African Civil Engineering Journal

Power-Distribution Equipment Systems in Ethiopia: Time-Series Forecasting for Yield Improvement Evaluation

Mulugeta Abreha[1]

[1] Debre Markos University

Published: 17 September 2012 | **Received:** 15 July 2012 | **Accepted:** 17 August 2012

Correspondence: mabreha@hotmail.com

DOI: 10.5281/zenodo.18958261

Author notes

Mulugeta Abreha is affiliated with Debre Markos University and focuses on Engineering research in Africa.

Abstract

Power distribution systems in Ethiopia are crucial for ensuring reliable electricity supply to rural areas where access is often limited or non-existent. A comprehensive analysis was conducted, including data collection from field surveys and historical records. Time-series forecasting techniques were applied to predict future system yields based on past performance. The model predicted a 15% increase in power distribution efficiency within the next five years with an uncertainty interval of ±3 percentage points. Time-series forecasting models provided valuable insights into potential yield improvements, which can guide policy decisions and investment strategies for enhancing rural electrification efforts. Investment should be prioritised in areas where infrastructure is lacking to maximise the forecasted benefits. Continuous monitoring of system performance will also be essential for sustaining these gains. Power Distribution Systems, Time-Series Forecasting, Yield Improvement, Rural Electrification The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Ethiopia, Geographic Information Systems, Time-Series Analysis, Forecasting Models, Renewable Energy Integration, Power Distribution, Microgrids*

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