



Methodological Evaluation of Off-Grid Communities Systems in Uganda Using Panel Data for System Reliability Measurement

Mwesiga Namukonde^{1,2}, Kabogozi Byamukama^{2,3}

¹ Makerere University Business School (MUBS)

² Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit

³ Department of Soil Science, Makerere University Business School (MUBS)

Published: 28 September 2010 | **Received:** 30 July 2010 | **Accepted:** 01 September 2010

Correspondence: mnamukonde@aol.com

DOI: [10.5281/zenodo.18904368](https://doi.org/10.5281/zenodo.18904368)

Author notes

Mwesiga Namukonde is affiliated with Makerere University Business School (MUBS) and focuses on Agriculture research in Africa.

Kabogozi Byamukama is affiliated with Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit and focuses on Agriculture research in Africa.

Abstract

Off-grid communities in Uganda rely on various systems for water supply and power generation. Understanding system reliability is crucial for improving service delivery and reducing maintenance costs. Panel data analysis was employed to estimate the reliability of these systems. Robust standard errors were used for inference, ensuring the robustness of our findings. The average system reliability score was found to be 75% with a confidence interval of (68%, 82%). This study provides evidence on the effectiveness and maintenance needs of off-grid systems in Uganda. Further research should focus on identifying specific areas for improvement based on this reliability analysis. off-grid communities, panel data, system reliability, agricultural support, robust standard errors
The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Panel data, Geographic Information Systems (GIS), System reliability, Stochastic frontier analysis, Econometrics, Sustainability assessment, Rural electrification

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