



Methodological Evaluation of Process-Control Systems in Kenya Using Difference-in-Differences for Risk Reduction Measurement

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Abstract

The prevalence of industrial accidents in Kenya necessitates a robust evaluation of process-control systems (PCS). This study aims to assess how PCS contribute to reducing risks and improving safety outcomes. The study employs a difference-in-differences (DiD) statistical model to measure the effect of PCS implementation. This approach compares treated and control groups over time to isolate the impact of intervention. A notable theme emerging from our analysis is an approximately 20% reduction in accidents reported post-PCS installation, with a confidence interval suggesting robustness of these findings. The DiD model effectively highlights the positive influence of PCS on safety metrics. Future research should extend this study to broader sectors and evaluate long-term sustainability. Industry stakeholders are encouraged to implement PCS as part of their safety strategy, with initial training provided for employees who may be affected by changes in operational procedures. Process-Control Systems, Difference-in-Differences Model, Safety Metrics, Industrial Accidents, Risk Reduction The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Kenya, Process-Control Systems, Methodology, Econometrics, Difference-In-Differences, Risk Analysis, Industrial Safety

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