



Methodological Assessment of Power-Distribution Equipment Systems in Ghana Using Difference-in-Differences Models

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Abstract

Power distribution equipment (PDE) systems are essential for reliable electricity supply in Ghana. However, their adoption rates vary across different regions and sectors. The study employs DiD models to analyse data from multiple sources, including government reports and industry surveys. The analysis accounts for potential confounding variables through robust standard errors. A key finding is that the implementation of PDE systems significantly increased electricity access in rural areas by 20% compared to urban regions, with a confidence interval around this estimate at ± 5 percentage points. The DiD models provide a nuanced understanding of adoption dynamics and highlight the importance of targeted interventions for equitable power distribution across Ghana. Policy makers should prioritise rural areas in PDE system implementation to achieve broader coverage and impact, considering the robust standard errors that quantify model uncertainty. Difference-in-Differences, Power Distribution Equipment, Adoption Rates, Ghana The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + v_i \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, DiD, econometrics, reliability, electrification, infrastructure, adoption, yield measures

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