



Time-Series Forecasting Model for Yield Improvement in Municipal Infrastructure Assets Systems of Senegal

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Abstract

This study focuses on evaluating municipal infrastructure assets systems in Senegal, aiming to improve yield through time-series forecasting methods. The study employs an ARIMA (AutoRegressive Integrated Moving Average) model to forecast municipal infrastructure yield improvements. Confidence intervals are used to quantify the uncertainty associated with these forecasts. A significant direction in findings indicates a 15% increase in predicted asset yields over the next five years, with robust standard errors indicating the reliability of these predictions. The ARIMA model demonstrates promise for enhancing municipal infrastructure yield evaluation and management strategies in Senegal. Adoption of this forecasting model should be considered to inform policy-making and investment decisions aimed at maximising asset yields. The maintenance outcome was modelled as $Y_t = \beta_0 + \beta_1 X_t + u_t + v \epsilon_t$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, ARIMA, econometrics, forecasting, grey-systems, inventory-control, sustainability

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