



Methodological Evaluation of Transport Maintenance Depot Systems in Ghana Using Quasi-Experimental Design

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Abstract

Transport maintenance depots (TMDs) play a crucial role in ensuring the reliability and efficiency of transport systems in Ghana. A quasi-experimental design was employed to assess the impact of different maintenance strategies on TMD performance. Data from five randomly selected depots were analysed using regression analysis with robust standard errors to account for potential confounding variables. The results indicate that a specific maintenance schedule resulted in an average reduction of 12% in downtime compared to the baseline condition, with a confidence interval of $\pm 3\%$ (95%). This study provides empirical evidence on how different maintenance strategies can enhance TMD reliability. Based on findings, it is recommended that transport authorities implement consistent maintenance schedules and periodic performance audits to improve depot reliability. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u_i + \text{varepsilon}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic, Depots, Maintenance, Reliability, Quasi-experimental, Evaluation, Methods*

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