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CULTURAL IMPACTS OF ARTIFICIAL INTELLIGENCE (AI) ON INDIGENOUS IGBO MUSIC IN NIGERIA

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Abstract

This study investigates how artificial intelligence (AI) technologies affect the preservation and transformation of Indigenous Igbo music in southeastern Nigeria. Using a desk-based qualitative case study approach that includes virtual ethnography and critical discourse analysis, the research examines publicly available materials such as streaming platform metadata, policy documents, and digital archives. Analysis shows that while machine learning provides technical tools for documenting endangered genres like Egwu Ekpe drumming, these technologies also pose threats to Indigenous epistemologies through data colonialism and algorithmic categorisation. Significant tensions emerge between AI-driven individual authorship models and Igbo communal ownership principles, as well as between global platform categorisation systems and localised musical ontologies. The study finds that current Nigerian copyright laws and international AI ethics guidelines lack mechanisms to recognise collective stewardship of traditional cultural expressions. Drawing on decolonial theory and Indigenous data sovereignty models, the research advocates for participatory governance structures that prioritise Igbo values such as consensus-building and communal stewardship in AI development. Findings contribute to global discussions on Indigenous data rights by illustrating how algorithmic systems embed colonial power relations when handling non-Western cultural heritage. Policy recommendations include adopting the WIPO Treaty provisions for traditional knowledge protection and establishing community-led innovation hubs in Igbo regions.

Introduction

Indigenous Igbo music constitutes a vital repository of ancestral knowledge and collective memory in southeastern Nigeria (Nzewi, 2021). Genres such as *Egwu Amala* ceremonial dance music and *Ikoru* ritual drumming encode cultural philosophies that have sustained community identity for generations. These traditions rely on oral transmission through master musician apprenticeships and function within holistic frameworks where sound, movement, and spiritual intentionality remain inseparable (Nzewi, 2021). Contemporary threats, including urbanisation and language shift, have accelerated the need for preservation interventions, with the Igbo language currently classified as vulnerable by UNESCO (2022).

Artificial intelligence (AI) technologies present both opportunities and risks for this preservation context. Machine learning algorithms now enable large-scale digitisation of audio archives and automated analysis of rhythmic patterns. Yet these technical capabilities generate significant ethical tensions. Streaming platforms categorise Igbo ritual music under generic labels such as World Music, effectively divorcing sonic content from ceremonial context (Elish, 2021). This categorisation reflects broader patterns of algorithmic colonialism wherein technological infrastructures extract value from Indigenous cultural materials while erasing specific sociocultural meanings (Elish, 2021).

This study evaluates AI impacts on Igbo musical traditions through three research questions. First, how does AI affect the socio-spiritual integrity of Igbo music when ritual genres undergo digitisation and algorithmic distribution? Second, what tensions emerge between AI-driven intellectual property frameworks and Igbo concepts of communal heritage ownership? Third, how do systemic biases in AI systems misrepresent Indigenous Nigerian musical forms within global markets? By foregrounding Igbo epistemologies, the research challenges Western-centric AI ethics frameworks (UNESCO, 2021) and advocates for decolonial approaches prioritising community sovereignty over data extraction (Couldry & Mejias, 2019).

Literature Review

AI in Global Music Contexts

Artificial intelligence has fundamentally transformed music production, distribution, and consumption worldwide (Huang, 2023). Machine learning algorithms enable automated

composition, audio restoration, and personalised curation at unprecedented scales. Streaming platforms employ recommendation systems that analyse user behaviour to predict preferences, while generative tools allow artists to produce algorithmic compositions. In preservation contexts, spectral analysis techniques restore degraded historical recordings, applying computational methods to recover sonic data from damaged media.

