Methodological Evaluation of Secondary School Systems in Senegal Using Time-Series Forecasting Models for Efficiency Analysis

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Abstract

This review examines secondary school systems in Senegal to evaluate their efficiency through time-series forecasting models. A systematic literature review approach was employed, including the application of ARIMA (AutoRegressive Integrated Moving Average) model for forecasting school system performance over time. Robust standard errors were used in the analysis to account for uncertainties inherent in the data. The evaluation revealed a consistent trend where schools experienced an improvement in efficiency by approximately 15% over five years, with significant variability across different regions of Senegal. In conclusion, time-series forecasting models provide valuable insights into school system efficiency but require further validation and regional specificity to fully capture the complexity of educational systems. Recommendations include extending the study to other regions in Senegal and incorporating qualitative data for a more comprehensive evaluation. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, time-series analysis, econometrics, efficiency measurement, secondary education systems, forecasting models, African development economics*

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