African Supply Chain Management

Challenges and Opportunities in Natural Language Processing for African Languages in Benin Context

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Abstract

Natural Language Processing (NLP) is a critical component in many technological applications, including supply chain management. However, its implementation for African languages remains underexplored. A mixed-methods approach was employed, including surveys and qualitative interviews among stakeholders in Benin's agricultural sector. Data were analysed using thematic analysis. The findings suggest that language-specific challenges account for approximately 60% of the issues faced by NLP developers, particularly in terms of vocabulary specificity and syntactic complexity. Despite these challenges, there is significant potential for leveraging NLP to improve communication and data processing within Benin's diverse agricultural supply chain ecosystem. Investment should be directed towards developing specialized NLP models tailored to African languages. Collaborative efforts between industry experts and academic researchers are recommended. Natural Language Processing, African Languages, Supply Chain Management, Benin Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *African Geography, African Languages, Computational Linguistics, Data Mining, Formal Grammar Analysis, Machine Learning, Text Classification*

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