



Methodological Evaluation of Manufacturing Systems Efficiency Gains in Ugandan Plants Using Quasi-Experimental Design

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Abstract

The efficiency gains in manufacturing systems are crucial for economic growth and sustainability in developing countries like Uganda. A quasi-experimental design was employed to assess the performance of manufacturing systems across various Ugandan plants. Data were collected through surveys and process audits. Significant gains in production efficiency were observed in plant X, with outputs increasing by 15% compared to baseline data, indicating a clear improvement in operational effectiveness. The quasi-experimental design provided robust evidence of efficiency gains, which can inform policy and investment decisions for enhancing manufacturing sector productivity in Uganda. Investment in process optimization and employee training should be prioritised to sustain these efficiency improvements. Manufacturing Efficiency, Quasi-Experimental Design, Ugandan Plants, Production Gains The empirical specification follows $Y = \beta_{0+\beta} X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Uganda, Quasi-experimental, Efficiency, Manufacturing, Sustainability, Performance Measurement, Methodology*

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