

# Evaluating Process-Control System Adoption in South Africa

*A Difference-in-Differences Model, 2000–2026*

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## ABSTRACT

**Background:** The adoption of advanced process-control systems (PCS) in industrial and infrastructure projects is a critical driver of efficiency and quality. However, robust quantitative methods for evaluating the causal impact of policy and market interventions on adoption rates in emerging economies are underdeveloped.

**Purpose and objectives:** This case study aims to develop and apply a quasi-experimental econometric model to measure the causal effect of a national industrial modernisation policy on PCS adoption within the country's engineering sector.

**Keywords:** *Process-control systems, Difference-in-differences, Industrial automation, Sub-Saharan Africa, Adoption modelling, Quantitative evaluation, Infrastructure projects*

### Article Highlights

- Difference-in-differences model isolates causal effect of policy intervention.
- 18-percentage-point increase in adoption likelihood for treated firms.
- Quasi-experimental design strengthens evidence for engineering policy.
- Capital allowance schemes effectively accelerate technological uptake.

### Methodological Note

The study employs a difference-in-differences model with a matched control group, using cluster-robust standard errors for inference on firm-level panel data.

*This study provides a causal evaluation framework for technology adoption policies in engineering sectors.*

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