



Methodological Evaluation of Field Research Stations Systems in Uganda Using Quasi-Experimental Design to Measure Adoption Rates

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Abstract

Field research stations in Uganda have implemented various systems to facilitate data collection and management. Understanding how these systems are adopted by stakeholders is crucial for their continued effectiveness. A mixed-methods approach combining quantitative and qualitative data was employed. A convenience sample of 150 stakeholders from different sectors within Uganda's agricultural sector were surveyed to gather primary data. Secondary data included pre-existing records of system usage and stakeholder feedback. The analysis revealed that the adoption rate varied significantly across different application domains, with a proportion of 68% of respondents indicating active use of the systems. This study provides insights into the factors affecting system adoption in Ugandan agricultural research settings. The findings suggest that socio-economic status and training programmes are key determinants for system uptake. Stakeholder engagement, continuous support, and tailored training programmes should be prioritised to enhance adoption rates of field research station systems. Model estimation used $\hat{\theta} = \operatorname{argmin}_{\theta} \{ \sum_{i=1}^n (y_i - f_{\theta}(\xi_i))^2 + \lambda \|\theta\|_2^2 \}$, with performance evaluated using out-of-sample error.

Keywords: *Geographic Information Systems, Quasi-Experimental Design, Adoption Theory, Survey Research, Data Analytics, Geographic Profiling, Stakeholder Analysis*

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