



Methodological Evaluation of Municipal Infrastructure Assets Systems in Ethiopia: A Randomized Field Trial

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Abstract

Municipal infrastructure assets systems in Ethiopia are critical for economic development but often lack systematic assessment methods. A randomized field trial was conducted across five randomly selected municipalities. Data on assets condition, maintenance costs, and usage were collected using structured surveys and GIS mapping. The analysis revealed an average cost reduction of 15% in maintenance expenses when implementing best practice asset management techniques compared to current practices. Randomized field trials offer a robust method for evaluating municipal infrastructure systems' effectiveness, providing actionable insights into efficiency gains and identifying areas for improvement. Municipalities should prioritise investment in systematic asset management training and technology to maximise cost savings and system efficiency. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords:

Ethiopia

Geographic

Terms:

Methodological

Randomization

Evaluation

Assessment

Sampling

Experimental

Terms:

Design

Theoretical

Complexity

Infrastructure

Sustainability

Risk

Performance Metrics

Concepts:

Theory

Management

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Analysis

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