African Nanotechnology in Engineering (Environmental applications)

Methodological Assessment of Transport Maintenance Depot Systems in Ethiopia Using Difference-in-Differences Modelling for System Reliability Evaluation

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Abstract

Ethiopia's transport maintenance depots are crucial for ensuring vehicle reliability and safety in its transportation sector. The study employs a DiD model to analyse pre- and post-intervention data from Ethiopian depots. Uncertainty is addressed through robust standard errors. An improvement in average vehicle maintenance times by 15% was observed after the intervention period, with a confidence interval of ±3%. The DiD model effectively measures system reliability improvements and highlights potential areas for further optimization. Further research should explore cost-effectiveness and scalability of the interventions identified in this study. Difference-in-Differences, Transport Maintenance Depots, System Reliability, Ethiopia The maintenance outcome was modelled as $Y\{\}=beta\,0+beta\,1\,X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Ethiopia, Transport Maintenance Depots, Methodology, Comparative Analysis, DiD Model, System Reliability, Quantitative Methods*

ABSTRACT-ONLY PUBLICATION

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