Methodological Assessment and Comparative Evaluation of Regional Monitoring Networks in Ethiopia: A Multilevel Regression Analysis for Risk Reduction Measurement

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Abstract

This study aims to assess and compare regional monitoring networks in Ethiopia, focusing on their effectiveness in reducing agricultural risks. A comparative study involving multilevel regression analysis was conducted. The data were collected from various regions in Ethiopia and analysed using statistical software. The analysis revealed a significant correlation ($p < 0.05$) between the density of monitoring stations and the effectiveness of risk reduction strategies, indicating that higher station densities lead to better outcomes. This study provides evidence that regional monitoring networks play a crucial role in reducing agricultural risks in Ethiopia. Based on the findings, it is recommended that additional monitoring stations be established in under-resourced regions to enhance risk reduction efforts. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Ethiopia, Geographical, GIS, Spatial Analysis, Multilevel Modelling, Regression Techniques, Agricultural Risk Reduction, Remote Sensing*

ABSTRACT-ONLY PUBLICATION

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