1), 2-21.
- Kanu, A. I.; Addidi, T. D.; Kanu, C. C. (2024). “Artificial intelligence and cybercrime in Nigeria: Towards an Ethical framework”. *Dialogue and Universalism*, 32(1), 143-158.
- Kanu, A. I. (2025). “Philosophical roots of Artificial Intelligence: Theoretical and practical foundations.” *La Ciudad de Dios, Revista Augustiniana*. 238(1), 235-258.
- Kanu, I. A. & E. J. O. Nsubisi (2026). “Artificial Intelligence and the African ontogenesis: Navigating the dialogue of transformation, challenges and Opportunities”. *African Journal of Religion, Philosophy and Culture*. 7(1), 161-177
- Kanu, I. A. & Okpokwasili, O. A. (2025). “Artificial Intelligence, Development and Ethics of Care: A Feminist Perspective on Human-Technology Relations”. Nwadiador, K.; Ulpogu, N.; Adamy, J. N. (Ed.). *Artificial Intelligence, Ethics and Indigenous Wisdom: Rethinking Africa’s Cultural and Philosophical Future- Proceedings of the 2025 International Conference of the Association for the Promotion of African Studies (APAS)* (pp. 56-78). Abuja: Association for the Promotion of African Studies
- Langeveldt, D., & Pietersen, L. (2024). Decolonial approaches to AI in education in African contexts. *Frontiers in Computer Science*.

- Mhlambi, S. (2020). From rationality to relationality: Ubuntu as an ethical and human rights framework for artificial intelligence governance. *Carr Center for Human Rights Policy Discussion Paper*.
- Mohamed, S., Png, M. T., & Isaac, W. (2020). Decolonial AI: Decolonial theory as sociotechnical foresight in artificial intelligence. *Philosophy and Technology*, 33, 659-684.
- Mollema, W. (2024). Epistemic decolonisation and the integration of African traditional medicine: Toward an epistemic redress model for inclusive AI in mental healthcare. *AI and Society*. <https://doi.org/10.1007/s00146-026-03182-8>
- Muldoon, J., & Wu, B. A. (2023). Artificial intelligence in the colonial matrix of power. *Philosophy and Technology*, 36(4), 80.
- Okolo, C. T. (2022). Optimizing human-centered AI for healthcare in the Global South. *Patterns*, 3(2).
- OlaOlorun, D. A., Oladiran, I. O., & Adeniran, A. (2001). Complications of fracture treatment by traditional bonesetters in southwest Nigeria. *Family Practice*, 18(6), 635–637.
- Onuminya, J. E. (2004). The role of the traditional bonesetter in primary fracture care in Nigeria. *South African Medical Journal*, 94(8), 652–658.
- Onyiah, S. C.; Ndubisi, J. O. E.; Kanu, A. I. (2024). “Navigating the Ethical Implications of Artificial Intelligence through Carol Gilligan’s Ethics of Care.” *Aquino Journal of Philosophy*. 4(2), 1-12.
- Perera, M., Vidanaarachchi, R., Chandrashekeran, S., Kennedy, M., Kennedy, B., & Halgamuge, S. (2025). Indigenous peoples and artificial intelligence: A systematic review and future directions. *Big Data and Society*, 12(1).
- Pilani, M. P. (2024). Environmental stewardship and dignity of labour in Gen 2:4b–15 and its challenges for Nigeria. *Theology and Science*, 22(4), 774–789. <https://doi.org/10.1080/14746700.2024.2399901>
- Pilani, M. P. (2025). Ethics, artificial intelligence and entrepreneurship: Towards a biblical perspective on just labour. In I. A. Kanu, T. D. Adidi, C. C. Kanu, & O. A. Okpokwasili (Eds.), *Ethics, entrepreneurship and sustainable development: Converging perspectives and insights* (pp. 141–155). Veritas University Press.
- Pilani, M. P., Kanu, I. A., Onukwuba, M., & Okonkwo, P. (2026). A comparative study of African traditional legal systems and the Mosaic jurisprudence. *African Journal of Law and Justice System*, 5(2), 5–23. <https://doi.org/10.31920/2753-3123/2026/v5n2a1>
- Udosen, A. M., Otei, O. O., & Onuba, O. (2006). Role of traditional bone setters in Africa: Experience in Calabar, Nigeria. *Annals of African Medicine*, 5(4), 170–173.