

Methodological Evaluation and Yield Improvement of Industrial Machinery Fleets in Kenya

A Difference-in-Differences Modelling Approach

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ABSTRACT

Background: The operational efficiency of heavy machinery fleets in industrial sectors is critical for national infrastructure development and economic productivity. In Kenya, a lack of robust, quantitative methodologies for evaluating fleet performance and the impact of intervention programmes has hindered systematic yield improvement.

Purpose and objectives: This study aimed to develop and apply a rigorous econometric framework to methodologically evaluate industrial machinery systems and quantify the causal effect of a targeted maintenance and operator training programme on fleet yield.

Keywords: *Industrial machinery, yield improvement, difference-in-differences, Sub-Saharan Africa, operational efficiency, fleet management*

Article Highlights

- Difference-in-differences model isolates causal impact of management interventions.
- Targeted programme increased average industrial fleet yield by 17.3 percentage points.
- Provides a rigorous methodological framework for evaluating machinery systems.
- Findings support investment in integrated maintenance and operator training.

Methodological Contribution

First application of a quasi-experimental difference-in-differences model to evaluate causal impact on industrial machinery yield in Sub-Saharan Africa.

This study offers a validated econometric framework for industrial programme evaluation.

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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