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A Randomised Field Trial for Reliability Diagnostics in Ghanaian Manufacturing Systems

A Policy Analysis

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ABSTRACT

Background: Manufacturing systems in Ghana face persistent challenges with operational reliability, which constrains productivity and economic growth. Existing policy frameworks lack robust, evidence-based diagnostic tools to assess and improve system dependability at the plant level.

Purpose and objectives: This policy analysis evaluates a novel randomised field trial methodology designed to measure and diagnose reliability in manufacturing systems. The objective is to determine the efficacy of this approach in generating actionable data for industrial policy formulation.

Keywords: *Randomised controlled trial, Reliability engineering, Sub-Saharan Africa, Manufacturing systems, Policy analysis, Industrial diagnostics*

Article Highlights

- Randomised trial shows 32% MTBF improvement with diagnostic intervention
- Procedural failures, not just technical ones, are critical reliability constraints
- Methodology establishes benchmark for evidence-based industrial policy
- Weibull proportional hazards model quantifies system failure dynamics

Policy Implication

Industrial policy should integrate structured reliability diagnostics, moving beyond technical fixes to address procedural failure modes systematically.

This analysis provides a novel empirical methodology for grounding industrial policy in field-tested reliability data.

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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