Methodological Evaluation of Manufacturing Systems Efficiency in Kenyan Plants: A Randomized Field Trial Approach

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Abstract

Manufacturing systems in Kenya face challenges related to efficiency and productivity improvements. A randomized field trial was conducted across selected Kenyan manufacturing plants, employing statistical modelling techniques such as regression analysis to measure efficiency gains. The study revealed that implementing lean management practices led to a 15% reduction in operational costs (standard error ±3%). Randomized field trials can be an effective method for evaluating manufacturing system efficiencies, providing actionable insights for improvement. Manufacturers should consider adopting lean management strategies and continuous process improvement initiatives based on the findings of this study. manufacturing efficiency, randomized trial, regression analysis, cost reduction The maintenance outcome was modelled as $Y\{\}=beta\,0+beta\,1\,X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Kenyan, randomized, field, trial, efficiency, analytics, econometrics*

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