



Methodological Evaluation of Municipal Infrastructure Asset Systems in Nigeria Using Quasi-Experimental Design to Measure Adoption Rates

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Abstract

Municipal infrastructure in Nigeria is critical for economic development but faces challenges such as underinvestment and poor maintenance. Efficient asset management systems are essential to optimise resource allocation and improve service delivery. A mixed-methods approach combining quantitative data from surveys and qualitative insights through interviews was employed. The quasi-experimental design involved comparing municipalities that adopted new asset management systems to those that did not, controlling for confounding variables. The analysis revealed a significant adoption rate of 45% among the sample municipalities, with higher rates observed in urban areas compared to rural regions ($p < 0.01$). Findings suggest that effective communication and stakeholder engagement are critical for successful implementation of municipal infrastructure asset systems. Policy recommendations include fostering public-private partnerships and enhancing training programmes for local authorities on asset management best practices. Municipal Infrastructure, Asset Management Systems, Quasi-Experimental Design, Adoption Rates The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, asset management, quasi-experimental, econometrics, geospatial, sustainability, performance measurement*

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