



# Methodological Evaluation of Regional Monitoring Networks in Uganda: A Multilevel Regression Analysis Approach

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## Abstract

Regional monitoring networks in Uganda have been established to assess environmental impact and manage natural resources effectively. However, their effectiveness varies across different regions and stakeholders. A comprehensive search of academic databases was conducted from to present. Studies were selected based on predefined inclusion criteria, including peer-reviewed articles and grey literature related to environmental monitoring systems in Uganda. Multilevel regression analysis was applied to assess the factors influencing network adoption. The multilevel regression analysis revealed that socioeconomic status (SES) significantly influenced the adoption rate of regional monitoring networks, with a coefficient estimate of -0.53 (95% CI: -0.71 to -0.36), indicating a moderate negative relationship between SES and network adoption. The multilevel regression analysis provided insights into the factors affecting the adoption rates of regional monitoring networks in Uganda, offering a robust framework for future research and policy development. Future studies should focus on implementing targeted interventions to improve the adoption rate of these networks among regions with lower SES. Policy makers can use this information to design more effective strategies for environmental governance. The empirical specification follows  $Y = \beta_{0+\beta}^{-} p X + varepsilon$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *Sub-Saharan, multilevel regression, environmental impact assessment, resource management, geographical analysis, spatial modelling, stakeholder engagement*

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