Challenges and Opportunities of AI in Revitalizing and Preserving Endangered Languages in Kenya

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Abstract
Kenya's rich variety of languages carries important cultural and traditional knowledge. However, many of these languages are disappearing because of the growing influence of English, Kiswahili, and other challenges. This language loss threatens cultural identity and the preservation of traditional knowledge. This study aims to explore how Artificial Intelligence (AI) can help revitalize endangered languages in Kenya and ensure their survival. The study uses secondary data from reports, academic studies, and policy reviews to examine Kenya's language landscape, technological capabilities, and challenges to AI adoption. Key challenges include a lack of skilled professionals, limited internet access, weak policies, and ethical concerns about data ownership. Findings show that despite these challenges, AI offers opportunities to preserve endangered languages. For example, AI can create digital tools for speech-to-text transcription, personalized learning platforms, and digital repositories for storing linguistic data. These tools can help younger generations reconnect with their cultural roots. While AI has great potential, addressing infrastructure gaps, creating clear policies, and involving communities are essential to success. With strategic efforts, AI can play a transformative role in preserving Kenya's endangered languages and protecting its cultural heritage for future generations.

Keywords: AI, Endangered Languages, Culture

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1. Introduction

1.1 Importance of Language in Society

Language is a cornerstone of human society, serving as a fundamental tool for communication, cultural expression, and the preservation of knowledge. Scholars consistently assert that language and culture are inseparable, with language acting as both a mirror and a shaper of cultural identity (Peeters, 2015). The interplay between language and culture extends beyond communication; it transmits traditions, values, and norms across generations. Jiang (2000) captures this duality through metaphors, likening language and culture to a living organism: language represents the flesh, and culture the blood. Without culture, language would lack depth, and without language, culture would lose its form. This metaphor underscores the significance of language as a communicative tool and as the societal glue facilitating mutual understanding and cohesion.

The relationship between language and identity further demonstrates its societal importance. Rovira (2008) highlights that language is intrinsic to cultural identity and serves as how people convey their innermost selves across generations. She describes how the loss of one's language often leads to a disconnection from cultural roots and identity, emphasizing that language carries a community's history, traditions, and shared experiences. For instance, the erosion of a home language among immigrants can disrupt familial bonds and cultural continuity, illustrating language's vital role in shaping personal and collective identity.

Languages in Africa play key role in preserving and sharing cultural traditions, as seen in practices like songs, proverbs, riddles, and tongue twisters. Zeleza (2016) explains that African languages are not just tools for communication. They represent communities' values and creative expressions, holding their cultural history and shared ideas. He also emphasizes that African languages support the transfer of culture and problem-solving across disciplines. These languages store traditional knowledge and provide ways to work together and innovate in modern settings. Supporting African languages is more than protecting heritage; it strengthens societies and encourages creativity to tackle today's challenges (Mbunwe-Samba, 2012).

1.2 Language Endangerment in Kenya

Language loss is a pressing global issue that poses significant risks to cultural diversity and human heritage. The gradual disappearance of languages erodes communities' collective identity and knowledge. Several critical factors contribute to this phenomenon, each deeply interconnected with societal, environmental, and political contexts (Derhemi & Moseley, 2023).

In Kenya, urbanization and social mobility have contributed to a decline in the use of indigenous languages. Parents often prioritize teaching their children English or Kiswahili, which are viewed as symbols of education and socioeconomic advancement. This shift is further reinforced by educational policies prioritizing dominant languages over indigenous ones. For example, local languages are taught only up to the third grade in linguistically homogenous areas, while Kiswahili replaces indigenous languages in urban schools (Wamalwa & Stephen, 2013).

Economic imperatives often force members of Indigenous communities in Kenya to migrate to urban centers in search of better education and employment opportunities. In these new environments, dominant languages frequently replace indigenous ones as tools for communication and socioeconomic mobility. This trend diminishes the use of indigenous languages, as children who grow up in urban centres are disconnected from their linguistic heritage (Obiero, 2008). Over time, such shifts contribute to the erosion of linguistic diversity, particularly among younger generations in urbanized settings.

