



# Methodological Assessment of Transport Maintenance Depot Systems in Rwanda Using Panel Data for Risk Reduction Analysis

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## Abstract

This study examines transport maintenance depot systems in Rwanda to assess their effectiveness in reducing operational risks. A mixed-methods approach combining quantitative panel data estimation with qualitative insights was employed. The study utilised logistic regression models to analyse the impact of various factors on operational risks in maintenance depots. The analysis revealed a significant reduction ( $p < 0.01$ ) in operational risk levels attributed to improved depot management practices and technological advancements. The findings suggest that proactive measures such as regular equipment inspections and staff training can significantly mitigate operational risks, thereby enhancing the reliability of transport maintenance systems. Implementing a comprehensive maintenance schedule and fostering continuous improvement in depot operations are recommended to further reduce risk levels. Rwanda, Transport Maintenance Depots, Panel Data Analysis, Risk Reduction The maintenance outcome was modelled as  $Y_i = \beta_0 + \beta_1 X_i + u_i + \text{varepsilon}_i$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** Rwanda, Depot Systems, Maintenance, Methodology, Risk Assessment, Econometrics, Panel Data Analysis

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