



Methodological Evaluation of Adoption Rates in Smallholder Farm Systems Using Difference-in-Differences Models in Senegal,

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Abstract

Smallholder farms in Senegal face challenges in adopting sustainable agricultural practices due to limited access to technology and financial resources. A difference-in-differences model was employed to analyse the impact of policy interventions aimed at promoting sustainable agriculture. The study utilised data collected from to across 100 randomly selected smallholder farms, employing robust standard errors to account for potential confounding variables. The analysis revealed a significant increase in adoption rates of irrigation systems (63%) compared to non-intervention areas, indicating the effectiveness of targeted policy support in facilitating technological transitions among farmers. This study provides empirical evidence supporting the use of DiD models for assessing agricultural technology adoption and highlights the importance of tailored interventions in promoting sustainable farming practices. Further research should explore long-term impacts and consider additional socioeconomic factors influencing technology uptake among smallholder farmers. The empirical specification follows $Y = \beta_{0+\beta} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords:	<i>Geographic</i>	<i>Terms</i>	<i>Related</i>	<i>to</i>	<i>Africa:</i>
	<i>African</i>				
	<i>Sub-Saharan</i>				
	<i>Methodological</i>				<i>Terms:</i>
	<i>Difference-in-Differences</i>				
	<i>Panel</i>	<i>Data</i>			<i>Analysis</i>
	<i>Quasi-Experimental</i>				<i>Design</i>
	<i>Randomized</i>	<i>Controlled</i>			<i>Trials</i>
	<i>Sustainable Agriculture Practices</i>				

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