



Efficiency Gains in Nigerian District Hospitals: A Panel Data Estimation Study

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Abstract

District hospitals in Nigeria play a critical role in providing healthcare services to rural populations. However, their operational efficiency is often under scrutiny due to resource constraints and varying service needs. The study employs a two-stage least squares (2SLS) regression model with robust standard errors to estimate efficiency scores. Data from 10 randomly selected district hospitals over three years were analysed, accounting for potential endogeneity issues. Panel data analyses reveal significant heterogeneity in hospital performance across districts, with some achieving efficiency gains of up to 25% after controlling for confounders such as patient volume and funding levels. Variations in resource allocation are highlighted as key factors influencing these outcomes. The empirical results suggest that targeted interventions focusing on optimising resource utilization could lead to substantial improvements in district hospital performance, thereby enhancing service delivery and cost-effectiveness. Policy recommendations include allocating additional funds to underperforming hospitals, implementing standardised training programmes for healthcare staff, and promoting collaborative health initiatives across districts. District Hospitals, Efficiency Gains, Panel Data Estimation, Two-Stage Least Squares (2SLS), Nigeria Treatment effect was estimated with $text\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Sub-Saharan, Panel, Econometrics, Efficiency, Health Services Management, Resource Allocation*

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