Risk Reduction in Transport Maintenance Depots Systems: A Panel Data Estimation Study in Uganda

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Abstract

Transport maintenance depots in Uganda play a crucial role in ensuring vehicle reliability and safety on roads. However, these systems often face challenges related to operational efficiency and risk management. A mixed-methods research design was employed, combining quantitative analysis with qualitative insights. Panel data from six major transport maintenance depots across Uganda were analysed using a Generalized Method of Moments (GMM) regression model to estimate the impact of risk reduction strategies implemented in these depots over three years. The GMM regression revealed that personnel training programmes significantly reduced operational risks by approximately 20% compared to baseline conditions. Equipment condition, however, showed a weaker correlation with risk reduction, indicating potential areas for further improvement. This study provides empirical evidence on the effectiveness of specific risk management strategies in transport maintenance depots and highlights the importance of continuous personnel training as a key factor for reducing operational risks. Based on the findings, it is recommended that transport authorities implement more comprehensive training programmes for depot staff and invest in regular equipment upgrades to enhance overall risk reduction efforts. Transport Maintenance Depots, Risk Reduction, Personnel Training, Equipment Condition, Panel Data Analysis The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African Geography, Maintenance Systems, Econometrics, Panel Data Analysis, Risk Management, Reliability Engineering, Supply Chain Management*

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