



# Methodological Evaluation of Manufacturing Systems Yield Improvement in Ghana: A Randomized Field Trial

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### Abstract

Manufacturing systems in Ghana have shown significant potential for yield improvement through technological integration, yet methodological rigor is essential to validate these improvements. A randomized field trial was conducted across five selected Ghanaian manufacturing plants. The study employed statistical modelling techniques to assess yield performance, including regression analysis with robust standard errors and confidence intervals for uncertainty quantification. The preliminary findings suggest an average increase in yield of 12% among the treated plants compared to a control group, indicating potential methodological validity. This study provides empirical evidence supporting the effectiveness of manufacturing system enhancement strategies on yield performance in Ghanaian settings. Further research should explore scalability and sustainability of these findings across different types of manufacturing industries in Ghana. Manufacturing, yield improvement, randomized field trial, statistical modelling The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u_i + \epsilon_i$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Geography, Africa, Case-Study, Design-Of-Evaluation, Methodological, Fundamental-Methods, Operational-Research*

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