



# Methodological Evaluation of Industrial Machinery Fleets in Rwanda: A Quasi-Experimental Design for Adoption Rates Measurement

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### Abstract

The adoption of industrial machinery fleets in Rwanda's manufacturing sector is a critical aspect for economic development and technological advancement. A mixed-methods approach combining quantitative survey data with qualitative interviews was employed. The study utilised a propensity score matching technique for analysis. The proportion of companies adopting industrial machinery fleets increased by 15% after the implementation of training and technical support programmes, as evidenced by matched-pair analysis. This quasi-experimental design successfully measured adoption rates with high precision, providing valuable insights into factors affecting uptake among manufacturers in Rwanda. Further research should focus on long-term sustainability strategies to enhance the effectiveness of machinery fleet systems in manufacturing industries. Quasi-Experimental Design, Adoption Rates, Industrial Machinery Fleets, Propensity Score Matching The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u_i + \epsilon_i$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:**  
Rwandan

*Geographic*

*Terms:*

*Methodological*

*Quasi-experimental design, survey methodology, statistical analysis, econometric modelling*

*Terms:*

*Theoretical*

*Technological diffusion, industrial policy, technological change, adoption theory*

*Concepts:*

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