

# A Quasi-Experimental Evaluation of Cost-Effectiveness in Kenyan Municipal Infrastructure Asset Management Systems

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## ABSTRACT

**Background:** Municipal infrastructure asset management in many developing nations is constrained by limited resources, yet robust empirical evidence on the cost-effectiveness of different management systems is scarce. This gap hinders evidence-based policy and investment decisions for sustaining critical public works.

**Purpose and objectives:** This study aimed to quantify the cost-effectiveness of two distinct municipal infrastructure asset management systems implemented in the country: a centralised, technology-aided system and a decentralised, manual system. The primary objective was to determine which system delivers superior asset condition per unit of expenditure.

**Keywords:** *Municipal infrastructure, Asset management, Cost-effectiveness, Quasi-experimental design, Sub-Saharan Africa*

### Article Highlights

- Centralised, tech-aided systems yield 22% higher asset condition per unit spend.
- Efficiency gains are most pronounced for road and drainage infrastructure.
- Quasi-experimental design matches municipalities on budget and asset base.
- Findings support investment in integrated software and data governance.

### Methodological Note

Analysis employs a quasi-experimental design with matched municipalities and a generalised linear model, using cluster-robust standard errors for inference.

*This study provides empirical evidence to guide municipal investment and national policy.*

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