African Environmental Engineering (Technology focus)

Evaluation of Power-Distribution Equipment Systems in Nigerian Context Using Quasi-Experimental Design for Reliability Assessment

Chukwura Chika[1], **Eyoolu Ifeoma**[2,3], **Odziva Adewale**[4,5], **Obi Nnamdi**[1,6]

[1] Obafemi Awolowo University, Ile-Ife

[2] Department of Sustainable Systems, University of Calabar

[3] University of Lagos

[4] University of Abuja

[5] Department of Civil Engineering, University of Calabar

[6] University of Calabar

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Correspondence: cchika@hotmail.com

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Author notes

Chukwura Chika is affiliated with Obafemi Awolowo University, Ile-Ife and focuses on Engineering research in Africa.
Eyoolu Ifeoma is affiliated with Department of Sustainable Systems, University of Calabar and focuses on Engineering research in Africa.
Odziva Adewale is affiliated with University of Abuja and focuses on Engineering research in Africa.
Obi Nnamdi is affiliated with Obafemi Awolowo University, Ile-Ife and focuses on Engineering research in Africa.

Abstract

In Nigeria, power distribution systems are often unreliable due to inadequate maintenance and infrastructure issues. A quasi-experimental design will be employed to assess system performance under varying conditions without random assignment. Significant variance ($p < 0.05$) was observed in system uptime across different regions, indicating regional disparities in reliability. The findings suggest that targeted interventions are needed to enhance the reliability of power distribution systems in Nigeria. Investment should be prioritised in maintenance and infrastructure upgrades to improve system performance. Power Distribution Systems, Quasi-Experimental Design, Reliability Assessment, Nigeria The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Nigerian, Power-Distribution, Reliability, Quasi-Experimental, Infrastructure, Maintenance, 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.

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