



Methodological Evaluation of Manufacturing Plants Systems in Nigeria Using Difference-in-Differences Model to Measure Risk Reduction

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Abstract

Manufacturing plants in Nigeria face significant operational risks that can hinder productivity and sustainability. A DiD regression analysis was employed to assess the impact of implemented risk mitigation measures across different plants. Data from three years of operational records were used. The DiD model revealed that the implementation of protective barriers reduced production downtime by approximately 20% compared to baseline conditions. The difference-in-differences approach effectively quantifies the impact of risk reduction strategies in Nigerian manufacturing environments, offering a robust method for evaluating similar interventions. Further research should explore scalability and cost-benefit analyses of these risk mitigation measures across various industries. Manufacturing, Nigeria, DiD model, Risk Reduction The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Nigerian, manufacturing, systems, qualitative, methodology, risk, mitigation, econometrics*

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