

# Evaluating Transport Depot Maintenance Systems in Tanzania

*A Difference-in-Differences Model for Adoption Rate Analysis*

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## ABSTRACT

**Background:** Maintenance systems for transport depots are critical for infrastructure longevity and operational efficiency. In many developing economies, systematic evaluation of the adoption and efficacy of such engineering systems is lacking, hindering evidence-based policy and investment.

**Purpose and objectives:** This working paper develops and demonstrates a methodological framework for rigorously evaluating the causal impact of introducing a structured maintenance system across a network of transport depots. The primary objective is to quantify the adoption rate and its determinants.

**Keywords:** *transport infrastructure maintenance, Sub-Saharan Africa, adoption modelling, difference-in-differences, depot management systems, developing economies, operational efficiency*

### Article Highlights

- A quasi-experimental DiD model quantifies causal impact in real-world depot settings.
- Findings demonstrate a statistically significant 22pp increase in maintenance completion.
- Provides a methodological framework for evaluating engineering system interventions.
- Highlights the value of phased rollouts for rigorous impact assessment.

### Methodological Note

The core DiD model,  $Y_{it} = \beta_0 + \beta_1 \text{Treat}_i + \beta_2 \text{Post}_t + \delta (\text{Treat}_i \times \text{Post}_t) + \epsilon_{it}$ , isolates the causal effect ( $\delta$ ) of the system intervention using depot-level panel data.

*This paper presents a working analysis with preliminary findings.*

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