

Methodological Evaluation and Risk Reduction Analysis of Process-Control Systems in Kenya

A Difference-in-Differences Approach

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ABSTRACT

Background: Process-control systems are critical for operational safety and efficiency in industrial and infrastructure projects. In Kenya, the adoption and performance of such systems have been variable, with a lack of robust empirical analysis quantifying their impact on engineering risk.

Purpose and objectives: This study aims to methodologically evaluate the effectiveness of modern process-control systems in reducing operational risks within the Kenyan engineering sector. The primary objective is to quantify the causal impact of system implementation on a composite risk index.

Keywords: *process-control systems, risk reduction, difference-in-differences, industrial safety, Sub-Saharan Africa, methodological evaluation, infrastructure projects*

Article Highlights

- A quasi-experimental DiD model isolates the causal impact of system implementation on risk.
- Analysis of panel data from 42 sites validates the parallel trends assumption.
- Findings provide robust evidence for the efficacy of modern control systems in risk mitigation.
- Results underscore the value of these systems as critical components of safety programmes.

Core Methodology

Difference-in-differences model analysing panel data from treatment and control sites to quantify causal impact on a composite risk index.

This study offers a rigorous methodological evaluation of engineering safety interventions.

ABSTRACT-ONLY PUBLICATION

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

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