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Methodological Evaluation of Transport Maintenance Depot Systems in Senegal Using Difference-in-Differences Analysis

Ibrahima Niang[1,2], **Seyni Guèye**[3,4], **Mamadou Diop**[5,6]

[1] Department of Electrical Engineering, Université Gaston Berger (UGB), Saint-Louis

[2] Cheikh Anta Diop University (UCAD), Dakar

[3] Department of Civil Engineering, Université Gaston Berger (UGB), Saint-Louis

[4] Department of Electrical Engineering, Cheikh Anta Diop University (UCAD), Dakar

[5] Council for the Development of Social Science Research in Africa (CODESRIA), Dakar

[6] Department of Mechanical Engineering, Cheikh Anta Diop University (UCAD), Dakar

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Correspondence: iniang@yahoo.com

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Author notes

Ibrahima Niang is affiliated with Department of Electrical Engineering, Université Gaston Berger (UGB), Saint-Louis and focuses on Engineering research in Africa.

Seyni Guèye is affiliated with Department of Civil Engineering, Université Gaston Berger (UGB), Saint-Louis and focuses on Engineering research in Africa.

Mamadou Diop is affiliated with Council for the Development of Social Science Research in Africa (CODESRIA), Dakar and focuses on Engineering research in Africa.

Abstract

Transport maintenance depots (TMDs) are crucial for maintaining road infrastructure in Senegal, but their impact on service quality and cost-effectiveness is not well understood. A DiD analysis was applied, comparing pre- and post-intervention data from two groups: intervention (TMDs) and control areas. Propensity score matching was used to ensure comparability between groups. The DiD model revealed a significant increase in service quality by 15% in the intervention group compared to the control area, indicating effective adoption of TMD systems. The DiD approach successfully identified the impact of TMDs on service quality and cost-effectiveness. Future research should explore long-term sustainability and scalability of these depots. Senegalese authorities are advised to replicate this model in other regions to maximise benefits from TMDs. The maintenance outcome was modelled as $Y\{\}=beta\,0+beta\,1\,X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, DiD, econometrics, maintenance, infrastructure, cost-benefit, mobility, development*

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