African Maintenance Engineering

Evaluating Power-Distribution Equipment Adoption in Uganda through Randomized Field Trials: A Methodological Assessment

Akello Kiggundu[1,2], **Kizza Mukaso**[3], **Onyango Kakooza**[1], **Bassey Oryang**[1]

[1] Kyambogo University, Kampala

[2] Uganda National Council for Science and Technology (UNCST)

[3] Department of Mechanical Engineering, Makerere University Business School (MUBS)

Published: 09 February 2021 | **Received:** 25 September 2020 | **Accepted:** 22 January 2021

Correspondence: akiggundu@gmail.com

DOI: 10.5281/zenodo.18704221

Author notes

Akello Kiggundu is affiliated with Kyambogo University, Kampala and focuses on Engineering research in Africa.
Kizza Mukaso is affiliated with Department of Mechanical Engineering, Makerere University Business School (MUBS) and focuses on Engineering research in Africa.
Onyango Kakooza is affiliated with Kyambogo University, Kampala and focuses on Engineering research in Africa.
Bassey Oryang is affiliated with Kyambogo University, Kampala and focuses on Engineering research in Africa.

Abstract

Power distribution equipment (PDE) is critical for ensuring reliable electrical supply in Uganda. However, adoption rates of these systems vary significantly across different regions. A randomized control trial (RCT) was conducted in two randomly selected districts, with 100 households per district as study participants. Data on equipment usage, maintenance practices, and user feedback were collected over six months using a structured questionnaire. The proportion of households adopting PDEs within six months ranged from 25% to 40%, with higher adoption rates observed in districts with better infrastructure and community engagement initiatives. This study provides insights into the effectiveness of RCT methodology for evaluating PDE adoption, highlighting the importance of pre-existing infrastructural conditions and community involvement in adoption processes. Future research should consider implementing targeted interventions to enhance PDE adoption rates, particularly focusing on less urbanized areas where adoption is notably lower. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Power distribution systems, Uganda, Randomized trials, Methodology, Grid integration, Renewable energy adoption, Technological diffusion*

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