African Technology Integration in Education

Methodological Evaluation of Industrial Machinery Fleets Systems in Rwanda: Randomized Field Trial for Measuring Cost-Effectiveness

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Abstract

Industrial machinery fleets systems are increasingly being adopted in Rwanda to enhance productivity and efficiency across various sectors such as manufacturing and agriculture. A Randomized Field Trial (RCT) was conducted in Rwanda to assess the impact of industrial machinery fleets systems. Participants were randomly assigned to either an intervention group (receiving the fleet system) or a control group (no intervention). Data collection included operational costs, maintenance expenses, and productivity measures. The trial revealed that the intervention group showed a 15% reduction in total operational costs compared to the control group over a six-month period. Productivity increased by an average of 20%, indicating significant cost savings and efficiency gains. This RCT provided valuable insights into the potential benefits of industrial machinery fleets systems, demonstrating their effectiveness in reducing costs and improving productivity. Further research should be conducted to validate these findings across different industries and regions. Policy makers could consider implementing similar fleet systems as a cost-saving measure for businesses. The maintenance outcome was modelled as $Y\{\}=beta0+beta1X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, randomized controlled trial, econometrics, stochastic frontier analysis, grey literature, data envelopment analysis, benchmarking*

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