Power-Distribution Equipment Systems in Rwanda: Quasi-Experimental Assessment of Cost-Effectiveness

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Published: 25 September 2004 | **Received:** 08 May 2004 | **Accepted:** 13 August 2004

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DOI: 10.5281/zenodo.18798400

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Abstract

Power distribution in Rwanda relies on a network of equipment systems that are crucial for ensuring reliable electricity supply across the country. A mixed-method approach combining quantitative data analysis and qualitative field observations was employed to assess the efficiency and economic viability of power-distribution equipment in Rwanda. The preliminary findings suggest that there is a significant variation (20-35%) in cost-effectiveness across different regions, with urban areas generally outperforming rural ones. This study highlights the need for tailored investment strategies to enhance the efficiency and reduce costs of power distribution equipment systems in Rwanda. Recommendation is made for targeted investments in underperforming regions to improve overall system performance at a lower cost, thus increasing economic benefits. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic, Sub-Saharan, Power-Distribution, Quasi-Experimental, Methodology, Evaluation, Infrastructure*

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