



# Methodological Assessment of Manufacturing Risk Reduction Systems in Ghana Using Difference-in-Differences Analysis

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## Abstract

Manufacturing risk reduction systems are critical for enhancing productivity and competitiveness in Ghana's manufacturing sector. A DID model was applied to compare pre- and post-intervention outcomes in treated and control groups, accounting for potential confounders. The analysis revealed a statistically significant reduction (p-value < 0.05) of operational risk scores by 12% among the treated manufacturing plants compared to controls. The DID model demonstrated its effectiveness in isolating treatment effects, providing robust evidence for the efficacy of implemented risk reduction systems. Based on the findings, recommendations include scaling up successful interventions and continuous monitoring of risk management practices. Manufacturing Risk Reduction, Difference-in-Differences (DID), Operational Risks, Ghana The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Sub-Saharan, manufacturing, productivity, intervention, econometrics, randomized, impact

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