

CASE STUDY

# A Randomised Field Trial for Efficiency Diagnostics in Ugandan Manufacturing Systems

*A Methodological Evaluation*

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## ABSTRACT

**Background:** Manufacturing systems in sub-Saharan Africa face persistent efficiency challenges, yet rigorous field-based diagnostic methodologies tailored to the regional context are scarce. Existing approaches often rely on observational data, lacking the causal rigour needed to isolate the impact of specific operational interventions.

**Purpose and objectives:** This case study evaluates a novel methodological framework for conducting randomised field trials (RFTs) to diagnose and measure efficiency gains within manufacturing plants. The primary objective was to assess the feasibility, implementation challenges, and analytical robustness of RFTs in this setting.

**Keywords:** *Manufacturing systems, Efficiency diagnostics, Sub-Saharan Africa, Randomised field trial, Methodological evaluation*

### Article Highlights

- RFTs provide high-quality causal evidence but demand substantial stakeholder investment.
- Intervention increased throughput by 14.2pp (95% CI: 8.7, 19.7) in treatment plants.
- Mid-level management engagement emerged as critical for trial fidelity.
- Method is viable but requires adapted protocols for faster deployment.

### Implementation Insight

The primary theme from the process evaluation was the critical role of mid-level management engagement for maintaining randomised trial protocol adherence.

*This brief presents a methodological evaluation, not a report of generalisable efficiency results.*

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