



Reliability Assessment of District Hospital Systems in Tanzania Using Panel Data Analysis: An Econometric Approach

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Abstract

This study aims to evaluate the reliability of district hospital systems in Tanzania by applying econometric techniques. Panel data analysis will be used to investigate the reliability of district hospitals. Econometric methods such as fixed effects models will be employed to analyse hospital performance over time in Tanzania's medical sector. The econometric model revealed a significant positive relationship between investment in healthcare infrastructure and patient recovery rates, indicating that increased investments lead to better health outcomes. The study concludes that reliable district hospitals contribute significantly to improved healthcare delivery, with specific findings supporting the need for further investment in hospital infrastructure. District health authorities should prioritise investments in modernizing infrastructure and training of medical staff to enhance system reliability. panel data analysis, fixed effects model, healthcare systems, reliability assessment, Tanzania Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, econometrics, hospital system, panel data, reliability analysis, Tanzania, validity assessment*

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