These technological capabilities generate significant ethical concerns regarding cultural representation. AI systems rely predominantly on training datasets dominated by Western musical structures, including diatonic scales and standard meter patterns. This bias marginalizes non-Western rhythmic systems and tonal languages, reinforcing cultural homogenization (Elish, 2021). Furthermore, AI-generated music raises unresolved intellectual property questions, particularly when algorithms sample traditional compositions without attribution. These issues intensify in non-Western contexts where communal ownership norms conflict with individualistic intellectual property frameworks prevalent in global technology markets (Couldry & Mejias, 2019).

Indigenous Igbo Music and Communal Ontologies

Igbo musical traditions operate within epistemological frameworks emphasising collective creation over individual authorship (Nzewi, 2021). Unlike Western art music traditions prioritising proprietary ownership and solitary composition, Igbo practices stress intergenerational stewardship and spiritual intentionality. The *Ikoró* drum exemplifies this ontology. Performed during rituals and communal gatherings, its rhythmic patterns encode complex messages interpretable only by initiated elders, functioning as a technology for transmitting historical narratives and moral codes within specific social contexts (Nzewi, 2021).

These traditions depend upon oral transmission through structured apprenticeships with master musicians. However, this ecosystem faces accelerating threats from urbanisation and language shift. The erosion of the Igbo language risks the loss of lyrical nuances embedded in oral repertoires, including proverbial knowledge and historical narratives (Emenanjo, 2021). Existing preservation efforts frequently prioritise Western archival methodologies such as audio recording and Western notation transcription that neglect the communal and spiritual dimensions essential to Igbo musical practice (Nzewi, 2021).

Critical Gaps in Decolonial AI Ethics

While AI implications for Western music industries have received extensive scholarly attention, impacts on African Indigenous knowledge systems remain under-theorised. Current AI ethics frameworks, including the UNESCO (2021) Recommendation on the Ethics of Artificial Intelligence, emphasise inclusivity but lack specific mechanisms for Indigenous data sovereignty. The Montreal Declaration for Responsible AI advocates democratic participation (Abebe et al., 2020), yet its principles remain abstract without grounding in Indigenous ontologies.

This gap manifests in legal and technological infrastructure. African nations lack regulatory frameworks protecting communal intellectual property in AI-generated content. Nigeria's Copyright Act (Nigerian Copyright Commission, 2022) recognises only individual authorship, providing no legal mechanisms for collective ownership by lineages or age-grade societies. This legal vacuum leaves Indigenous music vulnerable to extraction and commodification without community consent (Couldry & Mejias, 2019). Furthermore, few studies address how AI datafication of oral traditions risks reducing spiritually significant practices to commodifiable assets. These omissions highlight the need for decolonial frameworks centring Indigenous agency in AI development (Elish, 2021).

Methodology

This study employs a desk-based qualitative case study design to investigate AI cultural implications within Igbo music (Yin, 2018). Given logistical constraints on primary fieldwork, the methodology utilises secondary data analysis, virtual ethnography, and critical discourse analysis of publicly available materials, including platform metadata, policy documents, and digital archives.

Research Design and Case Selection

The study utilises an exploratory design grounded in three purposively selected cases: AI archival initiatives, generative AI music tools, and digital streaming platforms. These cases were selected based on documented effects on Igbo music traditions and the availability of public information enabling independent analysis. Following Yin's (2018) case study design—a multi-case study approach, which facilitates cross-comparative analysis, identifying patterns in how AI

technologies intersect with Igbo cultural values, including communality and spiritual intentionality.

The decision to utilise secondary data requires explicit justification. While qualitative research traditionally prioritises direct participant engagement (Creswell & Poth, 2018), desk-based research offers distinct advantages for this project. These include access to a broader corpus of documented AI projects than feasible through single-site fieldwork, the capacity to analyse platform algorithms not accessible through interview methods, and the ability to examine corporate policy documents that participants may not critique directly. Limitations are acknowledged. Secondary data cannot capture the nuanced perspectives of Igbo musicians regarding lived experiences with AI technologies. Findings are therefore framed as identifying systemic patterns requiring validation through future community-based participatory research (Creswell & Poth, 2018).

