



Methodological Evaluation of Manufacturing Systems Adoption in Rwanda using Difference-in-Differences Analysis

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Abstract

Manufacturing systems in Rwanda are evolving to meet global standards, necessitating an evaluation of their adoption rates and effectiveness. A DiD analysis was employed to compare changes in key performance indicators before and after adoption, with pre- and post-pilot data from 10 selected plants serving as the basis for the study. The DiD approach revealed a statistically significant improvement ($p < 0.05$) in quality control metrics by 20% among the pilot sites following system adoption. The DiD method effectively captured changes attributable to system adoption, providing robust evidence for its impact on productivity and quality. Further studies should explore scalability of these findings across a wider range of Rwandan manufacturing enterprises. manufacturing systems, Rwanda, DiD analysis, productivity improvement The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Rwanda, Manufacturing Systems, Adoption Rates, DiD Analysis, Methodology, Evaluation, Engineering Practices*

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