African Maintenance Engineering

Time-Series Forecasting Model Evaluation for Cost-Effectiveness in Nigerian Transport Maintenance Depots Systems,

Godwin Agwu[1,2], **Chidera Okoli**[3,4], **Chinedu Anyakwe**[5,6]

[1] Department of Electrical Engineering, University of Benin

[2] University of Nigeria, Nsukka

[3] Department of Mechanical Engineering, University of Benin

[4] Nigerian Institute of Social and Economic Research (NISER)

[5] Department of Mechanical Engineering, University of Nigeria, Nsukka

[6] University of Benin

Published: 17 March 2012 | **Received:** 18 October 2011 | **Accepted:** 27 January 2012

Correspondence: gagwu@yahoo.com

DOI: 10.5281/zenodo.18705457

Author notes

Godwin Agwu is affiliated with Department of Electrical Engineering, University of Benin and focuses on Engineering research in Africa.

Chidera Okoli is affiliated with Department of Mechanical Engineering, University of Benin and focuses on Engineering research in Africa.

Chinedu Anyakwe is affiliated with Department of Mechanical Engineering, University of Nigeria, Nsukka and focuses on Engineering research in Africa.

Abstract

This study addresses a current research gap in Engineering concerning Methodological evaluation of transport maintenance depots systems in Nigeria: time-series forecasting model for measuring cost-effectiveness in Nigeria. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of transport maintenance depots systems in Nigeria: time-series forecasting model for measuring cost-effectiveness, Nigeria, Africa, Engineering, methodology paper This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. The maintenance outcome was modelled as $Y\{\}=beta0+beta1\,X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic Terms: Nigerian*

Methodological Terms:

Time-series analysis
Forecasting
Model evaluation
Cost-effectiveness
Depot systems

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