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Time-Series Forecasting Model Evaluation for Manufacturing Plant Efficiency in Nigeria,

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Abstract

Manufacturing plant efficiency in Nigeria has seen significant fluctuations over the years, with limited data available for detailed analysis. A comparative study using ARIMA (AutoRegressive Integrated Moving Average) model was conducted, considering various error metrics such as Mean Absolute Error and Root Mean Squared Error for model evaluation. The ARIMA(3,1,1) model showed a reduction in MAE by 20% compared to the base model, indicating improved efficiency measurement over the studied period. The ARIMA model demonstrated superior performance in forecasting manufacturing plant efficiency in Nigeria during the specified timeframe. Further research should be conducted to validate these findings and explore potential improvements using machine learning techniques. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographical, Time-series, Econometrics, ARIMA, Forecasting, Autoregression, Nigeria*

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