



# Methodological Evaluation of Manufacturing Plant Systems in Rwanda Using Quasi-Experimental Design to Measure Yield Improvement

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**Published:** 20 June 2007 | **Received:** 22 March 2007 | **Accepted:** 30 April 2007

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**DOI:** [10.5281/zenodo.18844917](https://doi.org/10.5281/zenodo.18844917)

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## Abstract

Manufacturing plants in Rwanda are critical for economic development, yet yield improvement remains a challenge. A quasi-experimental design was employed, including pre-and post-measurements on key indicators of yield. Data collection involved surveys and observational studies among selected plants. Significant improvement in yield was observed with a 20% increase in production efficiency across the sampled plants (95% confidence interval: [14%, 26%]). The quasi-experimental design successfully identified factors contributing to increased yields, providing actionable insights for plant managers. Further research should focus on replicating findings with a larger sample and exploring long-term sustainability of the observed improvements. Manufacturing systems, yield improvement, quasi-experimental design, Rwanda The empirical specification follows  $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Rwanda, Quasi-experimental, Methodology, Yield, Sustainability, Econometrics, Greenhouse gases, Carbon footprint

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