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Methodological Evaluation of Manufacturing Plant Systems in Kenya: Randomized Field Trial for System Reliability Assessment

Odhiambo Mwanga[1], **Moroto Ochieng**[1,2], **Kiprop Cheruji**[3,4]

[1] Egerton University

[2] Department of Advanced Studies, African Population and Health Research Center (APHRC)

[3] Department of Interdisciplinary Studies, African Population and Health Research Center (APHRC)

[4] Department of Interdisciplinary Studies, Jomo Kenyatta University of Agriculture and Technology (JKUAT)

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Correspondence: omwanga@outlook.com

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Author notes

Odhiambo Mwanga is affiliated with Egerton University and focuses on Energy research in Africa.
Moroto Ochieng is affiliated with Egerton University and focuses on Energy research in Africa.
Kiprop Cheruji is affiliated with Department of Interdisciplinary Studies, African Population and Health Research Center (APHRC) and focuses on Energy research in Africa.

Abstract

The effectiveness of manufacturing plant systems in Kenya for energy production is crucial for sustainable development. However, there is a lack of systematic evaluation and standardization of these systems. A randomized controlled trial was conducted across three sites in Kenya. Data were collected through continuous monitoring over six months, including system uptime and maintenance frequency. The analysis revealed that the systems experienced an average downtime of 10% during operational hours, with a confidence interval (95%) around this estimate providing robust accuracy. The randomized field trial methodology demonstrated high reliability in manufacturing plant systems for energy production in Kenya. Findings suggest a need for further optimization and standardization. Further research should focus on improving maintenance protocols to reduce downtime, while policymakers could implement incentives for system upgrades to enhance reliability. manufacturing plants, energy production, randomized field trial, reliability assessment The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Kenyan, Manufacturing, Systems, Reliability, Methodology, Evaluation, Performance*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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