



Methodological Evaluation of Power-Distribution Equipment Systems in Senegal: Randomized Field Trial for Cost-Effectiveness Assessment

Mariama Diop^{1,2}, Ibrahima Ndiaye³

¹ Institut Sénégalais de Recherches Agricoles (ISRA)

² Department of Mechanical Engineering, Université Alioune Diop de Bambey (UADB)

³ Department of Sustainable Systems, Institut Sénégalais de Recherches Agricoles (ISRA)

Published: 03 July 2000 | **Received:** 14 March 2000 | **Accepted:** 31 May 2000

Correspondence: mdiop@aol.com

DOI: [10.5281/zenodo.18706987](https://doi.org/10.5281/zenodo.18706987)

Author notes

Mariama Diop is affiliated with Institut Sénégalais de Recherches Agricoles (ISRA) and focuses on Engineering research in Africa.

Ibrahima Ndiaye is affiliated with Department of Sustainable Systems, Institut Sénégalais de Recherches Agricoles (ISRA) and focuses on Engineering research in Africa.

Abstract

The power distribution systems in Senegal face challenges such as frequent outages and high maintenance costs. A randomized field trial was conducted to compare two types of power distribution equipment systems. Data collection included system performance metrics such as uptime, energy efficiency, and maintenance costs over a year. The analysis revealed that System A had an average uptime of 95% compared to System B's 87%, with System A also showing lower maintenance costs by 20 per month per unit. System A demonstrated superior performance in terms of reliability and cost-effectiveness, $Y_{it} = \beta_0 + \beta_1 X_{it} + \epsilon_{it}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, African, Social-Ecological, Systems, Variability, Optimization, Randomization

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