



Methodological Evaluation of Power-Distribution Equipment Systems in Nigeria Using a Difference-in-Differences Approach

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Abstract

In Nigeria, a significant challenge is the inefficient distribution of electricity, leading to power outages and reduced productivity in various sectors. A DiD model was applied to assess changes in operational metrics before and after the installation of new distribution equipment, comparing affected areas with control regions that did not receive upgrades. The DiD analysis revealed an average efficiency improvement of 15% in power supply reliability across tested systems within a year post-installation. This study confirms the effectiveness of the DiD method for evaluating distribution system improvements, providing actionable insights for policy makers and investors. Investment in new equipment should be prioritised in regions with ongoing power outages to maximise efficiency gains. Power Distribution, Difference-in-Differences, Efficiency Gains, Nigeria The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Nigerian, power-distribution, DiD, econometrics, infrastructure, efficiency, disparities*

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