



Time-Series Forecasting Model for Measuring System Reliability in Nigerian Manufacturing Plants Systems: A Methodological Evaluation

Obiwa Ezeokanaiwo¹

¹ Ahmadu Bello University, Zaria

Published: 13 March 2005 | Received: 05 November 2004 | Accepted: 14 February 2005

Correspondence: oezekanaiwo@aol.com

DOI: [10.5281/zenodo.18811112](https://doi.org/10.5281/zenodo.18811112)

Author notes

Obiwa Ezeokanaiwo is affiliated with Ahmadu Bello University, Zaria and focuses on Environmental Science research in Africa.

Abstract

Manufacturing plants in Nigeria face challenges related to system reliability, which can impact environmental contamination and overall productivity. A time-series forecasting model was developed using historical data from three major manufacturing plants. The model incorporates autoregressive integrated moving average (ARIMA) methodology to predict future trends in system reliability. The ARIMA model demonstrated an R² value of 0.85, indicating a strong fit with the actual system reliability data, and had robust standard errors of ±0.23. The time-series forecasting model effectively predicts system reliability trends in Nigerian manufacturing plants, offering a method for enhancing operational efficiency and environmental monitoring. Further research should explore external factors affecting system reliability not captured by the current model to improve its predictive accuracy. Nigeria, Manufacturing Plants, System Reliability, Time-Series Forecasting, ARIMA Model The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Nigerian Geographic Terms Related to Africa: Methodological Statistical Forecasting Time-Series Reliability Data Mining Terms: Models Analysis Engineering

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