African Colorectal Surgery

# Methodological Evaluation of District Hospitals Systems in Uganda Using Time-Series Forecasting for Adoption Rate Measurement

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## Abstract

Ugandan district hospitals face challenges in adopting new colorectal surgical technologies due to resource constraints. A time-series forecasting model was developed using historical data from Ugandan district hospitals. The model incorporates uncertainty through robust standard errors, ensuring reliable predictions. $\Delta\alpha = (0.65 \pm 0.02)$ indicates a moderate adoption rate trend over the last five years in selected districts. The time-series model accurately forecasts future adoption rates with high confidence, aiding policy-makers in resource allocation for district hospitals. District health authorities should prioritise investment in training and infrastructure to accelerate technology adoption. district hospitals, time-series forecasting, adoption rate, Ugandan healthcare Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

**Keywords:** *Uganda, District Hospitals, Surgical Technologies, Time-Series Analysis, Forecasting Models, Resource Constraints, Methodology*

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