



# Methodological Assessment and Risk Reduction in Nigerian Secondary School Systems: A Panel Data Analysis

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## Abstract

Nigerian secondary school systems have faced significant challenges in terms of educational quality and resource allocation, particularly impacting agricultural education outcomes. The study employs a fixed effects model to analyse variance across schools over time, using administrative datasets from multiple years. Robust standard errors are applied to account for potential omitted variable bias. There is a notable positive correlation ( $p < 0.05$ ) between the implementation of risk reduction measures and improved agricultural education outcomes at secondary school level. The findings suggest that targeted interventions in resource allocation and teacher training can significantly enhance educational quality, particularly for agriculture-related subjects. School administrators should prioritise investments in infrastructure and professional development programmes to mitigate identified risks and improve teaching efficacy. Secondary schools, Nigeria, Agricultural education, Risk reduction, Panel data analysis The empirical specification follows  $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African geography, agricultural education, econometrics, panel data analysis, risk assessment, social indicators, sustainability studies*

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