



Methodological Assessment of Secondary School Systems in South Africa Using Quasi-Experimental Design for System Reliability Measurement

Methodological
Assessment of Secondary
School Systems

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Abstract

The secondary school systems in South Africa face challenges that affect educational outcomes. A robust methodological framework is needed to evaluate and improve these systems. A quasi-experimental design was employed to measure system reliability. Data from standardised tests and teacher evaluations were analysed to identify patterns indicative of systemic weaknesses. The analysis revealed that student performance in mathematics had a significant negative correlation with the adequacy of school resources, suggesting a need for targeted resource allocation. This study contributes to the methodological toolkit for evaluating educational systems by providing empirical evidence on system reliability through a quasi-experimental approach. School administrators should prioritise enhancing access to necessary resources such as textbooks and technology to improve student performance in mathematics. secondary school, South Africa, quasi-experimental design, system reliability Model estimation used $\hat{\theta} = \operatorname{argmin} \{ \theta \} \operatorname{sumiell} (y_i , f\theta (\xi)) + \lambda | \operatorname{Vert} \theta |$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, stratification, econometric, validity, reliability, intervention, assessment*

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