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Quasi-Experimental Design Assessment of Smallholder Farm Systems in Senegal: A Cost-Effectiveness Evaluation

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Abstract

{ "background": "Smallholder farming systems in Senegal are characterized by significant variability in productivity and resource use efficiency.", "purposeandobjectives": "To evaluate the cost-effectiveness of different smallholder farm management strategies through a quasi-experimental design, with a focus on identifying optimal interventions for enhancing agricultural output while minimising costs.", "methodology": "A quasi-experimental study was conducted using data from 120 randomly selected farms across Senegal. The analysis employed regression discontinuity design (RDD) to estimate the impact of specific management practices on farm profitability and resource utilization efficiency, accounting for potential confounding variables such as soil type and market access.", "findings": "The results indicated a statistically significant positive effect of certain agronomic practices on both profit margins ($\delta text\{ Profit \} = 15¿$) and water use efficiency (90% reduction in water usage per unit increase in yield), with robust standard errors indicating the reliability of these findings.", "conclusion": "The study confirmed the potential for cost-effective interventions to improve farm performance, providing evidence that supports targeted policy support aimed at promoting sustainable agricultural practices in Senegal.", "recommendations": "Based on the findings, policymakers should prioritise the promotion and adoption of specific agronomic practices known to yield substantial economic benefits with minimal resource inputs.", "keywords": "Regression Discontinuity Design, Quasi-Experimental Study, Smallholder Farm Management, Cost-Effectiveness Analysis, Agricultural Output", "contributionstatement": "This study introduces a rigorous quasi-experimental design approach for evaluating the cost-effectiveness of agricultural interventions in smallholder farming systems, offering actionable insights for enhancing productivity and sustainability." } --- Quasi-Experimental Design Assessment of Smallholder Farm Systems in Senegal: A Cost-Effectiveness Evaluation Background Smallholder farming systems in Senegal exhibit significant variability in productivity and resource use efficiency. Purpose and Objectives To evaluate the cost-effectiveness of different smallholder farm management strategies through a quasi-experimental design, with a

Keywords: *African geography, Smallholder farming, Quasi-experimental design, Resource management, Cost-effectiveness analysis, Evaluation methodology, Agricultural economics*

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This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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