The spread of global media and digital platforms has worsened the decline of minority languages. Indigenous communities often lack the resources to represent their languages in these spaces. This allows dominant languages like English and Kiswahili dominate media, education, and online platforms. In Kenya, many endangered languages, are not documented or codified, making it difficult to include them in digital technologies. As a result, younger generations prefer dominant languages that are more accessible and seen as economically beneficial, further pushing native languages aside (Wamalwa & Stephen, 2013).

1.3 Kenya's Linguistic Landscape

Kenya's linguistic landscape is both diverse and complex, reflecting the country's rich cultural and ethnic heritage. Estimates of the number of languages spoken in Kenya range widely, from 30 to 74, depending on classification criteria. Obiero (2008) notes between 30 and 60 languages, while Barasa (2023) identifies 66 native and eight non-native languages, including English and French. These languages belong to three primary linguistic families: Bantu, Nilotic, and Cushitic. Bantu languages account for the majority at 65%, followed by Nilotic at 32%, and Cushitic languages comprising the remaining 3% (Obiero, 2008). Kiswahili, the national language, is a Bantu language widely used as a lingua franca, facilitating communication across the country's ethnolinguistic groups. Meanwhile, English is an official language and the primary medium of instruction from primary school through university, reinforcing its prominence in formal education and governance.

Wamalwa and Oluoch (2013) report that at least seven languages in Kenya, are classified as endangered. They are predominantly spoken by the older generation, particularly those aged 50 years and above, and according to the Atlas of the World’s Languages in Danger (2010), six Kenyan languages, El Molo, Kore, Lorkoti, Sogoo (also known as Okiek), Yaaku, and Kinare have already become extinct, as illustrated in Table 1. This alarming trend prompts a critical question: Can Artificial Intelligence (AI) be harnessed to revitalize Suba and preserve the invaluable indigenous knowledge embedded within the language?

Table 1: Vitality Levels for Endangered Languages of Kenya

Language	No. of speakers	Vitality
Suba	157,787	Vulnerable
Burji	39,000	Vulnerable
Boni	20,103	Definitely endangered
Bong'om	1,000	Definitely endangered
Dahalo	575	Severely endangered
Ongamo	200	Critically endangered
Omotik	50	Critically endangered
Elmolo	-	Extinct
Kinare	-	Extinct
Kore	-	Extinct
Lorkoti	-	Extinct
Sogoo	-	Extinct
Yaaku	-	Extinct

Source: Moseley, C. (2010) and KNBS (2019)

1.4 Rationale for AI in Language Preservation

A growing number of researchers in sociolinguistics and anthropology are examining the AI's transformative potential in revitalizing endangered languages and preserving cultural heritage (Gray, 2023; Jafari, 2023). Advances in AI, particularly in Natural Language Processing (NLP), have resulted in innovative tools that enhance communication, translation, and education across diverse languages (Hohenstein et al., 2023). These technologies play a pivotal role in preserving endangered languages and expanding their accessibility to wider audiences.

However, significant challenges persist, particularly in underrepresented regions such as Africa and other developing countries, where the application of AI for language preservation remains largely unexplored. Factors like limited institutional capacity, inadequate Information and Communication Technology (ICT) infrastructure, and region-specific socio-cultural barriers shape the outcomes of AI initiatives (Romaine, 2017). To address these issues developing AI-driven models tailored to local contexts is crucial, moving beyond "one-size-fits-all" approaches that often fail to meet the unique needs of diverse linguistic communities (Arakpogun et al., 2021).

This study seeks to identify key challenges and opportunities in leveraging AI to revitalize and preserve Kenya's endangered linguistic heritage. Specifically, the study aims to:

i. Identify challenges to AI adoption in Kenya.
ii. Explore how AI tools can support endangered language revitalization and preservation in Kenya.

2. Materials and Methods

The research design follows a qualitative approach, focusing on secondary data and literature analysis. Secondary data was gathered from existing databases, reports, and field studies to

contextualize the challenges and opportunities specific to Kenya. The research focused on several key for preserving endangered languages in Kenya. First, demographic and linguistic trends were analyzed to gather data on endangered language speakers, providing insights into language vitality and usage patterns. Second, the study examined educational resources and initiatives to support language learning and revitalization efforts. Third, Kenya's technological and policy landscape was assessed, including an evaluation of the country's ICT infrastructure, AI readiness, and policy frameworks related to digital tools and language preservation. This comprehensive analysis was essential for identifying barriers to AI adoption and evaluating the feasibility of implementing AI-driven interventions tailored to the Kenyan context.

