



Methodological Validation of Manufacturing Plant Systems in Rwanda Using Difference-in-Differences Analysis

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Abstract

This study aims to validate methodological approaches used in previous research on manufacturing plant systems in Rwanda. This replication study employs the difference-in-differences (DiD) econometric model to assess changes in manufacturing plant yields over time. The DiD model compares treatment effects before and after an intervention among treated and control groups. The empirical analysis revealed a significant increase in yield by approximately 10% for the treated plants compared to controls, with robust standard errors indicating the reliability of these results. This study confirms the effectiveness of DiD methodology in measuring yield improvement in Rwandan manufacturing environments. The replication underscores the utility of DiD analysis for evaluating interventions in industrial settings. Future research should consider expanding the sample size and exploring additional variables to enhance model robustness. 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: Rwanda, Methodology, Manufacturing Systems, Econometrics, Difference-in-Differences, Yield Improvement, Geographical Analysis

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