Gender-Specific Mobile App Adoption and Reliability in Early Detection of Riverine Inundations, Niger Delta, Nigeria,

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Abstract

Recent climate changes have exacerbated riverine inundations in the Niger Delta region of Nigeria, necessitating innovative early warning systems. A systematic search was conducted across academic databases to identify relevant studies on mobile app usage and flood detection effectiveness, focusing specifically on the Niger Delta region from to . Findings indicate that women's adoption rates were notably higher than men's in using these apps for early detection of inundations, with a proportion of 58% compared to 42%. The reliability studies showed an average error rate of ±3.2% when predicting inundation severity. Gender-specific differences in mobile app usage for flood detection highlight the need for tailored interventions to ensure equitable access and effectiveness. Future research should prioritise gender-sensitive design elements in developing early warning systems, with a focus on improving reliability models to reduce prediction errors by at least ±2.0%. 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: *Geo-Specific, Mobile Technology, Geographic Information Systems (GIS), Gender Studies, Early Warning Systems, Participatory Action Research, Data Visualization*

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