

Methodological Evaluation and Efficiency Gains in Ethiopian Municipal Infrastructure Asset Systems

A Difference-in-Differences Analysis

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ABSTRACT

Background: Municipal infrastructure asset management in developing nations often lacks robust, quantitative frameworks for evaluating systemic efficiency improvements. In the Ethiopian context, where rapid urbanisation places immense pressure on public works, there is a critical need for empirical methodologies to assess the impact of modernised asset management systems.

Purpose and objectives: This study aims to develop and apply a quasi-experimental econometric model to quantify the causal effect of implementing a standardised municipal asset management system on infrastructure project delivery efficiency within the country.

Keywords: *Municipal infrastructure, Asset management, Sub-Saharan Africa, Efficiency gains, Difference-in-differences, Developing nations, Urban engineering*

Article Highlights

- Difference-in-differences model quantifies a causal 18.5% efficiency gain.
- Validated parallel trends assumption strengthens the methodological rigor.
- Findings support the systematic rollout of standardised management frameworks.
- Provides an empirical model for evaluating public sector engineering interventions.

Core Methodology

A difference-in-differences model analysed panel data from treatment and control municipalities, with inference based on cluster-robust standard errors.

This study offers a replicable econometric framework for infrastructure policy evaluation.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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