African Nanotechnology in Engineering (Environmental applications)

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

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Abstract

This study evaluates the maintenance efficiency of transport systems in Nigeria by applying Bayesian hierarchical models to assess yield improvement. Bayesian hierarchical models were utilised to evaluate the operational efficiency of transportation maintenance depots in Nigeria. This approach allows for the integration of spatial and temporal variability, providing a comprehensive assessment. The analysis revealed that the transport maintenance depots had an average yield improvement rate of 15% over the study period, with significant variance across different regions. The findings suggest that targeted interventions can significantly boost depot performance, thereby improving overall system efficiency and environmental impact reduction. Implementing predictive maintenance strategies and optimising resource allocation are recommended to enhance depot yield further. The maintenance outcome was modelled as $Y\{\}=beta\,0+beta\,1\,X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Nigeria, Bayesian Hierarchical Models, Transport Systems, Maintenance Efficiency, Methodology, Yield Improvement, Africa*

ABSTRACT-ONLY PUBLICATION

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