3. Challenges to AI Adoption in Kenya

3.1 Limited Skilled Professionals

Kenya faces significant challenges in harnessing the potential of AI due to a shortage of skilled professionals with the necessary technical expertise and training. The current education system in Kenya does not adequately prepare students for careers in AI, leaving a gap in technical knowledge and expertise. AI requires specialized skills in machine learning, data science, and software development, but there are too few qualified instructors to provide advanced training in these fields. A study by Omonga (2023) showed that there are not enough qualified individuals in Kenya to manage AI technologies effectively.

A related issue is the brain drain, where skilled professionals migrate to the Global North or the Arab Gulf regions for better job opportunities. Political instability, limited resources, and economic challenges drive this trend, leaving Kenya with fewer experts to tackle local AI problems (Omonga, 2023). This loss of talent makes it difficult to build sustainable AI solutions tailored to Kenya's linguistic and cultural diversity.

Insufficient funding for AI research worsens the situation. Projects that preserve endangered languages often receive little financial support compared to urgent priorities like healthcare and food security. The high cost of AI implementation, and Kenya's reliance on foreign aid limit the ability to fund and prioritize local initiatives (Ndungi & Siregar, 2023). This lack of funding limits the opportunities for young researchers to advance their skills in localized AI and technology research, stifling the development of a skilled workforce needed to address these challenges effectively.

3.2 Insufficient Research Data and Infrastructure

Another barrier to effective AI adoption in Kenya is the lack of comprehensive frameworks and infrastructure for research data management (RDM). While the Data Protection Act (2019) focuses on safeguarding personal data, it does not address research data management (RDM) (Imbuga, 2017). This leaves individual researchers or institutions to handle data independently, often without consistent standards or guidelines, which makes data sharing and reuse extremely difficult. For example, NACOSTI (the National Commission for Science, Technology, and Innovation) does not require researchers to submit data management plans (DMPs) when applying for funding. As a result, RDM practices remain uncoordinated, and valuable research data is often poorly managed (Nakitare et al., 2024).

The lack of intense Information Technology (IT) infrastructure worsens this problem. Kenya has made some progress with data repositories; for instance, it hosts Africa's second-highest institutional repositories (Nakitare et al., 2024). However, these repositories are not well-utilized for research data storage. Platforms like the Kenya Open Data Portal and the Kenya Medical Research Institute (KEMRI) Welcome Trust Research Programme Data Repository exist. However, their use remains limited, and researchers often struggle to archive or retrieve data. There is also a shortage of dedicated research data storage systems, which are crucial for building AI tools to preserve endangered languages (Ng'eno & Mutula, 2022).

Many researchers in Kenya lack the necessary data management skills to effectively use existing infrastructure effectively. A 2019 study at the Technical University of Kenya found that RDM practices were happening at an individual level, with no institutional support to standardize data management processes. This skill gap means datasets are often poorly archived, fragmented, or inaccessible for further use (Allela & Mwai, 2019).

3.3 Internet Connectivity and Accessibility

Internet connectivity remains a significant challenge in using AI to preserve indigenous languages in Kenya, particularly in rural areas where most endangered speakers live. A significant digital divide exists between urban and rural populations (Mukuni, 2019). While cities enjoy better internet access, rural areas still face poor or non-existent connectivity, limiting their ability to use AI tools effectively.

The high cost of ICT services further restricts access. For many communities, the subscription fees for reliable internet are unaffordable, making digital resources inaccessible to those who need them most. Even where the internet is available, the poor quality of connections causes disruptions (Ntorukiri et al., 2022). Unreliable and slow speeds make tasks such as speech-to-text transcription and managing large language databases extremely challenging, delaying AI model development.

Kenya benefits from infrastructure like submarine fibre-optic cables; however, these advancements have primarily served urban centers. Rural populations continue to be excluded from these benefits due to limited investments in last-mile connectivity (Ntorukiri et al., 2022).

3.4 Lack of AI Use and Regulatory Policies

While initiatives such as the National AI Strategy by the Ministry of ICT and the AI Code of Practice drafted by the Kenya Bureau of Standards (KEBS) are steps in the right direction, progress has been slow, and specific policies focusing on AI for language preservation are still lacking (Ndungi & Siregar, 2023). This leaves a regulatory gap, making integrating AI solutions into cultural and linguistic preservation challenging.

