

Evaluating Efficiency Gains in Senegalese Transport Maintenance Depots

A Difference-in-Differences Modelling Approach

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ABSTRACT

Background: Transport infrastructure maintenance in West Africa is critical for economic development but often constrained by resource inefficiencies. Systematic, quantitative evaluations of operational improvements within public sector maintenance depots are scarce, particularly those employing robust causal inference techniques.

Purpose and objectives: This paper develops and applies a quasi-experimental econometric model to rigorously quantify the causal effect of a reorganisational intervention on the operational efficiency of a network of road vehicle maintenance depots.

Keywords: *Difference-in-differences, Efficiency Gains, Transport Maintenance, Sub-Saharan Africa, Infrastructure Management, Depot Operations, Quantitative Evaluation*

Article Highlights

- Intervention generated a statistically significant 17.5% increase in composite efficiency scores.
- Gains driven by reduced vehicle downtime and improved inventory turnover.
- Methodology offers a robust template for causal evaluation in public sector asset management.
- Findings support targeted managerial changes in procurement and scheduling.

Methodological Contribution

Applies a quasi-experimental difference-in-differences framework to isolate the causal effect of an organisational intervention on depot operational efficiency in Sub-Saharan Africa.

This study provides a causal evaluation framework for infrastructure management decisions.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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