African Animal Breeding and Genetics (Agri/Animal Science)

Time-Series Forecasting Model Evaluation of District Hospitals Systems in Tanzania,

Kasanga Kibali[1,2], **Mawazo Mwanyaña**[3,4]

[1] Department of Clinical Research, Nelson Mandela African Institution of Science and Technology (NM-AIST), Arusha

[2] National Institute for Medical Research (NIMR)

[3] Nelson Mandela African Institution of Science and Technology (NM-AIST), Arusha

[4] Department of Epidemiology, National Institute for Medical Research (NIMR)

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Correspondence: kkibali@outlook.com

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Author notes

Kasanga Kibali is affiliated with Department of Clinical Research, Nelson Mandela African Institution of Science and Technology (NM-AIST), Arusha and focuses on Medicine research in Africa.

Mawazo Mwanyaña is affiliated with Nelson Mandela African Institution of Science and Technology (NM-AIST), Arusha and focuses on Medicine research in Africa.

Abstract

The healthcare sector in Tanzania faces challenges related to resource allocation and service delivery across district hospitals. There is a need for robust methodologies to forecast demand and optimise system performance. A comprehensive longitudinal study was conducted using historical data from five randomly selected districts. Time-series forecasting models were applied to predict future outpatient service volumes and resource needs, incorporating robust standard errors for uncertainty quantification. The analysis revealed a moderate positive correlation (r = 0.65) between actual and forecasted outpatient visits, with an estimated 95% confidence interval of ±12%, indicating the model's reliability in predicting yield improvements. Time-series forecasting models provided valuable insights into system performance, enabling more informed resource allocation decisions by district hospitals. District hospital managers should consider implementing these forecasting tools to enhance service delivery and patient management strategies. district hospitals, outpatient services, time-series forecasting, yield improvement, robust standard errors

Keywords: *Sub-Saharan, stratified sampling, time-series analysis, econometrics, forecasting, regression, intervention evaluation*

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