One major issue is that existing laws like the Data Protection Act (2019) and the Computer Misuse and Cybercrimes Act (2018) primarily focus on personal data protection and critical infrastructure (Amol et al., 2024). However, they do not address critical concerns such as the ownership of linguistic data or the fair use of AI in marginalized communities. For example, Indigenous knowledge and cultural data could be exploited without clear policies governing

their use, leading to ethical challenges and mistrust between communities and AI developers (Amol et al., 2024).

The lack of institutional support and proper governance frameworks for AI adoption worsens the problem. Universities and research institutions often struggle with insufficient funding and infrastructure to develop localized AI tools that meet Kenya's specific needs (Imbuga, 2019). For instance, similar infrastructural challenges have been observed in Kenyan universities, where poor investment in ICT tools like computers and weak internet connectivity hinder technology adoption. These barriers slow AI innovation and prevent partnerships and funding opportunities essential for building AI-driven solutions tailored to Kenya's endangered languages (Ntorukiri, 2022).

3.5 Ethical Concerns: Data Ownership and Cultural Sensitivity

Ethical concerns about data ownership and cultural sensitivity present significant challenges in using AI to preserve endangered languages in Kenya. One critical issue is determining who owns the cultural and linguistic data collected for AI projects (Gray, 2023). Without clear rules, indigenous communities risk losing control of their cultural heritage. For example, Ndungi & Siregar (2023) highlight that data collected for AI tools in healthcare and education often lacks local consent and ownership frameworks, leading to concerns about data exploitation. These practices can create mistrust between communities, researchers, and developers, making collaboration more difficult.

Cultural sensitivity is equally important because indigenous languages are deeply connected to unique beliefs, spiritual practices, and sacred knowledge. AI models that misrepresent or commercialize these cultural elements can harm communities and reduce trust in technology (Raj, 2024). For instance, generalized AI tools often fail to capture the contextual depth of Indigenous languages, leading to inaccurate portrayals that erase their true meaning and significance. This problem is particularly evident when AI is applied to oral languages, where nuances like tone and rhythm are integral to meaning (Huriye, 2023).

The issue is further complicated by low digital literacy among indigenous communities. Without the skills to understand or monitor AI tools, these communities cannot ensure their data is used ethically or advocate for their rights. Huriye (2023) points out that in areas like agriculture, communities are often left out of decisions about AI tools, leading to solutions that do not fit their cultural, social, or economic needs.

4. AI Opportunities

Advancement in AI offers significant opportunities for revitalizing and preserving endangered languages in Kenya. By leveraging modern technologies, AI can address challenges such as insufficient documentation, low digital literacy, and cultural marginalization (Jafari, 2023). Key opportunities include language and cultural documentation, technological integration, AI-powered learning tools, and cultural content creation.

4.1 Language and Cultural Documentation

AI can play a key role in documenting and preserving endangered languages in Kenya by using innovative tools. Technologies such as speech-to-text recognition and audio

transcription enable the digital recording of oral traditions, conversations, and stories (Hohenstein et al., 2023). These tools are exceptionally vital for the languages listed in Table 1, which are at varying levels of endangerment. The development of digital repositories and databases enhances these preservation efforts by providing a secure and organized means of storing linguistic data. Additionally, metadata integration captures essential details such as speaker demographics, cultural significance, and geographical contexts, ensuring comprehensive and meaningful documentation. Data compression and forward-compatible technologies can be employed to safeguard this linguistic heritage for future generations, to ensure long-term accessibility and adaptability to future innovations (Raj, 2024).

4.2 Integration in Technology and Digital Platforms

Using technology to support endangered languages makes them more visible and accessible. AI-powered tools, like linguistic corpora, help create models for annotation, transcription, and text-to-speech conversion tasks. These tools are handy for preserving oral histories and cultural details often missing from written records (Jones-Evans et al., 2011).

Digital platforms like search engines, websites, and social media make these languages accessible to a broader audience and encourage active use. AI can also track language trends, helping communities stay visible online. Voice and speech recognition technologies further aid in preserving oral traditions. Integrating endangered languages into digital platforms ensures they remain relevant and valuable in today's connected world (Jones-Evans et al., 2011).

4.3 AI-Powered Language Learning Tools

AI-driven tools are transforming how endangered languages are taught and revived. Platforms like Duolingo and Memrise use AI to create personalized learning experiences that match each learner's pace and needs (Tennell & Chew, 2024). These tools make learning endangered languages fun and interactive. In addition, conversational AI assistants allow learners to practice real-time communication, creating immersive learning experiences. Gamified methods, and virtual and augmented reality, bring cultural and linguistic settings to life, making learning enjoyable and meaningful. These technologies are especially effective for younger generations, helping pass on knowledge between generations and supporting the revival of endangered languages (Tennell & Chew, 2024).

4.4 Cultural Content Creation

AI is creating new ways to express culture and share traditional stories. Tools like AI storytelling platforms help turn folktales and oral traditions into digital formats, preserving them as multimedia (Gray, 2023). Text-to-image tools and animated video creators also bring these stories to life visually, making them more engaging and dynamic. These technologies give local communities the power to create and share content that reflects their culture and connects with people worldwide. By combining storytelling and art with AI, endangered languages and traditions can be celebrated and preserved creatively and modernly (Hohenstein et al., 2023).

5. Conclusion

This study has explored the challenges and opportunities of using AI to revitalize and preserve endangered languages in Kenya. The findings indicate that significant barriers remain while AI offers transformative tools for language documentation, education, and cultural preservation. The challenges include a lack of skilled professionals, insufficient research data and infrastructure, limited internet access, weak regulatory policies, and ethical concerns surrounding data ownership and cultural sensitivity. For instance, rural communities with low connectivity and digital literacy face exclusion from AI-driven initiatives, while dominant languages like English and Kiswahili continue to overshadow indigenous ones. There is urgent need for collaborative efforts among stakeholders, including government bodies, technology developers, researchers, and local communities. Clear policies must govern ethical AI use, ensuring cultural sensitivity and equitable data ownership for indigenous groups. Strengthening Kenya's ICT infrastructure and investing in capacity-building programs will be critical for overcoming technical and resource-related challenges.

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References

Allela, A., & Mwai, N. (2019). Strategies for Research Data Management (RDM) at the Technical University of Kenya. *International Conference on Information and Knowledge Management Digital Technologies for Information* (Nairobi, Kenya) (pp.155-158).

Amol, C. J., Chimoto, E. A., Gesicho, R. D., Gitau, A. M., Etori, N. A., Kinyanjui, C., & Tombe, R. (2024). *State of NLP in Kenya: A Survey.* https://arxiv.org/pdf/2410.09948

Arakpogun, E. O., Elsahn, Z., Olan, F., & Elsahn, F. (2021). Artificial Intelligence in Africa: Challenges and Opportunities. In: A.Hamdan, A.E. Hassanien, A. Razzaque and B. Alareeni, (Eds.), *The Fourth Industrial Revolution: Implementation of Artificial Intelligence for Growing Business Success*, (Vol. 935, pp.375–388 Springer, https://doi.org/10.1007/978-3-030-62796-6_22

Barasa, D. (2023). Language ideologies, policies and practices within the multilingual Kenyan context. *Journal of Linguistics, Literary and Communication Studies,* 2(1), 55–62.

Derhemi, E., & Moseley, C. (2023). *Endangered languages in the 21st century.* Taylor and Francis.

Gray, E. (2023). AI and indigenous language preservation. *Medium.com.* https://medium.com/aimonks/ai-and-indigenous-language-preservation-3005d3567ab0

Hohenstein, J., Kizilcec, R. F., DiFranzo, D., Aghajari, Z., Mieczkowski, H., Levy, K., & Jung, M. F. (2023). Artificial intelligence in communication impacts language and social relationships. *Scientific Reports*, 13(1), 5487–5496.

Huriye, A. Z. (2023). The ethics of artificial intelligence: examining the ethical considerations surrounding the development and use of AI. *American Journal of Technology*, 2(1), 37–44.

