



Methodological Evaluation of Process-Control Systems in Rwanda Using Cost-Effectiveness Analysis

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Abstract

In Rwanda, process-control systems have been implemented in various sectors to enhance efficiency and effectiveness. However, their cost-effectiveness remains a subject of debate. A difference-in-differences model was employed, comparing pre- and post-intervention data from control and treatment groups in Rwanda. Data on costs and outcomes were collected through surveys and administrative records. The DID analysis revealed a significant reduction in operational costs by approximately 15% for the treated sector compared to the control group, with a confidence interval of (8%, 24%). This study provides robust evidence on the cost-effectiveness of process-control systems in Rwanda and offers a methodological framework that can be replicated. Further research should explore the long-term impacts and scalability of these systems across different sectors. Rwanda, Process-Control Systems, Cost-Effectiveness Analysis, Difference-in-Differences Model 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: *Rwandan, Geographic Information Systems, econometrics, cost-benefit analysis, intervention evaluation, difference-in-differences, spatial statistics*

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