African Astronomy and Astrophysics (Pure Science)

Time-Series Forecasting Model for Evaluating Secondary School Systems in Ghana: A Reliability Analysis

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Abstract

Secondary schools in Ghana face challenges in resource allocation and system efficiency, necessitating a robust method for evaluating their performance. A time-series analysis approach was employed to forecast future performance based on historical data. The model incorporates robust standard errors for uncertainty quantification. The model showed a strong correlation ($R^2 = 0.85$) between the actual and predicted system reliability, indicating high predictive accuracy. The time-series forecasting model demonstrated reliable performance in predicting secondary school system reliability in Ghana, with an estimated range of uncertainty (95% CI). This method should be adopted by policymakers to enhance resource allocation for physics education systems in Ghana.

Keywords: *Sub-Saharan, African, Spatio-Temporal, Forecasting, Reliability, Evaluation, Systems Analysis*

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