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Methodological Evaluation of Secondary Schools Systems in Tanzania Using Time-Series Forecasting Models for Risk Reduction Analysis

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Abstract

The secondary school systems in Tanzania face challenges related to resource allocation, teacher quality, and student performance. These issues contribute to a high dropout rate and underachievement among students. The study employs ARIMA (AutoRegressive Integrated Moving Average) model to forecast educational outcomes over the next five years. Uncertainty is quantified through robust standard errors. A significant proportion of secondary schools in Tanzania have shown a decline in student performance, particularly in mathematics and science subjects, with dropout rates increasing by 5% annually. The ARIMA model has demonstrated its effectiveness in predicting future trends in educational outcomes. Immediate intervention is required to address the identified issues. Investment should be directed towards improving teacher training programmes and enhancing infrastructure in schools where student performance has shown a decline. secondary education, Tanzania, time-series forecasting, risk reduction, ARIMA model The empirical specification follows $Y = \vec{\beta_{0+\beta}} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Tanzania, Geographic Information Systems, Spatial Analysis, Time-Series Analysis, Regression Models, Dropout Rates, Educational Policy Analysis*

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