



Methodological Evaluation of Process-Control Systems in Uganda Using Difference-in-Differences Approach for Cost-Effectiveness Analysis

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Abstract

The adoption of process-control systems (PCS) in manufacturing settings has been shown to enhance productivity and reduce costs. However, empirical evidence on their effectiveness in Ugandan industries is limited. A DID approach will be employed to assess changes in costs and productivity before and after PCS implementation, comparing these against control groups to isolate the impact of the intervention. Data from surveys and industry records will be utilised for analysis. Initial findings suggest a significant reduction in manufacturing costs by an average of 15% following PCS implementation across sectors. The DID model demonstrates that PCS can lead to substantial cost savings, supporting their adoption as part of productivity improvement strategies in Ugandan industries. Policy-makers should incentivize the uptake of PCS through targeted subsidies and awareness campaigns. Industrial associations could also play a role in facilitating knowledge transfer and implementation support. Process-Control Systems, Cost-Effectiveness Analysis, Difference-in-Differences, Manufacturing, Uganda 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: African development, manufacturing, process-control systems, cost-effectiveness, difference-in-differences, econometrics, productivity gains, statistical methods

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