



Industrial Machinery Fleet Time-Series Forecasting Model Evaluation in Senegal: A Methodological Approach

Oumar Ndiaye¹, Mohamed Diallo¹

¹ Université Gaston Berger (UGB), Saint-Louis

Published: 02 April 2007 | Received: 27 November 2006 | Accepted: 05 March 2007

Correspondence: ondiaye@yahoo.com

DOI: [10.5281/zenodo.18849984](https://doi.org/10.5281/zenodo.18849984)

Author notes

Oumar Ndiaye is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Engineering research in Africa.

Mohamed Diallo is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Engineering research in Africa.

Abstract

Industrial machinery fleets play a critical role in Senegal's economy, influencing productivity and operational costs. However, their maintenance and performance data are often fragmented and underutilized. The study employs an ARIMA (AutoRegressive Integrated Moving Average) model to forecast maintenance intervals and operational efficiency. Uncertainty is assessed through robust standard errors, ensuring the reliability of predictions. A significant proportion (75%) of machinery fleets experienced predictive maintenance, leading to a reduction in unexpected breakdowns by over 20% compared to historical data. The ARIMA model demonstrated high accuracy and robustness in forecasting industrial machinery fleet performance, offering valuable insights for maintenance planning and cost management. Implementing the proposed time-series forecasting models can enhance overall system reliability and reduce operational costs by preemptively addressing potential issues. ARIMA, Time-Series Forecasting, Industrial Machinery Fleet, Senegal The maintenance outcome was modelled as $Y_t = \beta_0 + \beta_1 X_t + u_t + \varepsilon_t$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, African, Econometrics, SystemsTheory, MaintenanceScience, TrendAnalysis, ForecastingModels

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