



Methodological Evaluation of Industrial Machinery Fleets in Senegal Using Panel Data for Adoption Rate Measurement

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Abstract

In Senegal, industrial machinery fleets play a crucial role in various sectors such as agriculture and manufacturing. A mixed-method approach combining qualitative interviews with quantitative panel-data estimation techniques was employed to assess adoption trends over time. The analysis revealed a significant variation (direction: increase) in adoption rates among fleets, particularly in the agricultural sector where machinery adoption increased by 25% from to . This study provides insights into the factors influencing industrial machinery adoption and highlights potential areas for policy interventions. Future research should focus on understanding the long-term impacts of these adoption rates on economic growth and environmental sustainability in Senegal. Industrial Machinery, Adoption Rates, Panel Data Analysis, Senegal The maintenance outcome was modelled as $Y_{it} = \beta_0 + \beta_1 X_{it} + u_i + v_t + \epsilon_{it}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, econometrics, stochastic frontier analysis, panel data, qualitative research, industrial organisation, technology adoption*

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