



# Methodological Evaluation of Manufacturing Systems Adoption in Tanzanian Plants: A Randomized Field Trial

Peter Mwakalila<sup>1,2</sup>, John Kamukama<sup>2,3</sup>

<sup>1</sup> Department of Civil Engineering, Catholic University of Health and Allied Sciences (CUHAS)

<sup>2</sup> Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam

<sup>3</sup> Catholic University of Health and Allied Sciences (CUHAS)

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**Correspondence:** [pmwakalila@aol.com](mailto:pmwakalila@aol.com)

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## Author notes

*Peter Mwakalila is affiliated with Department of Civil Engineering, Catholic University of Health and Allied Sciences (CUHAS) and focuses on Engineering research in Africa.*

*John Kamukama is affiliated with Catholic University of Health and Allied Sciences (CUHAS) and focuses on Engineering research in Africa.*

## Abstract

Manufacturing systems adoption in Tanzanian plants is crucial for enhancing productivity and competitiveness in the global market. A randomized field trial was conducted to measure the adoption rates of manufacturing systems across multiple plants. A binary logistic regression model with robust standard errors was used to analyse the data. The analysis revealed that approximately 65% of participating plants adopted new manufacturing systems, indicating a moderate level of acceptance in this context. The randomized field trial provided insights into the methodological challenges and effectiveness of adopting advanced manufacturing systems in Tanzanian industrial settings. Further research should focus on understanding long-term impacts and potential barriers to system adoption. 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, Geographic Information Systems (GIS), Lean Manufacturing, Six Sigma, Supply Chain Management, Empirical Research Design, Quantitative Analysis

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