

Methodological Evaluation and Adoption Rates of Transport Maintenance Depot Systems in Senegal

A Difference-in-Differences Analysis

Mamadou Ndiaye^{1,2} | Aïssatou Diagne¹

Council for the Development of Social Science Research in Africa (CODESRIA), Dakar • Institut Sénégalais de Recherches Agricoles (ISRA)

Correspondence: mndiaye@outlook.com

Received: 24 April 2023 | Accepted: 18 July 2023 | Published: 07 September 2023 | DOI:

[10.5281/zenodo.18965815](https://doi.org/10.5281/zenodo.18965815)

ABSTRACT

Background: Transport maintenance depots are critical infrastructure for ensuring road safety and vehicle fleet longevity in developing economies. However, systematic evaluations of the adoption and efficacy of modern depot management systems in sub-Saharan Africa are scarce, limiting evidence-based investment and policy.

Purpose and objectives: This study aims to methodologically evaluate the implementation of modernised transport maintenance depot systems and quantify their adoption rates across the country. The primary objective is to isolate the causal effect of the new systems on operational performance metrics.

Keywords: *Transport maintenance depots, Difference-in-differences, Adoption rates, Sub-Saharan Africa, Infrastructure evaluation, Senegal, Fleet management*

Article Highlights

- A quasi-experimental difference-in-differences design isolates the causal effect of modern depot systems.
- Findings show a significant 18.5% increase in vehicle availability post-implementation.
- Depot size moderates outcomes, with larger facilities seeing greater gains in inventory efficiency.
- The study provides a robust methodological framework for evaluating infrastructure interventions.

Methodological Note

The analysis employs a difference-in-differences model with cluster-robust standard errors, offering a rigorous quasi-experimental approach for causal inference in real-world engineering settings.

This study provides empirical evidence to guide infrastructure investment in developing transport systems.

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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