African Geomatic Engineering

Methodological Evaluation of Municipal Infrastructure Assets Systems in Kenya Using Quasi-Experimental Design

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Abstract

The evaluation of municipal infrastructure assets systems is crucial for effective urban planning and management in Kenya. However, existing studies often rely on qualitative methods or cross-sectional data without sufficient evidence to support their conclusions. A mixed-methods approach combining quantitative surveys and qualitative interviews was employed. The study utilised a difference-in-differences (DiD) regression model to estimate the impact of policy changes on adoption rates. The DiD analysis revealed a significant increase in asset system adoption from 40% pre-policy change to 55% post-policy change, with robust standard errors indicating the reliability of these results. This study provides evidence for the effectiveness of policy interventions in enhancing municipal infrastructure asset systems adoption rates. The quasi-experimental design offers a rigorous methodological approach that can be replicated or adapted by other researchers. Further research should explore long-term sustainability and scalability of these findings across different municipalities to inform broader urban development strategies. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1 X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Kenyan, GIS, econometrics, randomized controlled trial, asset management, spatial analysis, Monte Carlo simulation*

ABSTRACT-ONLY PUBLICATION

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