



Evaluating Transport Maintenance Depot Systems in Rwanda through Quasi-Experimental Design: A Cost-Efficiency Assessment

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Published: 02 August 2011 | **Received:** 08 March 2011 | **Accepted:** 12 June 2011

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DOI: [10.5281/zenodo.18929440](https://doi.org/10.5281/zenodo.18929440)

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Abstract

Rwanda's transport system faces challenges in maintaining vehicles efficiently, leading to potential inefficiencies in logistics and service delivery. A mixed-method approach combining quantitative data analysis with qualitative insights was employed. The study utilised a difference-in-differences (DID) model to measure the impact and efficiency of TMDs over time. The DID model revealed that the average cost per vehicle maintenance at depots decreased by approximately 15% compared to pre-deployment levels, indicating improved operational efficiencies. This study provides robust evidence on the effectiveness of TMDs in reducing maintenance costs and enhancing service delivery in Rwanda's transport sector. The findings suggest that further investments should be directed towards optimising depot operations and expanding coverage to serve a wider geographic area. 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: *Sub-Saharan, Maintenance, Quasi-Experimental, Logistics, Efficiency, Resource Allocation, Performance Measurement*

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