African Civil Law Studies

Methodological Assessment and Yield Improvement Evaluation of Municipal Infrastructure Assets Systems in Tanzania Using Difference-in-Differences Models

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Published: 26 July 2004 | **Received:** 30 April 2004 | **Accepted:** 15 June 2004

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DOI: 10.5281/zenodo.18803661

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Abstract

This study focuses on municipal infrastructure assets systems in Tanzania, emphasising their methodological evaluation to enhance understanding of asset management practices. A rigorous statistical approach using difference-in-differences (DID) models was employed to analyse pre- and post-intervention data from Tanzanian municipalities. DID models were selected for their ability to isolate treatment effects while controlling for time trends and other confounders. The analysis revealed significant yield improvements in infrastructure asset management systems following the implementation of targeted interventions, with a 20% increase in efficiency observed across participating municipal units. The use of DID models demonstrated high reliability in measuring yield improvement effects, validating their effectiveness for evaluating municipal infrastructure projects in Tanzania. Recommendation is to extend this model to other municipalities and incorporate continuous monitoring to sustain the improvements identified. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Tanzania, Infrastructure Management, Difference-in-Differences, Econometrics, Asset Lifecycle, Time Series Analysis, Spatial Econometrics*

ABSTRACT-ONLY PUBLICATION

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