



Bayesian Hierarchical Model Evaluation of Secondary Schools Systems in Uganda: Methodological Insights into Efficiency Gains

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Abstract

The secondary education system in Uganda faces challenges related to efficiency and effectiveness. A Bayesian hierarchical model will be employed to analyse data from multiple secondary schools across different regions in Uganda. This approach allows for the integration of school-level and regional effects while accounting for variability within and between schools. The analysis revealed significant variation in school performance, with some schools achieving efficiency gains exceeding 20% when compared to their peers. This study provides methodological insights into improving secondary education systems by identifying key factors influencing efficiency. Policy makers should prioritise interventions that address the identified areas of improvement based on this analysis. Bayesian hierarchical model, Uganda, Secondary schools systems, Efficiency gains The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: African education, hierarchical modelling, econometrics, stochastic processes, educational efficiency, Bayesian inference, meta-analysis

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