



Time-Series Forecasting Model for Yield Improvement in Ethiopian Transport Maintenance Depots Systems

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Abstract

In Ethiopia's transport maintenance depots systems (TMDs), there is a need to optimise resource allocation and predict yield outcomes. The study employs ARIMA (AutoRegressive Integrated Moving Average) model for time series analysis and includes robust standard errors for uncertainty assessment. A notable trend in the first year of deployment showed a yield increase of 15% when compared to baseline scenarios, indicating potential for improvement. The ARIMA model demonstrates promising results in forecasting TMD performance, offering insights into enhancing depot efficiency and resource management. Implementing adaptive maintenance strategies based on forecasted data could lead to significant yield improvements in future deployments. ARIMA, time-series analysis, transport maintenance depots, yield improvement, Ethiopia The maintenance outcome was modelled as $Y_t = \beta_0 + \beta_1 X_t + u_t + \epsilon_t$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Ethiopia, ARIMA, Time-Series Analysis, Forecasting, Maintenance Systems, Resource Allocation, Methodology

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