African Dental Hygiene and Therapy

Methodological Evaluation of District Hospitals Systems in Kenya Using Panel Data Estimation for Efficiency Gains

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Abstract

District hospitals in Kenya are pivotal health care providers, yet their operational efficiency varies widely. This research employs Stochastic Frontier Analysis (SFA) with robust standard errors, treating hospital performance as a function of inputs such as staffing levels, equipment availability, and patient volume. The dataset covers four years from to across ten districts. The SFA revealed that district hospitals in Kenya exhibit significant technical inefficiencies, with some units showing improvement rates exceeding 15% when optimised resource allocation is considered. This study underscores the need for targeted interventions aimed at enhancing resource utilization and patient care across all districts. The application of panel data estimation techniques provides a nuanced understanding of efficiency dynamics in Kenya's district health system. Policy makers should prioritise investment in infrastructure, training programmes, and standardised protocols to promote equitable service delivery. Continuous monitoring and periodic performance audits are recommended to sustain these gains. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Kenya, District Hospitals, Stochastic Frontier Analysis, Panel Data, Efficiency Measurement, Econometrics, Hierarchical Linear Modelling*

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