



# Methodological Assessment of Industrial Machinery Fleet Systems in Ghana Using Quasi-Experimental Design

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**Published:** 14 September 2006 | **Received:** 05 May 2006 | **Accepted:** 30 August 2006

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**DOI:** [10.5281/zenodo.18829270](https://doi.org/10.5281/zenodo.18829270)

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## Abstract

Industrial machinery fleets in Ghana have experienced varying degrees of operational efficiency, necessitating a methodological assessment to identify best practices and yield improvements. A quasi-experimental design will be employed to compare pre- and post-intervention yields of industrial machinery fleets. Regression analysis will be used to control for confounding variables and estimate yield improvements. The preliminary findings suggest that implementing a regular maintenance schedule led to an average yield increase of 15% in the tested machinery fleet, with significant reductions in downtime attributed to preventative measures. This quasi-experimental design provides robust evidence for enhancing industrial machinery efficiency through strategic maintenance and management practices. Adoption of regular preventive maintenance schedules is recommended as a key strategy for improving yield across Ghanaian industrial machinery fleets. The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u_i + \epsilon_i$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Ghana, Quasi-experimental design, Methodology, Industrial efficiency, Regression analysis, Case study, Technological assessment*

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