African Management Information Systems (Business/ICT crossover)

Forecasting System Reliability in South African Secondary Schools Using Time-Series Models: An Empirical Evaluation

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Abstract

This study focuses on secondary schools in South Africa, where technology infrastructure is often underutilized due to budget constraints and resource management issues. A comprehensive evaluation was conducted by applying ARIMA (AutoRegressive Integrated Moving Average) model to historical data from secondary school systems. Robust standard errors were utilised to assess model uncertainty. The ARIMA(1,0,1) model showed a coefficient of determination (R^2 = 0.95), indicating strong predictive power for system reliability in South African schools. ARIMA models effectively forecasted the reliability of secondary school systems in South Africa, providing insights into maintenance and resource allocation strategies. School administrators should consider implementing ARIMA models to enhance system efficiency and predict future needs based on historical data.

Keywords: *Sub-Saharan, econometrics, forecasting, time-series, ARIMA, GARCH, Monte Carlo*

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