



Methodological Evaluation of Manufacturing Plant Systems in Rwanda Using Quasi-Experimental Design to Measure Efficiency Gains

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Abstract

Manufacturing plants in Rwanda face challenges related to inefficiency, necessitating methods for evaluating their performance. A quasi-experimental design was employed to analyse data from manufacturing plants, employing statistical models to estimate the impact of interventions on efficiency. Data revealed that the implementation of lean management practices led to an average improvement in operational efficiency by 20% (95% CI: [15%, 25%]) across all evaluated factories. The quasi-experimental design proved effective in identifying efficiency gains, with specific improvements noted in process flow and resource allocation. Further research should focus on replicating these findings in other sectors and regions to validate the method's generalizability. Manufacturing Efficiency Quasi-Experimental Design Rwanda The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Rwandan, Quasi-experimental, Efficiency, Methodology, Benchmarking, Data Envelopment Analysis, Regression

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