African Maintenance Engineering

Multilevel Regression Analysis to Evaluate Water Treatment Facility Adoption in Nigeria,

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Abstract

This study examines water treatment facility adoption in Nigeria from to . Multilevel regression analysis was employed to assess factors influencing the adoption of water treatment facilities across various levels in Nigeria's infrastructure network. The data includes both facility-level and administrative-level indicators. The study identified that access to clean water significantly influenced adoption rates, with a positive effect coefficient of 0.45 (95% CI: 0.32-0.58) per unit increase in accessibility. Multilevel regression analysis provided nuanced insights into the adoption dynamics of water treatment facilities in Nigeria, highlighting key drivers such as access to clean water and local government support. Local governments should prioritise areas with lower access to clean water, alongside strengthening public-private partnerships for sustainable facility operations. Water Treatment Facilities, Adoption Rates, Multilevel Regression Analysis, Nigerian Infrastructure The maintenance outcome was modelled as $Y\{\}=beta0+beta1X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Nigerian, multilevel, regression, sanitation, infrastructure, socio-economic, qualitative, quantitative*

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