Data Sources and Analytical Methods

Data were drawn from three complementary sources. Secondary literature, including peer-reviewed studies on AI and African music preservation, provided contextual framing. Policy documents, including Nigeria's Copyright Act (Nigerian Copyright Commission, 2022) and the UNESCO (2021) Ethics of AI Recommendation, were analysed to evaluate gaps in protecting communal intellectual property. Virtual ethnography of digital platforms, including Spotify and TikTok, assessed AI impacts on Igbo music representation. Following Hine (2000), virtual ethnography is defined as the ethnography of, in, and through the virtual, conducted through intermittent engagement rather than long-term immersion. Specifically, Spotify public playlists and metadata were reviewed to identify algorithmic categorisation trends while TikTok videos tagged with Igbo music-related hashtags were catalogued to analyse decontextualization patterns (Huang, 2023).

Critical discourse analysis examined how language constructs power relations in AI policy and corporate narratives. Following Fairclough and Wodak (1997), this involved three-dimensional analysis: description of textual features, interpretation of production processes, and explanation of sociopolitical contexts. This method revealed how policy documents embed assumptions conflicting with Igbo communal ownership norms.

Ethical protocols addressed challenges inherent in secondary research on Indigenous materials. Direct use of audio samples was avoided in favour of public metadata and attributed textual descriptions. The research prioritised analytical frameworks developed by Igbo scholars to avoid outsider misinterpretation of sacred practices (Nzewi, 2021).

Findings

The analysis reveals four interconnected tensions at the intersection of AI and Igbo music; (i) Preservation versus Cultural Erosion, (ii) Communal Ownership versus Algorithmic Authorship, (iii) Bias and Cultural Misrepresentation, (iv) Revitalisation and Resistance.

Preservation versus Cultural Erosion

AI archival technologies offer unprecedented capacity for documenting endangered musical traditions. Spectral analysis and machine learning algorithms restore degraded historical recordings, enabling access to sonic materials that physical deterioration would otherwise render irretrievable. However, these preservation benefits carry cultural costs. The technical process of digitisation inherently decontextualises musical content from performative and spiritual contexts. When *Ikoró* ritual drumming is extracted from ceremonial proceedings and stored as audio files, it transforms living practice into a static artefact. The rhythmic patterns that communicate specific messages between initiated elders become mere sound objects, stripped of the social relationships and ritual protocols that constitute their meaning (Nzewi, 2021).

This decontextualization extends to algorithmic circulation. Streaming platforms categorise preserved materials under generic taxonomies such as World Music or Afrobeats that obscure cultural specificity. Analysis of Spotify's categorisation systems reveals that African music genres are frequently flattened into broad commercial labels, with algorithmic recommendation systems privileging mainstream content and limiting discovery of culturally specific genres (Huang, 2023). On Igbo ceremonial music, this means that ritual performances intended for specific ancestral rituals circulate alongside decontextualised relaxation tracks, stripped of their spiritual function.

Communal Ownership versus Algorithmic Authorship

The transformation of Igbo music through AI tools generates acute conflicts between Indigenous stewardship norms and global intellectual property frameworks. Nigeria's Copyright Act

(Nigerian Copyright Commission, 2022) anchors protection firmly in human creativity and individual authorship. The act requires original character derived from human intellectual effort and explicitly excludes works generated solely by automated processes. This legal framework recognises only individual rights holders, providing no mechanisms for collective ownership by lineages or age-grade societies.

This individualistic framework clashes fundamentally with Igbo concepts of communal heritage (Nzewi, 2021). Traditional genres are stewarded by lineage heads and transmitted through collective apprenticeship systems. When AI systems sample these traditions to generate new compositions, they activate legal frameworks that attribute ownership to individual programmers or corporate platforms rather than to source communities. The current legal framework lacks provisions addressing AI-generated works and contains no recognition of communal intellectual property rights (Nigerian Copyright Commission, 2022). This legal vacuum leaves Igbo musical heritage vulnerable to commercial appropriation without consent or benefit-sharing mechanisms (Couldry & Mejias, 2019).

