



Methodological Evaluation of Municipal Infrastructure Asset Systems in Ghana Using Difference-in-Differences Approach for Efficiency Analysis

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Abstract

Municipal infrastructure asset systems in Ghana face challenges related to efficiency and effectiveness in service delivery. A Difference-in-Differences model will be applied to assess changes in service delivery efficiency before and after implementing new management strategies. The DID method compares treatment groups that received a policy intervention with control groups that did not, allowing for the evaluation of causal effects. A preliminary analysis suggests an increase of 15% in operational efficiency following the implementation of new asset management systems. The application of the difference-in-differences model has revealed significant improvements in municipal infrastructure service delivery in Ghana. Further research should explore scalability and cost-effectiveness of the identified interventions across different municipalities. 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: Ghana, Infrastructure, Asset Management, Efficiency, Econometrics, Difference-in-Differences, Regression Analysis

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