

Methodological Evaluation and Time-Series Forecasting of Industrial Machinery Fleet Adoption in Uganda, 2000–2026

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ABSTRACT

Background: The adoption of industrial machinery is a critical driver of productivity and economic development, yet systematic, data-driven methodologies for forecasting its uptake in developing economies are lacking. This gap hinders effective infrastructure planning and capital investment strategies.

Purpose and objectives: This study aims to develop and evaluate a robust methodological framework for analysing historical trends and generating reliable forecasts of industrial machinery fleet adoption. The primary objective is to provide a predictive model to inform sectoral planning and policy.

Keywords: *Industrial machinery adoption, time-series forecasting, developing economies, Sub-Saharan Africa, methodological evaluation, fleet management, Uganda*

Article Highlights

- ARIMA model applied to forecast machinery adoption in a developing economy context.
- Analysis reveals a consistent positive trajectory in adoption rates from 2000 onward.
- Methodology provides narrow prediction intervals, indicating high forecast confidence.
- Framework enables integration into long-term strategic planning for sector development.

Methodological Core

The study employs an Autoregressive Integrated Moving Average (ARIMA) model to analyse national fleet data and generate forecasts through 2026, with uncertainty quantified using 95% prediction intervals.

This study provides a quantitative forecasting tool for machinery adoption in Sub-Saharan Africa.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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