African Technology Integration in Education

Risk Reduction Strategies in Municipal Infrastructure Assets Systems: A Randomized Field Trial in Senegal

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Abstract

Municipal infrastructure assets systems in Senegal require methodological evaluation to enhance risk reduction strategies. A randomized field trial was conducted in Senegal's municipalities to assess the impact of various risk reduction strategies on asset management outcomes. The study employed statistical modelling to analyse data from the trial. The analysis revealed a significant decrease ($p < 0.05$) in infrastructure failure rates across all tested interventions, suggesting that certain strategies are more effective than others in reducing risks. The randomized field trial demonstrated promising results for risk reduction in municipal infrastructure assets systems, providing evidence to support the adoption of specific strategies over others. Based on the findings, municipalities should prioritise the implementation of the most effective strategies identified in this study to improve asset management outcomes and reduce risks. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, African, SpatialAnalysis, RandomizedControlTrial, EpidemiologyOfInfrastructure, OmnibusTest, GeospatialModelling*

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