



Integrating Indigenous Knowledge Systems into AI Development in West Africa

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Abstract

West Africa, particularly Zimbabwe, is witnessing an increasing interest in integrating Indigenous Knowledge Systems (IKS) into Artificial Intelligence (AI) development frameworks. The study employs a systematic literature search across academic databases focusing on publications from to the present. A thematic analysis will be conducted to identify key themes and gaps in the integration of IKS with AI technologies. A preliminary analysis reveals that while there is growing interest, current research predominantly focuses on conceptual frameworks rather than practical implementation strategies. Specific examples include the successful incorporation of traditional ecological knowledge into climate modelling algorithms. Despite initial progress, significant challenges remain in translating theoretical understandings into operational AI models. The review identifies a need for more empirical studies and interdisciplinary collaboration between technologists and cultural experts. Future research should prioritise methodological rigor, including the development of robust evaluation metrics to assess the impact of IKS integration on AI outcomes. Policy recommendations are also needed to support this integration effort. Model estimation used $\hat{\theta} = \text{argmin}\{\theta\} \text{sumiell}(y_i, f\theta(\xi)) + \lambda \text{Vert}\theta r \text{Vert} 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, AI, Indigenous Knowledge Systems, Ethnobotany, Multilingualism, Cultural Sensitivity, Data Collection Strategies*

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