



Methodological Evaluation of Industrial Machinery Fleets in Senegal Using Difference-in-Differences Model

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Abstract

Industrial machinery fleets play a crucial role in Senegal's manufacturing sector. The study employs the DiD econometric framework to assess the impact of industrial machinery fleet investments on operational costs, productivity, and efficiency. Data from two distinct time periods before and after a policy intervention are used to estimate treatment effects. A significant reduction in operational costs was observed with an estimated mean decrease of 15% (95% CI: -20%, -10%) post-intervention compared to pre-intervention levels, indicating enhanced cost-effectiveness. The DiD model provides robust insights into the effectiveness of industrial machinery fleets in reducing operational costs and improving efficiency. Policy makers should consider implementing similar fleet management systems to further enhance economic benefits and competitiveness. Industrial Machinery Fleets, Cost-Effectiveness, Difference-in-Differences (DiD), Senegal The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, econometrics, DiD, productivity, remanufacturing, sustainability, forecasting*

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