AFRICAN STRUCTURAL ENGINEERING

ISSN: XXXX-XXXX | Peer-Reviewed | Open Access

A Randomised Field Trial Methodology for Evaluating Municipal Infrastructure Asset Management Adoption in South Africa

DOI: 10.5281/zenodo.18971565 | **Received:** 21 March 2011 | **Accepted:** 17 June 2011 | **Published:** 28 July 2011

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ABSTRACT

Background: Municipal infrastructure asset management (IAM) systems are critical for sustainable service delivery, yet their adoption across municipalities remains inconsistent and poorly measured. Current evaluation relies on self-reported surveys, which lack rigour in establishing causal effects of intervention programmes.

Purpose and objectives: This article presents a novel methodological framework for rigorously evaluating the causal impact of IAM capacity-building interventions on adoption rates within a municipal context. The primary objective is to detail a protocol for a randomised field trial (RFT) designed for this setting.

Keywords: *Randomised controlled trial, Municipal infrastructure, Asset management, Sub-Saharan Africa, Implementation science, Public sector adoption, Field experiment*

Article Highlights

- Clusters municipalities before random assignment to treatment or control groups.
- Measures adoption via a composite index from audits and compliance checks.
- Employs a linear mixed model with cluster-robust standard errors for inference.
- Pilot simulation indicates design is powered to detect a ≥15-point increase.

Methodological Contribution

Provides the first detailed experimental protocol designed to quantify the causal impact of asset management capacity-building interventions in a municipal setting.

This is a methodology paper presenting a trial framework, not empirical results from a completed study.