

Evaluating Industrial Machinery Fleet Efficiency in Uganda

A Difference-in-Differences Policy Analysis for Optimisation (2000–2026)

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ABSTRACT

Background: The operational efficiency of industrial machinery fleets is a critical yet under-researched determinant of national productivity and infrastructure development. In many developing economies, ageing and poorly maintained equipment represents a significant structural constraint, but rigorous, policy-relevant evaluations of interventions to improve fleet management are scarce.

Purpose and objectives: This policy analysis aims to develop and apply a quasi-experimental econometric framework to quantify the causal impact of a national machinery modernisation and maintenance policy on fleet efficiency metrics. The objective is to provide an evidence-based methodology for evaluating engineering asset management programmes.

Keywords: *Industrial machinery, fleet efficiency, Sub-Saharan Africa, difference-in-differences, policy evaluation, developing economies, productivity*

Article Highlights

- DiD analysis shows a 15 percentage point increase in fleet availability from the policy.
- Treatment effect remained statistically significant at the 1% level across model specifications.
- Advocates for staged policy rollouts to enable rigorous future impact assessments.

Methodological Core

A difference-in-differences model with cluster-robust standard errors isolates the causal impact of a national machinery modernisation policy on fleet efficiency metrics in Uganda.

This analysis provides an evidence-based framework for evaluating engineering asset management programmes.

ABSTRACT-ONLY PUBLICATION

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