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Methodological Assessment and Time-Series Forecasting of South African Secondary School Systems Efficiency,

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Abstract

This scoping review evaluates methodological approaches used to assess secondary school systems in South Africa over a decade. A systematic search strategy was employed, including articles from databases such as JSTOR, Google Scholar, and Scopus. Methodological frameworks were synthesized using thematic analysis. The review identified a need for more robust statistical models in evaluating school system efficiencies, particularly in areas of resource allocation and student performance metrics. A novel time-series forecasting model is proposed to enhance the accuracy of efficiency measurements by incorporating dynamic data from various years. Policy-makers should consider adopting this new model for ongoing evaluations of secondary school systems to ensure effective policy implementation and outcomes. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert\,2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *South Africa, Geographic Information Systems (GIS), Monte Carlo simulation, Quality indices, Educational policy analysis, Performance measurement, Data envelopment analysis (DEA)*

ABSTRACT-ONLY PUBLICATION

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