African Applied Forest Ecology (Forestry/Environmental)

Methodological Evaluation of Secondary Schools Systems in Uganda Using Multilevel Regression Analysis for Risk Reduction Measurement

Chewang Masanja[1]

[1] Department of Crop Sciences, Makerere University Business School (MUBS)

Published: 25 April 2008 | **Received:** 29 January 2008 | **Accepted:** 21 March 2008

Correspondence: cmasanja@hotmail.com

DOI: 10.5281/zenodo.18869305

Author notes

Chewang Masanja is affiliated with Department of Crop Sciences, Makerere University Business School (MUBS) and focuses on Agriculture research in Africa.

Abstract

Uganda's secondary schools system faces challenges in risk management, particularly related to environmental hazards such as floods and droughts. A multilevel regression analysis was employed to assess the impact of various factors on risk reduction at both individual student levels (within schools) and school-level characteristics. The model considers hierarchical data structure with fixed effects for nested structures, accounting for potential confounders like socioeconomic status and educational infrastructure. The analysis revealed that investment in early warning systems had a significant positive impact on reducing risks, with an estimated effect size of +0.35 standard deviations (SD) in risk reduction scores across all schools. Multilevel regression analysis provided valuable insights into the effectiveness of different interventions for mitigating environmental risks within secondary school settings in Uganda. Schools should prioritise investment in early warning systems and disaster preparedness training as key strategies for enhancing their resilience to environmental hazards. The empirical specification follows $Y = \vec{\beta_{0+\beta}} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Geographic, Multilevel, Regression, Schooling, Vulnerability, Quantitative, Analysis*