

Randomised Field Trial of a Diagnostic Framework for Municipal Infrastructure Asset Management Efficiency in Kenya

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ABSTRACT

Background: Municipal infrastructure asset management in sub-Saharan Africa is often characterised by inefficiency, with diagnostic tools lacking empirical validation. Existing frameworks are seldom tested in randomised field settings, limiting evidence on their practical efficacy.

Purpose and objectives: This study aimed to empirically evaluate a novel diagnostic framework for municipal infrastructure asset management systems. The primary objective was to measure its effect on management efficiency scores in a Kenyan context.

Keywords: *Municipal infrastructure, Asset management, Sub-Saharan Africa, Randomised controlled trial, Diagnostic framework, Efficiency measurement, Kenya*

Article Highlights

- Randomised trial with 42 municipal authorities in Kenya
- 18.7 percentage point increase in efficiency scores ($p < 0.01$)
- Framework improved asset inventory completeness
- Enhanced planned maintenance adherence

Methodological Note

Treatment effect estimated via linear regression with robust standard errors: $E_i = \beta_0 + \beta_1 T_i + X_i \beta + \epsilon_i$

This study provides empirical validation for diagnostic tools in municipal infrastructure management.

ABSTRACT-ONLY PUBLICATION

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