



Methodological Assessment of Transport Maintenance Depot Systems in Senegal Using Panel Data for Cost-Effectiveness Analysis,

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Abstract

This study examines transport maintenance depot systems in Senegal, focusing on their cost-effectiveness. A fixed effects model will be employed to analyse cost-effectiveness, accounting for potential confounding variables such as regional differences and economic fluctuations. This approach allows for a detailed examination of system performance within and across different depots over time. The analysis reveals that Depot A in Dakar shows the lowest maintenance costs per vehicle kilometre driven compared to other depots, indicating significant cost savings potential if implemented broadly. The findings suggest that deploying similar optimization strategies could enhance efficiency and reduce operational expenses across Senegalese transport maintenance depots. Based on this study, it is recommended that Senegal's Ministry of Transport consider adopting Depot A's methodologies to improve depot performance and overall transportation logistics. Senegal, Maintenance Depots, Cost-Effectiveness, Panel Data Analysis 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: *African geography, maintenance depots, econometrics, panel analysis, cost-benefit, fixed effects model, resource management*

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