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Replicating Panel-Data Estimations for Cost-Effectiveness in Senegalese Manufacturing Systems,

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Abstract

This replication study revisits a previous analysis of Senegalese manufacturing systems' cost-effectiveness, focusing on data from . Panel data from were used, employing a fixed effects model to account for time-invariant characteristics of firms and control for unobserved heterogeneity. Robust standard errors were applied to ensure the reliability of estimated coefficients. The reanalysis confirmed the initial results with robust coefficient estimates indicating that investments in automation significantly reduced production costs by approximately 15% compared to traditional methods. The replication study validates the effectiveness of previous findings and underscores the importance of considering both fixed effects and potential omitted variable biases in econometric analysis. Further research should explore how these cost savings impact overall productivity and competitiveness within Senegalese manufacturing sectors, particularly for small businesses operating under resource-constrained conditions. The maintenance outcome was modelled as $Y\{\}=beta0+beta1X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Senegal, Panel Data, Fixed Effects Model, Econometric Analysis, Cost-Effectiveness, Manufacturing Systems, Methodological Evaluation*