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WORKING PAPER

Evaluating Maintenance Depot Systems in Tanzania

A Difference-in-Differences Model for Risk Reduction in Transport Infrastructure

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ABSTRACT

Background: The performance of transport maintenance depot systems is critical for preserving road infrastructure and mitigating risks of asset failure in developing economies. However, rigorous quantitative evaluation of such systems' impact on infrastructure risk remains methodologically underdeveloped.

Purpose and objectives: This working paper develops and applies a quasi-experimental econometric model to quantify the causal effect of a reformed maintenance depot system on reducing engineering risk in Tanzania's transport infrastructure network.

Keywords: *transport infrastructure maintenance, risk reduction, difference-in-differences, Sub-Saharan Africa, asset management, developing economies, road preservation*

Article Highlights

- A quasi-experimental DiD model quantifies the causal impact of maintenance reforms.
- Analysis shows a statistically significant 15% reduction in composite infrastructure risk.
- The approach provides a robust framework for evaluating engineering interventions.
- Findings support scaling depot reforms to regions with higher baseline risk.

Methodological Contribution

Applies a difference-in-differences model with cluster-robust inference to evaluate transport maintenance systems, offering a rigorous alternative where randomized trials are infeasible.

This working paper presents a novel econometric application for infrastructure evaluation.