Methodological Evaluation of Manufacturing Systems in Senegal Using Time-Series Forecasting for Cost-Effectiveness Measures

Tayebou Dione[1,2]**, Mamadou Salliga**[1,3]

[1] Institut Pasteur de Dakar

[2] Cheikh Anta Diop University (UCAD), Dakar

[3] Department of Mechanical Engineering, Cheikh Anta Diop University (UCAD), Dakar

Author notes

Tayebou Dione is affiliated with Institut Pasteur de Dakar and focuses on Engineering research in Africa.

Mamadou Salliga is affiliated with Department of Mechanical Engineering, Cheikh Anta Diop University (UCAD), Dakar and focuses on Engineering research in Africa.

Abstract

{ "background": "Manufacturing systems in Senegal require effective cost-effectiveness measures to ensure sustainability and competitiveness.", "purposeandobjectives": "To evaluate manufacturing system methodologies in Senegal, specifically through time-series forecasting for cost analysis.", "methodology": "A time-series forecasting model was applied to analyse historical data from a selected manufacturing plant in Senegal. Robust standard errors were used to quantify the uncertainty in forecasts.", "findings": "The forecasted costs showed an average reduction of 12% over a five-year period, indicating potential savings and operational improvements.", "conclusion": "Time-series forecasting effectively identified cost-saving opportunities without requiring extensive empirical data collection.", "recommendations": "Manufacturing companies in Senegal should consider implementing similar time-series models for ongoing cost management.", "keywords": "time-series forecasting, manufacturing systems, cost-effectiveness, Senegal", "contributionstatement": "This study introduces a novel method for evaluating and optimising manufacturing costs using historical data analysis." } { "Background": "Manufacturing systems in Senegal require effective cost-effectiveness measures to ensure sustainability and competitiveness.", "Purpose and Objectives": "To evaluate manufacturing system methodologies in Senegal, specifically through time-series forecasting for cost analysis.", "Methodology": "A time-series forecasting model was applied to analyse historical data from a selected manufacturing plant in Senegal. Robust standard errors were used to quantify the uncertainty in forecasts.", "Findings": "The forecasted costs showed an average reduction of 12% over a five-year period, indicating potential savings and operational improvements.", "Conclusion": "Time-series forecasting effectively identified cost-saving opportunities without requiring extensive empirical data collection.", "Recommendations": "Manufacturing companies in Senegal should consider implementing similar time-series models for ongoing cost management.", "Keywords": "time-series forecasting, manufacturing systems, cost-effectiveness, Senegal", "Contribution Statement": "This study introduces a novel method for evaluating and optimising manufacturing costs using historical data analysis." } Structured The maintenance outcome was modelled as $Y\{\}=beta\,0+beta\,1\,X\{\}+ui+varepsilon_{\dot{\iota}}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sudanese, Geographic Information Systems, Monte Carlo simulation, econometrics, predictive analytics*

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