African Nanotechnology Applications (Technology)

Methodological Scrutiny of Manufacturing Plant Systems in Senegal through Quasi-Experimental Design

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Abstract

Manufacturing plants in Senegal have been identified as crucial for economic development, yet their operational efficiency remains under scrutiny. A quasi-experimental design was employed to assess the impact of process optimization interventions on manufacturing performance. Data collection included operational metrics such as production output and resource utilization. The analysis revealed that implementing lean management practices led to a 15% increase in productivity, with significant reductions in waste and downtime. This study underscores the potential of process optimization strategies to enhance manufacturing efficiency in Senegalese settings. Manufacturers should consider adopting lean management methodologies to further boost operational efficiencies. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, econometrics, productivity, stochastic frontier, experimental design, resource allocation, performance measurement*

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