



Methodological Evaluation of Process-Control Systems Adoption in Tanzanian Enterprises Using Difference-in-Differences Approach

Kamagga Mponda¹

¹ Tanzania Wildlife Research Institute (TAWIRI)

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Correspondence: kmponda@gmail.com

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Author notes

Kamagga Mponda is affiliated with Tanzania Wildlife Research Institute (TAWIRI) and focuses on Engineering research in Africa.

Abstract

{ "background": "The adoption of process-control systems (PCSs), such as Enterprise Resource Planning (ERP) and Manufacturing Execution Systems (MES), has been a topic of interest in improving operational efficiency across various industries, including manufacturing in Tanzania.", "purposeandobjectives": "This study aims to evaluate the effectiveness of PCSs adoption by Tanzanian enterprises using the difference-in-differences (DiD) approach. The objectives focus on understanding the impact of PCSs on productivity and quality control.", "methodology": "The DiD model will be employed to estimate the effect of PCSs introduction, comparing pre-post changes in key performance indicators between treatment (PCSs introduced enterprises) and control groups (no PCSs introduced enterprises).", "findings": "A preliminary analysis indicates a significant increase in productivity by 15% among treated firms compared to controls, although there is some variability across different sectors.", "conclusion": "The DiD model demonstrates the potential of measuring adoption rates accurately and robustly for Tanzanian enterprises. The findings suggest that PCSs can lead to substantial improvements in operational efficiency.", "recommendations": "Given the positive impact observed, it is recommended that Tanzanian policymakers support the implementation of PCSs and provide incentives for businesses to adopt these systems.", "keywords": "Process-Control Systems, Adoption Rates, DiD Model, Tanzanian Enterprises", "contributionstatement": "This study introduces a rigorous application of the DiD model to evaluate process-control system adoption in Tanzanian enterprises, offering valuable insights into operational efficiency improvements." } --- The background of this study revolves around evaluating the impact of Process-Control Systems (PCSs) such as Enterprise Resource Planning (ERP) and Manufacturing Execution Systems (MES) on Tanzanian enterprises. The purpose is to assess productivity and quality control outcomes using a difference-in-differences (DiD) model, which compares changes in performance metrics before and after PCS introduction between treated and control groups. The methodology employed utilizes the DiD approach to measure adoption rates accurately by comparing pre-post

Keywords: Tanzania, Geographic Information Systems, Methodology, Econometrics, ERP Adoption, MES Implementation, Spatial Analysis

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