



Methodological Assessment of Manufacturing Plant Systems in Senegal Using Quasi-Experimental Design for Yield Improvement

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Abstract

Manufacturing plants in Senegal are facing challenges in maintaining optimal yield levels due to variations in operational processes and external factors. A quasi-experimental design was employed, incorporating process measurements and statistical analysis to assess yield improvements. Data collection involved surveys and operational data logs from selected plants over a period of six months. Significant variations were observed in the yield levels among different manufacturing sectors (e.g., 15% variance between textile and automotive industries). The quasi-experimental design proved effective in measuring yield improvements, with notable differences attributed to operational efficiency and maintenance practices. Adoption of robust monitoring systems and targeted training programmes are recommended for further enhancing production yields across Senegalese manufacturing sectors. 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: *African Geography, Quasi-Experimental Design, Methodological Evaluation, Manufacturing Systems, Yield Analysis, Regression Discontinuity, Spatial Econometrics*

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