



Evaluating Cost-Effectiveness of Machinery Fleets in Ghana Through Quasi-Experimental Design

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Abstract

Industrial machinery fleets play a crucial role in Ghana’s economic development, yet their cost-effectiveness remains poorly understood. A mixed-methods approach combining econometric analysis with field surveys was employed to assess fleet utilization rates, operational costs, and productivity metrics across various sectors in Ghana. The preliminary findings suggest that the adoption rate of automated machinery is significantly higher among larger enterprises (52% vs. 30%, $p < 0.01$), indicating a potential shift towards more efficient fleet management strategies. This study highlights the importance of sector-specific adaptations and technological upgrades in enhancing the cost-effectiveness of industrial machinery fleets in Ghana. Policy makers should incentivize the adoption of advanced technology through tailored subsidies to accelerate the transition from traditional to modern machinery fleets. Industrial Machinery Fleets, Quasi-Experimental Design, Cost-Effectiveness, Ghana The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, econometrics, cost-benefit, experimental design, productivity enhancement, resource allocation, sustainability assessments

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