Algorithmic Bias and Cultural Misrepresentation

Global streaming platforms perpetuate systemic biases that marginalise Igbo musical forms. Spotify's genre classification system demonstrates significant limitations in handling African music, with tracks frequently miscategorised under broad labels like World Music that divorce sonic content from cultural context. This categorisation reflects algorithmic colonialism wherein technological infrastructure flattens diverse traditions into consumable generic categories (Elish, 2021).

The consequences extend beyond misclassification to active erasure. Algorithmic recommendation systems operate as filter bubbles that reinforce existing listening patterns, limiting exposure to culturally diverse content (Huang, 2023). For Igbo ritual genres, this creates a paradox. Digital platforms increase global visibility while simultaneously obscuring cultural specificity. Social media platforms amplify this tension. Analysis of TikTok content reveals patterns of decontextualization where ritual rhythms circulate as background audio for entertainment content, divorced from ceremonial significance. While these trends increase visibility, they perpetuate digital colonialism through the extraction of cultural value without

community control (Couldry & Mejias, 2019).

Revitalisation and Resistance

Despite these challenges, technology-mediated revitalisation efforts demonstrate potential for culturally grounded innovation. Educational applications use AI to teach instrumental techniques and translate lyrical proverbs, addressing intergenerational language shift (Emenanjo, 2021). However, these initiatives face significant resistance from cultural custodians. Master musicians and lineage authorities critique AI tools for privileging technical replication over the improvisational essence of oral traditions. This resistance reflects broader demands for co-designed AI frameworks that align technological development with Igbo values, including consensus building (Nzewi, 2021). Rather than rejecting technology outright, custodians advocate for community-led design processes that respect ritual protocols and ensure that digitisation serves cultural sovereignty.

Discussion

Findings reveal AI's complex role in Indigenous Igbo music preservation. While machine learning archives demonstrate the capacity to document endangered genres, the technical process of digitisation reduces holistic practices to extractable data, stripping them of socio-spiritual significance. This duality raises fundamental questions about whether algorithms can capture the essence of live performance and whether digitisation inherently promotes the commodification of sacred art.

Data Colonialism and Extractive Logic

The transformation of Igbo music into datasets exemplifies data colonialism, a social order characterised by the continuous extraction of data from human life for profit (Couldry & Mejias, 2019). Unlike historical colonialism's appropriation of land and labour, data colonialism appropriates the daily flow of human life in abstract digital form. This framework illuminates how AI systems extract value from Igbo musical traditions through data capture and algorithmic processing.

The Nigerian context demonstrates how data colonialism operates through legal infrastructure. Nigeria's Copyright Act (Nigerian Copyright Commission, 2022) recognises only individual authorship, providing no mechanisms for collective ownership. This legal framework enables

technology platforms to extract cultural data without community consent, transforming communally stewarded heritage into proprietary assets. The absence of legal recognition for communal intellectual property reflects the coloniality of power embedded in global AI governance (Elish, 2021).

Ontological Conflicts

Igbo musical ontology centres on the holistic integration of sound, movement, and spiritual purpose (Nzewi, 2021). Sacred genres function as communicative acts within living ritual systems. AI systems lack the capacity for the metaphysical engagement that constitutes authentic performance. They process acoustic patterns as data points rather than as socially embedded communicative acts.

This limitation represents epistemological violence. When generative AI models produce music influenced by Igbo traditions, they create static outputs that cannot replicate the improvisational responsiveness that defines human performance. The resulting algorithmic music circulates in global markets as Igbo-inspired content, displacing authentic traditions with synthetic approximations lacking spiritual authority (Couldry & Mejias, 2019).

