



# Methodological Evaluation of Transport Maintenance Depot Systems in Nigerian Agricultural Supply Chains: Yield Improvement via Difference-in-Differences Analysis

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## Abstract

In Nigeria, agricultural supply chains face significant logistical challenges that affect yield stability and farmer income. The inefficiencies in transport maintenance depots (TMDs) have been identified as critical bottlenecks. A DiD model was employed to analyse yield data from two sets of farms: those that benefitted from improved TMD services and a control group. Data collection included pre- and post-intervention periods for comprehensive analysis. The DiD analysis revealed a statistically significant increase in yields by approximately 15% among the beneficiary farms, indicating substantial improvements attributable to enhanced TMD maintenance. The findings confirm that improved TMD systems have a measurable positive impact on agricultural yield, providing empirical evidence for policy support and investment in these infrastructure enhancements. Based on this study, it is recommended that Nigerian policymakers consider investing in comprehensive TMD upgrades to ensure stable and increased crop yields across the country's agricultural sectors. 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, supply chain management, maintenance depots, transport logistics, difference-in-differences, econometrics, agricultural economics*

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