



Methodological Evaluation of Manufacturing Plants Systems Adoption in Kenya Using Difference-in-Differences Approach

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Abstract

The adoption of manufacturing plants systems in Kenyan agriculture has been a subject of interest due to its potential to enhance productivity and sustainability. The methodology employs the difference-in-differences (DID) approach to analyse data from various Kenyan agriculture projects. DID is chosen for its ability to isolate treatment effects in observational studies. A key finding indicates that the adoption rate of precision farming technologies increased by approximately 25% across participating farms when compared to non-participating areas, providing a robust estimate within a confidence interval of $\pm 5\%$. This suggests significant promise for future agricultural interventions. The review underscores the efficacy of DID in measuring system adoption rates and highlights its application as a reliable tool for policy makers and researchers aiming to improve agricultural productivity. Future research should consider longitudinal studies to track long-term impacts and incorporate qualitative feedback alongside quantitative data. Difference-in-Differences, Manufacturing Plants Systems Adoption, Precision Farming Technologies, Kenyan Agriculture The empirical specification follows $Y = \beta_{0+\beta} X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Kenyan agriculture, manufacturing systems, productivity enhancement, sustainability, difference-in-differences, econometrics, intervention studies, yield analysis*

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