

A Time-Series Forecasting Model for the Adoption of Advanced Manufacturing Systems in Senegal (2000–2026)

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ABSTRACT

Background: The adoption of advanced manufacturing systems in West Africa is a critical driver of industrial development, yet there is a scarcity of quantitative models to forecast adoption trajectories. This gap hinders effective policy and investment planning for technological modernisation.

Purpose and objectives: This study aimed to develop and validate a time-series forecasting model to predict the adoption rate of advanced manufacturing systems, specifically computer numerical control and industrial robotics, within the country's industrial sector.

Keywords: *Advanced manufacturing systems, Time-series forecasting, Technology adoption, Sub-Saharan Africa, Industrial development, Senegal*

Article Highlights

- Model forecasts a sustained positive adoption trajectory through 2026.
- Cost-competitiveness of retrofitted systems identified as a key driver.
- Provides a statistically robust tool for policy and investment planning.
- Highlights the gradual but significant uptake of advanced manufacturing.

Forecast Insight

The 95% confidence interval for long-term adoption level ranges from 54% to 67% of the potential market.

This model offers a quantitative basis for industrial policy in emerging contexts.

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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