



Methodological Assessment of Field Research Stations in Kenya: Estimating Efficiency Gains Using Panel Data Analysis

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Abstract

Field research stations in Kenya play a crucial role in environmental science studies, providing essential data for policy formulation and resource management. The study employed a comprehensive search strategy across academic databases, including Scopus and Web of Science. A total of 15 articles were included for analysis, with panel data models applied to assess efficiency gains in research output over time. Panel data analysis revealed that the average efficiency gain was approximately 20%, indicating significant room for improvement in resource allocation and operational processes. This review underscores the importance of optimising field research station operations to enhance their environmental science contributions, particularly in areas like climate change impact studies. Strategic investments should focus on upgrading infrastructure and enhancing data collection methods to improve overall efficiency levels. The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Kenyan, stations, methodology, panel-data, econometrics, efficiency, sustainability

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