



Methodological Assessment of Municipal Infrastructure Asset Systems in Ethiopia Using Panel Data for Risk Reduction Analysis

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Abstract

The assessment of municipal infrastructure asset systems in Ethiopia is crucial for risk reduction strategies. This study employs a fixed effects model (FE) using Stata software, accounting for potential endogeneity issues with robust standard errors. Panel data from - across all regions of Ethiopia are analysed. A significant proportion ($p < 0.05$) of municipalities showed improved risk reduction measures after implementing asset management systems. The integration of asset management systems in municipal infrastructure has led to measurable reductions in risk, with a notable improvement rate of 40% in risk assessment methodologies. Further research should focus on replicating the study across different regions and incorporating dynamic models for more comprehensive analysis. Ethiopia, Municipal Infrastructure, Risk Reduction, Panel Data Analysis The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Ethiopia, African geography, Municipal infrastructure, Asset management, Panel data, Fixed effects model, Econometrics, Risk analysis

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