

# A Randomised Field Trial for Measuring Adoption Rates in Nigerian Transport Depot Maintenance Systems

*A Methodological Evaluation*

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## ABSTRACT

**Background:** Maintenance systems in transport depots are critical for infrastructure longevity and operational safety, yet adoption of improved protocols in developing contexts remains poorly quantified. Existing studies often rely on self-reported data, lacking rigorous experimental designs to measure actual implementation rates.

**Purpose and objectives:** This case study evaluates a methodological framework for conducting a randomised field trial to measure the adoption rate of a new computerised maintenance management system (CMMS) within Nigerian transport depots. The primary objective was to assess the trial's design efficacy in generating reliable, actionable engineering management data.

**Keywords:** *Randomised controlled trial, Maintenance management systems, Transport infrastructure, Sub-Saharan Africa, Adoption rates, Methodological evaluation, Field experiment*

### Article Highlights

- Cluster-randomised trial across 24 depots measured CMMS adoption via direct audit.
- Method achieved 92% fidelity in planned data collection within a resource-constrained setting.
- Design provided credible causal estimates often absent from conventional case studies.
- Framework demonstrates robust approach for quantifying real-world implementation rates.

### Primary Analysis Model

Generalised linear mixed model:  $\text{logit}(p_{ij}) = \beta_0 + \beta_1 T_i + u_j + \varepsilon_{ij}$ , where  $p_{ij}$  is adoption probability,  $T_i$  is treatment, and  $u_j$  is a random intercept for depot cluster.

*This brief outlines the editorial presentation for a methodological case study.*

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