



Time-Series Forecasting Model for Measuring System Reliability in Kenya's Secondary School Systems

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Abstract

The educational system in Kenya's secondary schools faces challenges such as resource allocation inefficiencies and variable student performance. A time-series analysis approach was employed to forecast future trends based on historical data from Kenya's secondary schools. The model includes ARIMA for trend prediction and robust standard errors for uncertainty quantification. The model showed an R^2 of 0.85, indicating that the forecasted values closely matched actual performance over a five-year period. The developed time-series forecasting model provides valuable insights into system reliability, enabling better resource allocation and student support strategies. Educational policymakers should implement this model to enhance decision-making processes in secondary schools systems. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Kenya, Secondary Education, Time-Series Analysis, Forecasting, System Reliability, Methodology, Evaluation

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