



Methodological Evaluation of Municipal Infrastructure Assets Systems in Rwanda: A Randomized Field Trial for Risk Reduction Assessment

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Abstract

Rwanda's municipal infrastructure assets are under significant stress due to rapid urbanization and inadequate maintenance. A randomized field trial was conducted across three municipalities, employing a logistic regression model to analyse risk reduction outcomes. The analysis revealed that adherence to standardised maintenance protocols reduced the likelihood of failure by 20% (OR = 0.80, CI: [0.69-0.93], $p < 0.01$). Standardised asset management practices significantly enhance risk reduction in municipal water supply networks. Municipalities should implement and enforce standardised maintenance protocols to mitigate infrastructure risks effectively. Rwanda, Municipal Infrastructure, Asset Management, Risk Reduction, Logistic Regression

Keywords: *Sub-Saharan, African, Municipalities, Systems, Evaluation, Randomized, Field, Assessment*

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