African GIS Applications (Technology/Methodology)

Designing Accessible UIs for Senegal's Low-Literacy Populations: A Technological Approach

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Abstract

In Senegal, a significant portion of the population has low literacy levels, making traditional educational methods less effective for disseminating information and services. Utilising participatory design methodologies, a mixed-method approach was adopted involving focus group discussions, surveys, and prototype testing with low-literacy Senegalese individuals. The findings revealed that the majority of respondents preferred visual icons over text for understanding complex information (85%). Moreover, reducing sentence length to less than 10 words significantly improved comprehension rates by 23%. Despite initial challenges in translating traditional UI designs to accommodate low-literacy needs, a tailored approach has been identified as effective through iterative user testing and feedback loops. Future research should explore the scalability of these design principles across other African countries with similar literacy demographics. User Interface Design, Low Literacy, Participatory Design, Senegal Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *African Development, User Experience Design, Participatory Research, Universal Design Principles, Human-Computer Interaction, Interface Accessibility Standards, Low-Income Environments*

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