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# Comparative Cost-Effectiveness of Municipal Infrastructure Asset Management Systems in Uganda

A Quasi-Experimental Evaluation, 2000–2024

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## ABSTRACT

**Background:** Municipal infrastructure asset management systems (MIAMS) are critical for sustainable development, yet their cost-effectiveness in resource-constrained settings is poorly understood. In Uganda, diverse systems have been implemented with varying designs, but rigorous comparative evidence on their economic efficiency is lacking.

**Purpose and objectives:** This study aimed to evaluate the comparative cost-effectiveness of different MIAMS implemented across Ugandan municipalities. The primary objective was to quantify the incremental cost per unit of asset management outcome achieved by system type.

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

### Article Highlights

- Integrated digital systems showed 23% higher cost-effectiveness than manual systems.
- Primary efficiency driver was reduced recurrent maintenance expenditure.
- Findings support investment in interoperable, technology-supported MIAMS.
- Study employs rigorous difference-in-differences quasi-experimental design.

### Methodological Note

Analysis uses fixed-effects regression with cluster-robust standard errors on longitudinal municipal data (2000–2024).

*This study provides the first quasi-experimental evidence on this policy-relevant question in Sub-Saharan Africa.*

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