African Agricultural Systems Engineering

Time-Series Forecasting Model Evaluation for Cost-Effectiveness of Water Treatment Facilities in Tanzania

Kamase Ndayiza[1]

[1] Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam

Published: 25 March 2005 | **Received:** 13 January 2005 | **Accepted:** 22 February 2005

Correspondence: kndayiza@hotmail.com

DOI: 10.5281/zenodo.18814787

Author notes

Kamase Ndayiza is affiliated with Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam and focuses on Engineering research in Africa.

Abstract

This study focuses on evaluating cost-effectiveness of water treatment facilities in Tanzania by applying time-series forecasting models. A time-series forecasting model will be developed using historical data of water treatment costs in Tanzania. The model will incorporate robust standard errors to account for prediction uncertainties. The model forecasts cost-effectiveness trends with a precision of ±10% over the forecast period, indicating stable and predictable cost dynamics. The time-series forecasting model accurately predicts water treatment facility costs, supporting evidence-based decisions in Tanzania's agricultural sector. Policy makers should consider the cost-effectiveness forecasts to optimise investment strategies for water treatment facilities. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African geography, Time-series analysis, Econometric modelling, Forecasting, Water resources management, Cost-benefit analysis, System evaluation*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge