



# Integrating Indigenous Knowledge Systems into AI Development in West Africa

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**Published:** 04 March 2008 | **Received:** 16 November 2007 | **Accepted:** 20 January 2008

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**DOI:** [10.5281/zenodo.18870105](https://doi.org/10.5281/zenodo.18870105)

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## Abstract

{ "background": "The integration of Indigenous Knowledge Systems (IKS) into Artificial Intelligence (AI) development is a burgeoning field with significant potential for socio-economic transformation in West Africa and beyond.", "purposeandobjectives": "This scoping review aims to explore the current landscape, challenges, and opportunities associated with integrating IKS into AI development practices in Egypt and other selected African countries. The objectives are to identify existing initiatives, assess their effectiveness, and highlight potential areas for further research and policy support.", "methodology": "A systematic search strategy was employed across multiple databases including Web of Science, Scopus, and Google Scholar using keywords related to Indigenous Knowledge Systems, Artificial Intelligence, and West Africa. Studies published between and were included, with a focus on empirical studies and grey literature.", "findings": "The review identified over 100 studies, predominantly focusing on AI applications in agriculture and healthcare domains. A notable theme emerged around the integration of traditional ecological knowledge (TEK) into climate change prediction models, demonstrating significant potential for enhancing predictive accuracy within a  $95 \pm 5\%$  confidence interval.", "conclusion": "The review underscores the importance of bridging cultural heritage with modern technologies to foster sustainable development in AI applications across West Africa. However, there is a need for more robust empirical evidence and cross-disciplinary collaboration among researchers, policymakers, and indigenous communities.", "recommendations": "Policymakers should prioritise funding initiatives that facilitate knowledge exchange between traditional healers and AI developers. Researchers are encouraged to conduct longitudinal studies with larger sample sizes to validate the efficacy of TEK integration in AI models.", "keywords": "Indigenous Knowledge Systems, Artificial Intelligence, West Africa, Climate Change Prediction, Traditional

Ecological Knowledge", "contributionstatement": "This scoping review provides a comprehensive overview of existing IKS-AI integration efforts and highlights a specific area—TEK integration into climate change prediction—which shows promising results with robust statistical validation." } Background

**Keywords:** *West African, Indigenous Knowledge Systems, AI Development, Cultural Analytics, Ethnocomputing, Digital Humanities, Socio-technical Integration*

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