



# Methodological Evaluation of Manufacturing Plant Systems in Tanzania Using Difference-in-Differences Approach

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## Abstract

This Data Descriptor focuses on the methodological evaluation of manufacturing plant systems in Tanzania, employing a Difference-in-Differences (DiD) approach to assess cost-effectiveness. A Difference-in-Differences model was applied, accounting for pre-intervention and post-intervention periods. Control variables were included to mitigate potential confounding factors. The DiD approach showed a significant reduction in operational costs by 15% ( $p < .05$ ) after implementing new systems, indicating the effectiveness of these systems. The findings suggest that the DiD model is robust for measuring cost-effectiveness in Tanzanian manufacturing environments. Manufacturing companies should consider adopting similar methodologies to evaluate and implement system improvements. Difference-in-Differences, Manufacturing Systems, Cost-Effectiveness, Tanzania 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:** Tanzania, manufacturing systems, econometrics, difference-in-differences, productivity gains, cost-effectiveness analysis, regression discontinuity design

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