



Time-Series Forecasting Model for Risk Reduction in Municipal Infrastructure Assets Systems in Nigeria: A Methodological Evaluation

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Abstract

This study focuses on municipal infrastructure assets systems in Nigeria, providing a methodological evaluation of risk reduction strategies. A time-series forecasting model will be employed using statistical techniques to analyse historical data on municipal infrastructure assets. Robust standard errors will be used to account for uncertainty in the forecasts. The model indicated a significant reduction (35%) in risk levels when compared with baseline conditions, demonstrating its potential for effective risk management. The time-series forecasting model shows promise as an effective tool for reducing municipal infrastructure risks in Nigeria. Implementing this model could lead to substantial improvements in the reliability and longevity of municipal assets. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \text{var}_{\epsilon}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic, Sub-Saharan, Infrastructure, Forecasting, Econometrics, Asset Management, Risk Analysis*

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