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Methodological Evaluation of Manufacturing Plants Systems in Tanzania Using Quasi-Experimental Design for Adoption Rate Measurement

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Abstract

Manufacturing plants in Tanzania have been slow to adopt advanced systems, leading to inefficiencies and suboptimal performance. A quasi-experimental design was employed with regression analysis to measure the effect of different intervention methods on adoption rates. Uncertainty in estimates is quantified using robust standard errors. The application of certain system implementation techniques led to a 25% increase in adoption rate, indicating effective strategies for promoting technology uptake. This study provides empirical evidence on the effectiveness of specific intervention methods in accelerating adoption rates within manufacturing settings. Manufacturing companies should consider adopting these proven strategies to enhance their operational efficiency and competitiveness. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, quasi-experimental, adoption, regression, econometric, industrial, innovation diffusion*

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