

Methodological Evaluation and Yield Improvement in Ethiopian Manufacturing

A Difference-in-Differences Case Study

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ABSTRACT

Background: Manufacturing productivity in developing economies is critical for industrial growth, yet robust empirical evaluation of operational interventions remains scarce. This case study addresses the need for rigorous, quasi-experimental analysis within industrial engineering contexts.

Purpose and objectives: This study aims to methodologically evaluate the application of a difference-in-differences (DiD) model to quantify yield improvement following a systematic process optimisation intervention in a manufacturing setting. It seeks to demonstrate the model's utility for isolating causal effects amidst typical production variability.

Keywords: *Manufacturing productivity, Sub-Saharan Africa, Difference-in-differences, Operational interventions, Yield improvement, Industrial growth, Developing economies*

Article Highlights

- A quasi-experimental DiD model quantified a 7.3 percentage point yield increase.
- The study demonstrates a rigorous template for causal inference in industrial settings.
- Findings were robust to sensitivity checks, confirming the intervention's efficacy.
- Advocates for adopting quasi-experimental designs to assess process changes.

Core Finding

The intervention increased average production yield by 7.3 percentage points (95% CI: 5.1 to 9.5), as isolated by the DiD estimator.

This case study offers a methodological template for rigorous impact evaluation in industrial engineering.

ABSTRACT-ONLY PUBLICATION

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