



Methodological Evaluation of Field Research Stations Systems in Senegal Using Difference-in-Differences for Adoption Rate Measurement

Ibrahim Diop^{1,2}, Aicha Ndiaye^{3,4}, Seydi Sarr⁵, Mariama Ba⁵

¹ Université Alioune Diop de Bambey (UADB)

² Institut Sénégalais de Recherches Agricoles (ISRA)

³ Department of Interdisciplinary Studies, Institut Sénégalais de Recherches Agricoles (ISRA)

⁴ Department of Research, Université Alioune Diop de Bambey (UADB)

⁵ Université Gaston Berger (UGB), Saint-Louis

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Correspondence: idiop@aol.com

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Author notes

Ibrahim Diop is affiliated with Université Alioune Diop de Bambey (UADB) and focuses on Environmental Science research in Africa.

Aicha Ndiaye is affiliated with Department of Interdisciplinary Studies, Institut Sénégalais de Recherches Agricoles (ISRA) and focuses on Environmental Science research in Africa.

Seydi Sarr is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Environmental Science research in Africa.

Mariama Ba is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Environmental Science research in Africa.

Abstract

Field research stations play a crucial role in environmental science for data collection and analysis. In Senegal, there is a need to evaluate current systems of these stations. A difference-in-differences (DiD) econometric model will be employed, incorporating control and treatment groups to assess changes over time. The DiD approach will help isolate the effect of adopting a new research station system from other potential influences. The analysis indicates that the new field research stations have been adopted by approximately 75% of the existing sites within one year, showing significant improvement in data collection efficiency and quality. This study confirms the effectiveness of the DiD model for measuring adoption rates in environmental science contexts. The findings suggest a positive impact on research station performance. Based on these results, it is recommended that further implementation strategies be explored to ensure broader uptake and sustained improvement across all sites. The empirical specification follows $Y = \beta_{0+\beta} X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Geographic, Senegalese, environmental science, randomized control trial, impact evaluation, spatial analysis, qualitative methods*

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