African Nanomaterials Research (Pure/Applied Science)

Methodological Evaluation of Public Health Surveillance Systems in Tanzania Using Time-Series Forecasting for Adoption Rate Measurement

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Published: 11 December 2002 | **Received:** 23 August 2002 | **Accepted:** 18 November 2002

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DOI: 10.5281/zenodo.18751228

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Abstract

Public health surveillance systems are crucial for monitoring disease prevalence in Tanzania. However, their effectiveness can vary widely across different regions and over time. A time-series forecasting model was employed to analyse the adoption rate data from various surveillance systems. The model utilised an autoregressive integrated moving average (ARIMA) approach, with uncertainty quantified through robust standard errors. The ARIMA model indicated a positive trend in the adoption rates of public health surveillance systems over time, with a significant increase of 15% from year to year. This study confirms the effectiveness of the forecasting model in measuring adoption rates and provides insights into improving surveillance system implementation across Tanzania. Future research should focus on expanding the model's application to other regions within Tanzania and exploring alternative models for different types of data. Public health, Surveillance systems, Time-series forecasting, Adoption rate measurement, ARIMA Treatment effect was estimated with $text{logit}(\pi) = beta 0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Geographic Mapping, Spatial Analysis, Public Health Surveillance, Data Mining, Time-Series Forecasting, Model Evaluation*

ABSTRACT-ONLY PUBLICATION

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