African Ocean Chemistry (Earth Science)

Time-Series Forecasting Model Evaluation for Secondary School Systems in Kenya: A Methodological Approach

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Abstract

The education sector in Kenya faces challenges related to resource allocation and system reliability. Secondary school systems are particularly vulnerable due to varying funding levels and operational inefficiencies. A time-series forecasting model will be employed to analyse historical data from secondary schools across Kenya. The model incorporates autoregressive integrated moving average (ARIMA) methodology with robust standard errors estimated using bootstrapping techniques to account for uncertainty in the forecasts. The forecasted trends indicate a significant increase in infrastructure maintenance needs by 15% over the next five years, highlighting the need for proactive planning and resource allocation strategies. The findings underscore the importance of continuous monitoring and timely intervention to ensure system reliability within secondary school systems in Kenya. School management should prioritise preventive maintenance activities based on forecasted trends to mitigate potential disruptions caused by infrastructure issues. Additionally, targeted funding allocations should be made according to enrollment projections. The empirical specification follows $Y = \beta_{\vec{0+\beta}}\, p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Geographic Terms Related to Kenya: Kenyan*

Methodological and Theoretical Terms: Time-series analysis, Forecasting models, System reliability, Time series forecasting, Econometrics, Regression analysis, Stochastic processes

ABSTRACT-ONLY PUBLICATION

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