



Methodological Evaluation of Transport Maintenance Depot Systems in Ethiopia Using Difference-in-Differences Approach for Cost-Effectiveness Analysis

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Abstract

Transport maintenance depots (TMDs) play a crucial role in ensuring the reliability of road transport infrastructure in Ethiopia. However, there is limited empirical evidence on their cost-effectiveness. The analysis employs a DiD model to assess changes in maintenance costs over time before and after the implementation of TMDs. The study uses administrative data from government records. A significant reduction in average maintenance costs was observed post-TMD implementation, with a decrease of approximately 15% compared to pre-depot periods. The DiD model effectively highlights cost savings associated with TMDs. These findings support the adoption and further expansion of such systems in Ethiopia's transport sector. Based on this study, it is recommended that Ethiopian authorities prioritise investment in comprehensive maintenance infrastructure to enhance road network resilience and reduce operational costs. 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: *Geographic, Sub-Saharan, Maintenance, Depots, Cost-Effectiveness, Econometrics, Randomized, Interference*

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