



Time-Series Forecasting Model for Evaluating Adoption Rates in Community Health Centres in Uganda: A Methodological Assessment

David Businge¹, James Ssebagala^{2,3}, Ellen Namuguta⁴

¹ Department of Surgery, Uganda National Council for Science and Technology (UNCST)

² Uganda National Council for Science and Technology (UNCST)

³ Busitema University

⁴ Department of Internal Medicine, Uganda National Council for Science and Technology (UNCST)

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Correspondence: dbusinge@outlook.com

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Author notes

David Businge is affiliated with Department of Surgery, Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.

James Ssebagala is affiliated with Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.

Ellen Namuguta is affiliated with Department of Internal Medicine, Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.

Abstract

Community health centres in Uganda face challenges related to resource allocation and patient adoption rates. A comprehensive methodological approach was employed, including data collection from existing records, application of ARIMA (AutoRegressive Integrated Moving Average) model for forecasting future trends, and sensitivity analysis to assess model robustness. The ARIMA model demonstrated a moderate R^2 value ($R^2 = 0.75$), indicating that the model explains approximately 75% of the variance in adoption rates over time. ARIMA models provide valuable insights for predicting future trends and can be utilised to inform strategic planning within community health centres, though further validation is recommended. Recommendation for policymakers includes prioritising investments in areas with lower model predictions and implementing targeted interventions based on forecasted adoption rates.

Keywords: *Sub-Saharan, health economics, econometric, forecasting, data collection, patient engagement, longitudinal analysis*

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