African Aquatic Veterinary Sciences

Methodological Evaluation of Field Research Station Systems in Senegal Using Difference-in-Differences Analysis

Amadou Diop[1,2], **Mamoudou Ndiaye**[3], **Sourate Niangue**[4], **Ibrahima Sow**[2]

[1] Council for the Development of Social Science Research in Africa (CODESRIA), Dakar

[2] Cheikh Anta Diop University (UCAD), Dakar

[3] Department of Crop Sciences, Université Alioune Diop de Bambey (UADB)

[4] Department of Soil Science, Institut Pasteur de Dakar

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Correspondence: adiop@aol.com

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Author notes

Amadou Diop is affiliated with Council for the Development of Social Science Research in Africa (CODESRIA), Dakar and focuses on Agriculture research in Africa.

Mamoudou Ndiaye is affiliated with Department of Crop Sciences, Université Alioune Diop de Bambey (UADB) and focuses on Agriculture research in Africa.

Sourate Niangue is affiliated with Department of Soil Science, Institut Pasteur de Dakar and focuses on Agriculture research in Africa.

Ibrahima Sow is affiliated with Cheikh Anta Diop University (UCAD), Dakar and focuses on Agriculture research in Africa.

Abstract

This study addresses a current research gap in Agriculture concerning Methodological evaluation of field research stations systems in Senegal: difference-in-differences model for measuring system reliability in Senegal. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of field research stations systems in Senegal: difference-in-differences model for measuring system reliability, Senegal, Africa, Agriculture, original research This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Geographic, Agricultural, Evaluation, Methodology, Difference-in-Differences, Randomized-Controlled-Experiment, Experimental Design*

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