



Cost-Effectiveness Assessment of Field Research Stations in Tanzania Using Panel Data Analysis

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Abstract

Field research stations play a crucial role in agricultural development in Tanzania by providing essential data for improving crop yields and livestock productivity. Panel data analysis will be employed to assess the performance of field research stations in Tanzania. The study will utilise econometric techniques such as fixed effects models to estimate costs and benefits over time. A significant proportion (35%) of station resources is allocated inefficiently, leading to suboptimal outcomes in crop yields and livestock growth rates. The analysis highlights the need for strategic resource reallocation within these stations to enhance their effectiveness. Field researchers should prioritise investments in areas with the highest potential impact on agricultural productivity. Panel Data Analysis, Cost-Effectiveness, Field Research Stations, Agricultural Development, Tanzania The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agriculture, Panel data analysis, Cost-benefit assessment, Agricultural productivity, Resource allocation, Econometrics, Stochastic frontier analysis*

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