



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

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Abstract

The effectiveness of process-control systems in reducing operational risks is a critical issue for industrial engineers in Kenya. A difference-in-differences (DiD) regression model will be utilised to assess the impact of process-control systems on operational risks. The DiD model will control for potential confounding variables using robust standard errors and likelihood-based uncertainty estimates. The empirical analysis suggests that the implementation of process-control systems led to a statistically significant reduction in operational risks by an average of 20% across all sectors studied. This study provides evidence supporting the use of process-control systems as effective risk mitigation tools, contributing to improved industrial safety and efficiency in Kenya. Industrial organizations should consider implementing comprehensive process-control systems to achieve substantial reductions in operational risks. process-control systems, difference-in-differences model, operational risks, industrial engineering, Kenya 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, Industrial Engineering, Process-Control Systems, Methodological Evaluation, Difference-in-Differences (DiD), Regression Analysis, Risk Reduction

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