African Retailing Studies

Methodological Evaluation of Field Research Stations Systems in Kenya using Panel Data Estimation for System Reliability Assessment

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Abstract

Field research stations (FRSs) are crucial for data collection in various studies, especially in resource-limited settings like Kenya. However, their reliability and efficiency can vary significantly based on operational practices. The analysis employs panel data from multiple FRS stations across Kenya, applying econometric techniques such as fixed effects models. Robust standard errors are used to account for potential heteroscedasticity and autocorrelation within the dataset. Panel data reveals a significant variation in system reliability among different FRSs, with some stations showing a 15% improvement over time through strategic resource allocation. The findings suggest that consistent monitoring and periodic recalibration of resources can enhance the overall performance of FRS systems in Kenya. Based on these results, it is recommended to implement a standardised resource management protocol across all FRSs to improve their reliability and efficiency. Field Research Stations, System Reliability, Panel Data Analysis, Econometrics 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: *Kenya, Field Research Stations, Panel Data, System Reliability, Methodology, Econometrics, Geographic Information Systems*

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