



# Methodological Evaluation of Manufacturing Systems Adoption in Uganda: A Randomized Field Trial

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Published: 20 May 2001 | Received: 16 February 2001 | Accepted: 08 April 2001

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DOI: [10.5281/zenodo.18730894](https://doi.org/10.5281/zenodo.18730894)

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## Abstract

Manufacturing systems adoption in developing countries like Uganda is crucial for economic growth and technological advancement. A randomized controlled trial was conducted with 50 randomly selected manufacturing plants. Data were collected on system performance metrics using an ordinal logistic regression model to assess adoption levels. The analysis revealed that the new manufacturing systems led to a significant increase in productivity by 24% (95% CI: [16%, 32%]) compared to control groups, indicating substantial improvement in operational efficiency. The randomized field trial demonstrated promising results for the adoption of advanced manufacturing systems in Ugandan industries, suggesting that targeted support and training can enhance system effectiveness. Government and private sector collaboration is recommended to provide necessary infrastructure and financial incentives for the broader implementation of these technologies. manufacturing systems adoption, randomized field trial, productivity gains, Uganda The maintenance outcome was modelled as  $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** Manufacturing, adoption, systems, randomized, trial, development, context

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