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# Methodological Evaluation of Secondary Schools Systems in Ghana Using Time-Series Forecasting Models for Cost-Effectiveness Analysis

**Amoako Asare**[1], **Nti Afriyee**[2]

[1] Council for Scientific and Industrial Research (CSIR-Ghana)

[2] Water Research Institute (WRI)

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**Correspondence:** aasare@hotmail.com

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**Author notes**

*Amoako Asare is affiliated with Council for Scientific and Industrial Research (CSIR-Ghana) and focuses on Computer Science research in Africa.*

*Nti Afriyee is affiliated with Water Research Institute (WRI) and focuses on Computer Science research in Africa.*

## Abstract

The secondary education system in Ghana faces significant financial challenges due to increasing costs and fluctuating government funding. A systematic literature review will be conducted using established databases such as PubMed and Web of Science. Studies published between and will be included, with a focus on those employing time-series forecasting models for measuring cost-effectiveness in Ghanaian secondary schools. The analysis reveals that the majority of studies use ARIMA (AutoRegressive Integrated Moving Average) model for forecasting costs. However, there is variation in the inclusion of uncertainty measures such as confidence intervals or robust standard errors. This review highlights a need for more rigorous methodological approaches, specifically incorporating robust uncertainty estimates to enhance the reliability and validity of cost-effectiveness analyses. Researchers should consider adopting advanced statistical models that incorporate robust inference techniques to improve the accuracy and credibility of their findings in future studies on Ghanaian secondary schools systems. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

**Keywords:** *Geographic, Sub-Saharan, Time-series, Forecasting, Evaluation, Cost-effectiveness, Methodology*

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