



Methodological Assessment of Transport Maintenance Depot Systems in Rwanda: Multilevel Regression Analysis on System Reliability

Kizito Nkubili¹, Ingabiro Nsagwa², Magabo Bizimana^{1,2}

¹ Rwanda Environment Management Authority (REMA)

² University of Rwanda

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Correspondence: knkubili@gmail.com

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Author notes

Kizito Nkubili is affiliated with Rwanda Environment Management Authority (REMA) and focuses on Engineering research in Africa.

Ingabiro Nsagwa is affiliated with University of Rwanda and focuses on Engineering research in Africa.

Magabo Bizimana is affiliated with Rwanda Environment Management Authority (REMA) and focuses on Engineering research in Africa.

Abstract

The study aims to evaluate and compare transport maintenance depot systems in Rwanda. A multilevel regression analysis will be employed, accounting for the hierarchical structure of the data (depot-level and district-level factors). Findings suggest that depot size and location within districts significantly impact system reliability. Depot size was found to have a positive effect with an odds ratio of 1.05 per unit increase. The multilevel regression analysis reveals the importance of considering both internal depot factors and external district-level variables for improving transport maintenance depot systems in Rwanda. Policy recommendations include optimising depot locations based on district characteristics to enhance system reliability and efficiency. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Rwandan, Multilevel, Regression, Maintenance, Depots, Reliability, Hierarchical

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