African Maintenance Engineering

Bayesian Hierarchical Model Assessment of Transport Maintenance Depot Systems in Kenya,

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Abstract

This study focuses on evaluating the performance of transport maintenance depots in Kenya by applying a Bayesian hierarchical model to assess yield improvements over time. A Bayesian hierarchical model was employed to analyse data from Kenya's transport maintenance depots. The model accounts for variability at different levels of the system hierarchy, including depot-specific and regional effects. The analysis revealed a significant positive relationship between investment in infrastructure and operational efficiency, with an estimated coefficient of 0.5 on a standardised scale indicating that every unit increase in infrastructure investment leads to an average improvement of 0.5 percentage points in yield. The Bayesian hierarchical model provided robust estimates for regional differences in maintenance depot performance, highlighting the importance of localized data and the need for tailored interventions to enhance efficiency. Policy makers should prioritise investments in infrastructure that are regionally specific based on the findings from this study. Additionally, targeted training programmes should be developed to address skill gaps observed at different depots.

Keywords: *Kenyan, hierarchical, Bayesian, maintenance, depot, econometrics, stochastic, optimization*

ABSTRACT-ONLY PUBLICATION

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