

A Quasi-Experimental Evaluation of Process-Control System Adoption in Ethiopian Structural Engineering Practice

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ABSTRACT

Background: The adoption of digital process-control systems in structural engineering practice within developing economies is poorly understood, with a lack of empirical evidence on implementation rates and causal drivers. This gap hinders the development of effective strategies for modernising practice and improving project outcomes.

Purpose and objectives: This case study aims to methodologically evaluate the adoption rates of process-control systems within a national context, employing a quasi-experimental design to isolate and measure the effect of a targeted intervention programme on uptake among practising firms.

Keywords: *Quasi-experimental design, Process-control systems, Structural engineering practice, Sub-Saharan Africa, Technology adoption, Implementation evaluation, Developing economies*

Article Highlights

- Quasi-experimental design isolates causal effect of training intervention on technology uptake.
- Intervention firms showed 42 percentage point greater improvement in adoption scores versus control.
- Persistent barriers identified: software cost and interoperability with local specifications.
- Study provides empirical evidence for context-sensitive modernisation strategies in Sub-Saharan Africa.

Methodological Note

A difference-in-differences model with robust standard errors clustered at firm level was used to estimate the causal treatment effect of the structured support programme.

This study offers empirical evidence for accelerating digital modernisation in structural engineering practice.

ABSTRACT-ONLY PUBLICATION

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