Imbuga, M. (2017). Implementing Open Access Research Data Policies in Kenyan Research Institutions: The Case of JKUAT [Jomo Kenyatta University of Agriculture and Technology]. Presentation at Ninth Annual Heads of Institutions Forum, December 7–8, 2017, Mombasa, Kenya, https://www.kenet.or.ke/sites/default/files/implementing_open_access_research_data_policies_in_kenyan_research_institutions__the_case_of_jkuat.pdf

Jafari, Z. (2023). The role of AI in supporting indigenous languages. *AI and Tech in Behavioral and Social Sciences, 1*(2), 4–11.

Jiang, W. (2000). The relationship between culture and language. *ELT Journal, 54*(4), 328–334. https://doi.org/10.1093/elt/54.4.328

Jones-Evans, D., Thompson, P., & Kwong, C. (2011). Entrepreneurship amongst minority language speakers: The case of Wales. *Regional Studies*, *45*(2), 219–238.

KNBS. (2019). Kenya National Bureau of Statistics; *the 2019 Kenya population and housing census.* https://www.knbs.or.ke/wp-content/uploads/2023/09/2019-Kenya-population-and-Housing-Census-Volume-1-Population-By-County-And-Sub-County.pdf

Mbunwe-Samba, P. (2012). Oral tradition and the African past. In R. Layton (Ed.), *Who Needs the Past?* (pp. 105–118). Routledge.

Moseley, C. (Ed.) (2010). *Atlas of the World's Languages in Danger.* (3rd ed.). Paris, UNESCO Publishing. Online version: http://www.unesco.org/culture/en/endangeredlanguages/atlas

Mukuni, J. (2019). Challenges of educational digital infrastructure in Africa: A tale of hope and disillusionment. *Journal of African Studies and Development*, *11*(5), 59–63.

Nakitare, J., Mathangani, S., & Kamau, G. (2024). Building a Culture for Research Data Management in Kenya: A Scoping Review of the Early Indicators. portal: *Libraries and the Academy*, *24*(3), 457–471.

Ndungi, R., & Siregar, M. U. (2023). The effects of artificial intelligence on the Kenyan society. *Indonesian Journal of Electrical Engineering and Computer Science*, *32*(2), 1199–1205.

Ng'eno, E. J., & Mutula, S. M. (2022). Research data management in Kenya's agricultural research institutes. In *Handbook of Research on Academic Libraries as Partners in Data Science Ecosystems* (pp. 334–361). IGI Global.

Ntorukiri, T. B., Kirugua, J. M., & Kirimi, F. (2022). Policy and infrastructure challenges influencing ICT implementation in universities: a literature review. *Discover Education*, *1*(1), 1–12.

Obiero, O. J. (2008). Evaluating language revitalization in Kenya: the contradictory face and place of the local community factor. *Nordic Journal of African Studies*, *17*(4), 22–22.

Omoga, C. O. (2023). Challenges in Implementing Artificial Intelligence within Management Information Systems: Case of County Governments in Kenya. *International Journal of Advanced Research in Computer and Communication Engineering. 12*(9), 135–143. https://doi.org/10.17148/IJARCCE.2023.12924

Peeters, B. (2015). Language and cultural values*. International Journal of Language and Culture, 2*(2), 133–141.https://doi.org/10.1075/ijolc.2.2.001pe

Raj, A. (2024). Preserving indigenous languages with AI. *Tech Wire Asia.* https://techwireasia.com/tag/artificial-intelligence/

Romaine, S. (2017). Language endangerment and language death: The future of language diversity. In A. Fill and H. Penz (Eds.), *The Routledge handbook of ecolinguistics* (pp. 40–55). Routledge.

Rovira, L. C. (2008). The relationship between language and identity. The use of the home language as a human right of the immigrant. *REMHU-Revista Interdisciplinar da Mobilidade Humana, 16*(31), 63–81.

Tennell, C., & Chew, K. A. (2024). Perspectives on relationality in online Indigenous language learning. *AlterNative: An International Journal of Indigenous Peoples*, *20*(3), 512–520.

Wamalwa, E. W., & Stephen, O. (2013). Language endangerment and language maintenance: Can endangered indigenous languages of Kenya be electronically preserved? *International Journal of Humanities and Social Science, 7*(3), 258–266.

Zeleza, P. T. (2006). The inventions of African identities and languages: The discursive and developmental implications. *Selected Proceedings of the 36th Annual Conference on African Linguistics*, (Ed.) F. Olaoba and A. Michael 14–26. Somerville, MA: Cascadilla Proceedings Project.

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