African Structural Engineering | Vol. 1 | No. 1 | 2003 | DOI: 10.5281/zenodo.18969638

Methodological Evaluation and Adoption Rates of Municipal Infrastructure Asset Management Systems

A Randomised Field Trial in Ghana

Kofi Mensah-Bonsu[1], **Ama Owusu-Ansah**[2], **Kwame Asare**[1,2]

Ghana Institute of Management and Public Administration (GIMPA) | *Ashesi University*

Correspondence: kmensahbonsu@hotmail.com

Received: 20 January 2003 | Accepted: 13 April 2003 | Published: 12 May 2003 | **DOI:** 10.5281/zenodo.18969638

ABSTRACT

{ "background": "Municipal infrastructure asset management systems (AMS) are promoted to enhance the sustainability of public works in developing nations, yet their adoption by local government engineers remains inconsistent and poorly understood.", "purpose and objectives": "This case study aimed to evaluate the efficacy of a structured training and support intervention on the adoption rates of a digital AMS among municipal engineering teams, and to identify key barriers to sustained use.", "methodology": "A randomised field trial was conducted with 42 municipal engineering departments. Treatment groups received a tailored training programme and technical support, while control groups received only basic system access. Adoption was measured via system logins and data entry completeness over a defined period. The primary analysis used a logistic regression model: $\logit(\pi) = \beta0 + \beta1\, Ti + \beta' \xi + \epsiloni$, where π is the probability of consistent use, Ti is the treatment indicator, and X_i is a vector of covariates. Robust standard errors were clustered at the municipal level.", "findings": "The intervention significantly increased the probability of consistent AMS use by 35 percentage points (95% CI: 22 to 48). However, adoption in the treatment group plateaued after the initial support period, with a key thematic barrier being the perceived misalignment between system data requirements and existing, paper-based workflow approvals.", "conclusion": "While targeted training demonstrably accelerates initial adoption of engineering asset management systems, sustained engagement requires deeper integration with entrenched bureaucratic processes.", "recommendations": "Future AMS implementations should co-design data entry protocols with finance and administration units to align with existing approval chains. Pilot programmes should include a phased withdrawal of support to identify and address workflow discontinuities.", "key words": "asset management, infrastructure, adoption, randomised trial, municipal engineering, Ghana", "contribution statement": "This study provides the first experimental evidence on the causal effect of training interventions on digital AMS adoption

Keywords: *Municipal infrastructure, Asset management systems, Sub-Saharan Africa, Randomised controlled trial, Adoption rates, Engineering management, Developing countries*

Article Highlights

- Randomised trial shows training boosts initial AMS adoption by 35 percentage points.
- Sustained use requires alignment with existing paper-based approval chains.
- Intervention efficacy diminished after technical support was withdrawn.
- Co-design with finance units is critical for long-term system

Methodological Note

Analysis used logistic regression with robust standard errors clustered at the municipal level (N=42 departments).

This trial provides causal evidence on interventions for digital system adoption in municipal engineering.

integration.	