

A Quasi-Experimental Evaluation of Cost-Effectiveness in Ethiopian Manufacturing Systems

A Methodological Framework

Meklit Tsegaye¹

Ethiopian Institute of Agricultural Research (EIAR)

Correspondence: mtsegaye@hotmail.com

Received: 18 November 2001 | Accepted: 24 December 2001 | Published: 10 February 2002 | DOI:

[10.5281/zenodo.18970279](https://doi.org/10.5281/zenodo.18970279)

ABSTRACT

Background: Evaluating the cost-effectiveness of manufacturing systems in developing economies is critical for industrial policy, yet robust methodological frameworks for such analysis are scarce. Existing approaches often lack the rigour to establish causal links between system interventions and economic outcomes.

Purpose and objectives: This paper develops and applies a novel quasi-experimental framework to rigorously assess cost-effectiveness within manufacturing plants. The primary objective is to demonstrate a method for isolating the causal impact of system-level engineering interventions on production costs.

Keywords: *Manufacturing systems, Cost-effectiveness analysis, Quasi-experimental design, Sub-Saharan Africa, Industrial policy, Developing economies, Methodological framework*

Article Highlights

- A novel quasi-experimental framework isolates causal impacts of engineering interventions.
- Application in Ethiopian plants shows 8.7% average reduction in unit production costs.
- Cost-effectiveness ratio of 2.3 indicates significant operational savings per investment.
- Provides a valid methodological alternative where randomized trials are infeasible.

Methodological Contribution

Introduces a difference-in-differences econometric model for causal cost-effectiveness analysis in manufacturing systems, validated with cluster-robust inference.

This framework offers industrial engineers a practical tool for rigorous ex-post evaluation of system changes.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

REQUEST FULL PAPER

 **Email:** info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

**Are you a researcher in Africa? We
welcome your submissions!**

Join our community of African scholars and share
your groundbreaking work.

 **Submit at:** app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global
Knowledge