Leveraging Mobile Technologies for Agricultural Information Dissemination in Senegal: A Methodological Framework

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Abstract

Mobile technologies have become increasingly prevalent in Senegal, particularly among agricultural communities seeking to improve their productivity and income. The study employed mixed-methods research design, combining quantitative surveys with qualitative interviews. A sample size of 300 randomly selected farmers was used for the survey component, while in-depth interviews were conducted with 50 farmer leaders and community members to gather qualitative insights. Data analysis included descriptive statistics and thematic coding. The findings indicate that short message service (SMS) is the most preferred communication channel among respondents, with a preference ratio of 72%. SMS messages about pest control strategies had the highest impact on farmers' decision-making processes, leading to an increase in crop yields by 15% compared to those who did not receive such information. The methodological framework developed provides valuable insights into how mobile technology can be leveraged for agricultural information dissemination and highlights the importance of tailored content and effective communication channels. Future research should focus on evaluating longer-term impacts, exploring new technological platforms, and assessing economic benefits to farmers. Policy recommendations include subsidizing mobile data costs and promoting public-private partnerships to ensure sustained adoption of these technologies. Agricultural Information Dissemination, Mobile Technologies, Senegal, Methodology Framework 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: *Mobile Networks, Geographic Information Systems, Participatory GIS, Spatial Analysis, Geospatial Technologies, Data Profiling, Mobile Communication Platforms*