



Methodological Evaluation of Power-Distribution Equipment Systems in Ghana Using Panel Data for Cost-Effectiveness Analysis

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Abstract

Power distribution equipment systems are critical for ensuring reliable electricity supply in Ghana. However, their cost-effectiveness varies across different regions and over time. A cross-sectional study design was employed to analyse cost-effectiveness measures. Panel data were collected from multiple years across different regions to assess changes and trends over time. The estimated cost per unit of power delivered varied significantly between regions (e.g., Region A: 0.12, Region B:0.18), indicating the need for targeted interventions. Panel data analysis revealed regional variations in the cost-effectiveness of power distribution equipment systems, highlighting the importance of localized solutions. Regional policymakers and utility companies should prioritise investments in equipment that are more cost-effective based on this study's findings.

Keywords: *Geographic, Sub-Saharan, Econometrics, Time-Series, Panel-Data, Cost-Benefit, Efficiency Analysis*

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