



Methodological Evaluation of Municipal Infrastructure Assets Systems in Ethiopia Using Quasi-Experimental Design for Cost-Efficiency Measurement

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Abstract

This Data Descriptor focuses on evaluating municipal infrastructure asset systems in Ethiopia, aiming to measure cost-effectiveness through a quasi-experimental design. A quasi-experimental design was employed, incorporating pre- and post-intervention data from selected municipalities to evaluate the impact of different municipal infrastructure management strategies on costs and outcomes. Statistical analysis will include regression models with robust standard errors for cost-effectiveness measurement. The preliminary findings indicate a significant reduction in maintenance costs by applying targeted resource allocation strategies, demonstrating that efficient resource distribution can lead to substantial savings without compromising quality standards. This quasi-experimental design provides valuable insights into the effectiveness of municipal infrastructure management systems and offers recommendations for enhancing cost-efficiency and service delivery. The findings suggest implementing regular audits and continuous improvement cycles, along with targeted resource allocation based on performance data to optimise municipal infrastructure asset systems in Ethiopia. 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, Quasi-experimental design, Asset management, Methodology, Cost-benefit analysis, Evaluation, Infrastructure assessment*

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