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Methodological Evaluation of Industrial Machinery Fleets Systems in Kenya: Randomized Field Trial for Adoption Rates Measurement

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Abstract

Industrial machinery fleets have emerged as a significant driver of technological adoption in Kenya's manufacturing sector. However, understanding the factors influencing their widespread adoption remains challenging. A randomized field trial was conducted among 150 randomly selected manufacturing firms across various sectors in Kenya. Data were collected using surveys, interviews, and direct observations over a period of six months. Statistical models were employed to analyse data on adoption rates and their determinants. The analysis revealed that the proportion of firms adopting industrial machinery fleets increased by 30% after the intervention compared to baseline levels. Key drivers identified include firm size (medium-sized firms adopted at a higher rate), access to finance, and technological readiness level. This study provides valuable insights into methodological approaches for assessing adoption rates in industrial machinery fleets systems. Future research should consider longitudinal studies to track long-term effects of interventions on adoption rates. Policy recommendations include enhancing financial support mechanisms and improving technology readiness levels among small and medium enterprises (SMEs). The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Kenyan, Geographic Information Systems, Sampling, Experimental Design, Data Analytics, Regression Analysis, Randomization*

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