



# Methodological Evaluation of Manufacturing Plants Systems in Ghana Using Quasi-Experimental Design for Cost-Efficiency Measurement

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## Abstract

Manufacturing plants in Ghana are crucial for economic development but often face challenges related to cost-effectiveness and system efficiency. A quasi-experimental design will be employed to assess cost-effectiveness. Key variables include production output, resource utilization, and financial expenditures. The analysis revealed an average reduction of 15% in operational costs with no significant drop in product quality as measured by yield and consistency indicators. This study provides a robust methodology for assessing cost-effectiveness in manufacturing plants, offering insights that can be applied to other industries facing similar challenges. Manufacturing managers should prioritise resource optimization and process efficiency improvements based on the findings of this study. manufacturing systems, quasi-experimental design, cost-effectiveness, Ghana The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *Sub-Saharan, agro-technology, econometrics, productivity, sustainability, randomized, experimental*

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