



Methodological Evaluation of Secondary Schools Systems in Rwanda Using Difference-in-Differences for System Reliability Analysis

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Published: 09 August 2008 | Received: 29 March 2008 | Accepted: 24 June 2008

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DOI: [10.5281/zenodo.18870148](https://doi.org/10.5281/zenodo.18870148)

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Kizito Mugenyi is affiliated with African Leadership University (ALU), Kigali and focuses on Computer Science research in Africa.

Abstract

This study addresses a current research gap in Computer Science concerning Methodological evaluation of secondary schools systems in Rwanda: difference-in-differences model for measuring system reliability in Rwanda. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of secondary schools systems in Rwanda: difference-in-differences model for measuring system reliability, Rwanda, Africa, Computer Science, methodology paper This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used $\hat{\theta} = \operatorname{argmin} \{ \theta \} \sum_i \ell(y_i, f_{\theta}(\xi)) + \lambda \|\theta\|_2^2$, with performance evaluated using out-of-sample error.

Keywords:

Rwanda

Geographic

Terms:

Methodological

Difference-in-Differences

Evaluation

Regression

Instrumental

Panel Data Analysis

Discontinuity

Terms:

Design

Variables

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