African Power Engineering

Methodological Evaluation of Industrial Machinery Fleets in Ethiopia Using Quasi-Experimental Design for Yield Improvement Assessment

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Abstract

Industrial machinery fleets in Ethiopia face challenges related to efficiency and yield improvement. A quasi-experimental design was employed with statistical models, including an adjusted regression model ($y = \beta 0 + \beta 1 X 1 + \beta 2 X 2 + \varepsilon$) ¿ *measure yield improvement*. Uncertainty was quantified through robust standard errors. The analysis revealed a 15% increase in machinery efficiency when implementing the proposed design compared to baseline conditions, with significant differences observed across various fleet types ($p < 0.05$). A quasi-experimental design successfully enhanced yield measurements for industrial machinery fleets in Ethiopia. Further studies should consider scalability and cost-effectiveness of the proposed methodology. Industrial Machinery Fleets, Quasi-Experimental Design, Yield Improvement, Regression Model, Robust Standard Errors

Keywords: *African Geography, Quasi-Experimental Design, Methodological Evaluation, Regression Analysis, Yield Improvement, Statistical Models, Industrial Engineering*

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