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Comparative Evaluation of Maintenance Depot Systems

A Randomised Field Trial for Adoption Rate Measurement in South Africa

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ABSTRACT

Background: The adoption of new maintenance systems in public sector transport depots is often slow and poorly quantified, hindering effective asset management and infrastructure sustainability. Existing evaluations typically rely on post-implementation audits, lacking robust methods to measure causal adoption rates under real-world conditions.

Purpose and objectives: This study aimed to develop and apply a novel randomised field trial methodology to measure the comparative adoption rates of two competing depot maintenance management systems within a public transport agency.

Keywords: *Maintenance depots, Public sector transport, Randomised field trial, Adoption rate measurement, South Africa*

Article Highlights

- Process-oriented System P achieved a 68% adoption rate versus 51% for technology-driven System T.
- Randomised trial across 42 depots provides causal evidence on implementation success.
- Adoption advantage for System P was more pronounced in larger depot facilities.
- Novel methodology measures adoption via composite index of compliance and resource use.

Trial Methodology

A randomised controlled trial assigned 42 depots to implement one of two maintenance systems. Adoption was tracked quarterly over 18 months using a composite index analysed via linear mixed-effects models.

This study provides causal evidence for prioritising process design in public sector maintenance reforms.

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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