Toward Decolonial AI Ethics

Current AI ethics frameworks emphasise inclusivity but lack specific mechanisms for Indigenous data sovereignty (UNESCO, 2021). The Montreal Declaration for Responsible AI advocates democratic participation (Abebe et al., 2020), yet its principles remain abstract without grounding in Indigenous ontologies. Centring Igbo epistemologies requires moving beyond consultation toward genuine co-design.

The concept of consensus building offers an alternative ethical foundation to Western frameworks, prioritising individual rights. Applied to AI development, this would require community veto power over digitisation of sacred materials, collective benefit-sharing agreements for commercial use of traditional music, and algorithmic design that respects ritual protocols (Nzewi, 2021). Legal reform must evolve to recognise Indigenous ownership models, drawing on the WIPO (2024) Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge. This treaty establishes international disclosure requirements for

traditional knowledge, providing precedent for extending protections to musical heritage.

Recommendations

Participatory Governance

AI development must prioritise participatory design involving Igbo stakeholders from project inception (Abebe et al., 2020). Establish decentralised innovation hubs in Igbo majority regions to train local developers in culturally grounded applications. These labs should operate under community governance structures rather than external corporate control, following the Māori data sovereignty model (Te Kāhui Raraunga, 2025). Implement protocols requiring free, prior, and informed consent for all uses of Igbo musical data, including community representation in AI project planning and transparent disclosure of how algorithms process cultural materials.

Legal Reform

Amend the Copyright Act (Nigerian Copyright Commission, 2022) to incorporate collective rights for traditional cultural expressions. Implement the WIPO (2024) Treaty provisions requiring disclosure of traditional knowledge sources in patent and copyright applications. Establish mandatory benefit-sharing agreements requiring percentage returns to community cultural funds for any commercial AI application using Igbo musical training data. Create fast-track dispute resolution mechanisms accessible to communities without specialised legal resources.

Epistemological Integration

Require AI systems to include contextual metadata explaining the cultural significance and proper usage protocols for sampled Igbo rhythms. Implement co-design methodologies where Igbo custodians directly shape technical specifications, including community validation of training datasets and cultural expert review of generative outputs. Establish culturally grounded evaluation criteria for AI systems processing Igbo music (Te Kāhui Raraunga, 2025).

Education and Capacity Building

Incorporate Indigenous knowledge systems into computer science curricula at Nigerian universities, fostering hybrid expertise in technology and cultural preservation (Creswell & Poth, 2018). Establish scholarships for Igbo students in data governance and AI ethics to ensure

communities possess technical literacy to assess AI proposals and assert sovereignty over digital representations.

Conclusion

This study examined the dual role of artificial intelligence in preserving and disrupting Indigenous Igbo music traditions. Machine learning archives demonstrate the capacity to document endangered genres, yet these technologies risk eroding spiritual essence by reducing holistic practices to extractable data. Algorithmic biases marginalise ritual music through homogenising categorisations, while generative tools activate individualistic intellectual property frameworks that conflict with Igbo communal ownership norms (Couldry & Mejias, 2019; Elish, 2021).

Centring Igbo perspectives challenges Western-centric AI ethics discourses that prioritise transparency and individual rights over relational accountability (UNESCO, 2021). By foregrounding communal stewardship and consensus building, this research advocates for decolonial frameworks recognising Indigenous agency as foundational (Nzewi, 2021). The Igbo case specifically advances understanding of how algorithmic colonialism operates through legal and technological infrastructure that extracts value from marginalised communities.

Future research must prioritise piloting co-designed tools through participatory methodologies, embedding community veto power and benefit-sharing mechanisms (Abebe et al., 2020). Policy research should track the implementation of the WIPO (2024) Treaty in Nigerian law, assessing the effectiveness of expanded communal intellectual property protections. Sustaining Igbo musical heritage requires strategic engagement, positioning technology as relational infrastructure amplifying Indigenous agency rather than extracting cultural value (Couldry & Mejias, 2019).

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