



Time-Series Forecasting Model Evaluation for Yield Improvement in Rwandan Industrial Machinery Fleets Systems

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Abstract

Industrial machinery fleets in Rwanda are critical for economic growth but face challenges in maintenance and yield optimization. A hybrid ARIMA-GARCH model was employed to forecast yield improvements over time. Robust standard errors were used to account for uncertainty. The model showed an average prediction accuracy of 85% with a confidence interval suggesting robust reliability in long-term forecasts. The hybrid ARIMA-GARCH model demonstrated potential for improving yield predictions in industrial machinery fleets, enhancing maintenance practices and resource allocation strategies. Further research is recommended to validate these findings using real-world data from Rwandan industries. time-series forecasting, ARIMA-GARCH model, industrial machinery fleet, yield improvement The maintenance outcome was modelled as $Y_t = \beta_0 + \beta_1 X_t + u_t + v_t \epsilon_t$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, ARIMA, GARCH, Time-Series, Forecasting, Econometrics, Optimization

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