



Power-Distribution Equipment Systems Adoption Rates in Kenya: A Panel Data Analysis

Njuguna Ndirangu^{1,2}, Wakili Wanjiku^{2,3}, Kibet Kigenya^{2,4}, James Muthomi²

¹ African Population and Health Research Center (APHRC)

² Kenya Medical Research Institute (KEMRI)

³ Department of Civil Engineering, Kenya Agricultural and Livestock Research Organization (KALRO)

⁴ Kenyatta University

Published: 13 December 2005 | **Received:** 18 September 2005 | **Accepted:** 25 November 2005

Correspondence: nndirangu@hotmail.com

DOI: [10.5281/zenodo.18811718](https://doi.org/10.5281/zenodo.18811718)

Author notes

Njuguna Ndirangu is affiliated with African Population and Health Research Center (APHRC) and focuses on Engineering research in Africa.

Wakili Wanjiku is affiliated with Department of Civil Engineering, Kenya Agricultural and Livestock Research Organization (KALRO) and focuses on Engineering research in Africa.

Kibet Kigenya is affiliated with Kenyatta University and focuses on Engineering research in Africa.

James Muthomi is affiliated with Kenya Medical Research Institute (KEMRI) and focuses on Engineering research in Africa.

Abstract

This study addresses a current research gap in Engineering concerning Methodological evaluation of power-distribution equipment systems in Kenya: panel-data estimation for measuring adoption rates in Kenya. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of power-distribution equipment systems in Kenya: panel-data estimation for measuring adoption rates, Kenya, Africa, Engineering, original research This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. 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: Kenyan, Power-Distribution, Equipment, Systems, Adoption, Analysis, Methodology

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge