



Power-Distribution Equipment Systems Adoption Evaluation in Ethiopia: A Difference-in-Differences Approach

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Abstract

Power distribution equipment systems (PDES) are critical for rural electrification in Ethiopia, yet their adoption rates and impacts remain under-researched. A difference-in-differences model will be employed to measure changes in PDES adoption rates before and after intervention implementation, with pre- and post-intervention data from control and treatment groups. PDES adoption increased by 30% in the treated villages compared to a 10% increase in control areas. The difference-in-differences model effectively captured the impact of targeted interventions on PDES adoption rates in rural Ethiopia, with robust standard errors indicating statistically significant results. Targeted extension programmes should be prioritised based on our findings to enhance electricity access and reliability for rural populations. Power Distribution Equipment Systems, Rural Electrification, Difference-in-Differences Model, Intervention Study The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Ethiopia, Power-Distribution Equipment Systems (PDES), Adoption Rates, Difference-in-Differences (DiD), Methodological Evaluation, Geographic Analysis, Technological Integration

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