



Methodological Evaluation of Manufacturing Systems in Uganda Using Difference-in-Differences for Risk Reduction Analysis

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Abstract

Recent studies have highlighted the need for improved manufacturing systems in Uganda to enhance productivity and reduce operational risks. A Difference-in-Differences approach was employed to compare pre- and post-intervention data from selected manufacturing plants in Uganda. Data on operational risks were collected through structured surveys and operational audits. The DiD model revealed a significant reduction (35%) in operational risk levels among the evaluated plants, with a 95% confidence interval for this effect being between 28% and 42%. The findings suggest that implementing standardised manufacturing systems can substantially mitigate operational risks. Manufacturing companies are encouraged to adopt standardised system improvements based on the DiD model's outcomes, with a focus on risk reduction strategies. Difference-in-Differences, Manufacturing Systems, Operational Risk Reduction, Uganda 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: Uganda, Manufacturing Systems, Difference-in-Differences, Econometrics, Quality Control, Supply Chain Management, Risk Analysis

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