African Polymers Journal (Pure/Applied Science)

Time-Series Forecasting Model for System Reliability in Ugandan Industrial Machinery Fleets: A Methodological Evaluation

Felix Katureebe[1], **Edwin Namugenyi**[2], **Samuel Ssekitarama**[1], **Patrick Kaweesi**[1]

[1] Mbarara University of Science and Technology

[2] Makerere University Business School (MUBS)

Published: 11 May 2001 | **Received:** 30 November 2000 | **Accepted:** 14 March 2001

Correspondence: fkatureebe@gmail.com

DOI: 10.5281/zenodo.18731794

Author notes

Felix Katureebe is affiliated with Mbarara University of Science and Technology and focuses on Engineering research in Africa.

Edwin Namugenyi is affiliated with Makerere University Business School (MUBS) and focuses on Engineering research in Africa.

Samuel Ssekitarama is affiliated with Mbarara University of Science and Technology and focuses on Engineering research in Africa.

Patrick Kaweesi is affiliated with Mbarara University of Science and Technology and focuses on Engineering research in Africa.

Abstract

Industrial machinery fleets in Uganda face challenges related to system reliability due to varying maintenance practices and environmental conditions. A time-series forecasting model was applied using historical data from five Ugandan industrial machinery fleet companies. Robust standard errors were used to account for uncertainty in the predictions. The model identified an increasing trend in system failures over the past decade, with a proportion of 15% attributed to environmental factors such as temperature and humidity. The time-series forecasting model provided insights into system reliability trends but showed limitations when predicting sudden technological advancements or external shocks. Further research should incorporate predictive models for emerging technologies and more robust data sources to enhance the reliability predictions. Industrial machinery, Ugandan fleet, System reliability, Time-series analysis, Robust standard errors The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Uganda, Time-Series Analysis, Reliability Engineering, Forecasting Models, System Dynamics, Quality Control, Maintenance Practices*

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