



Methodological Assessment of Municipal Infrastructure Asset Systems in Ghana Using Multilevel Regression Analysis

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Abstract

Municipal infrastructure in Ghana is critical for urban resilience but often suffers from inadequate maintenance and management. A multilevel regression analysis was employed, incorporating data at both the city level ($n=10$) \wedge component level ($n=500$). Analysis revealed that investment in preventive maintenance increased asset performance by an average of 20% (95% CI: [15%, 25%]). Multilevel regression analysis provided a robust method for assessing municipal infrastructure yield improvement. Investment priorities should focus on preventive maintenance to enhance asset longevity and performance.

Keywords: Ghanaian, Multilevel, Regression, Asset, Evaluation, Framework, Analysis

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