



Methodological Evaluation of Quasi-Experimental Design in Assessing Smallholder Farm Systems in Kenya

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Abstract

Smallholder farming systems in Kenya face significant challenges related to productivity and sustainability. Understanding these systems requires rigorous methodological approaches that can account for the complex interactions within them. A quasi-experimental design was employed, incorporating cluster randomized trials and propensity score matching techniques. Data collection included surveys, yield measurements, and farmer interviews to assess system performance and sustainability indicators. The analysis revealed a moderate improvement in crop yields among the intervention groups (mean increase of 15% compared to control), with significant variability across different geographical regions. This study provides empirical evidence supporting the use of quasi-experimental designs for evaluating smallholder farm systems, particularly in terms of yield improvements and regional variations. The findings suggest that targeted interventions should be developed based on the observed regional differences to maximise their effectiveness. Future research could explore longer-term impacts and broader sustainability factors. Quasi-experimental design, smallholder farming, Kenya, clinical outcomes, cluster randomized trials The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Kenya, Quasi-Experimental Design, Randomized Controlled Trials, Causal Inference, Evaluation Methodology, Quantitative Research, Qualitative Analysis

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