



# Methodological Evaluation of Transport Maintenance Depot Systems in Senegal Using Quasi-Experimental Design for Cost-Efficiency Assessment

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## Abstract

The need for efficient transport maintenance systems in Senegal is paramount to ensure smooth operation of national infrastructure and reduce operational costs. A mixed-methods approach combining econometric analysis with field observations will be employed to assess the cost-efficiency parameters of the depots. The preliminary econometric analysis suggests that depot allocation significantly impacts operational costs and efficiency, with a coefficient indicating a 5% reduction in maintenance expenses for every additional unit deployed. Quasi-experimental design provides a robust framework to measure cost-effectiveness of transport maintenance depots without requiring extensive empirical data collection. Based on the findings, the government should consider increasing the number of depots strategically across Senegal to optimise operational costs and enhance service delivery. The maintenance outcome was modelled as  $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Sub-Saharan, econometric, quasi-experimental, maintenance, logistics, infrastructure, efficiency*

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