

# A Randomised Field Trial for the Cost-Effectiveness Evaluation of Industrial Machinery Fleet Management Systems in Rwanda

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## ABSTRACT

**Background:** The adoption of digital fleet management systems (FMS) for industrial machinery in sub-Saharan Africa is increasing, yet rigorous evidence on their cost-effectiveness remains scarce. This gap hinders informed investment decisions by engineering firms and policymakers.

**Purpose and objectives:** This working paper presents a methodological framework for evaluating the cost-effectiveness of industrial FMS. The primary objective is to demonstrate a field trial design capable of generating robust causal estimates of operational and financial impacts.

**Keywords:** *Fleet management systems, Cost-effectiveness analysis, Randomised controlled trial, Sub-Saharan Africa, Industrial machinery, Digitalisation, Rwanda*

### Article Highlights

- Randomised controlled trial with 42 Rwandan construction and mining firms
- Difference-in-differences model assesses cost per operational hour
- Dominant savings from improved fuel logistics and reduced downtime
- Methodology provides viable framework for evaluating capital-intensive tech

### Trial Design Note

Treatment firms received a commercial FMS for monitoring location, fuel use, and maintenance; control firms used conventional practices.

*Findings are preliminary, with further data required to narrow confidence intervals.*

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