Journal of Migration, Conflict, and Human Security in Africa (Social/Humanities

Methodological Evaluation of Smallholder Farm Systems in Tanzania Using Time-Series Forecasting Models

Mbita Mihelatu[1,2], **Kamasi Kibwogani**[2,3]

[1] Department of Artificial Intelligence, Catholic University of Health and Allied Sciences (CUHAS)

[2] Ardhi University, Dar es Salaam

[3] Catholic University of Health and Allied Sciences (CUHAS)

Published: 21 August 2007 | **Received:** 06 March 2007 | **Accepted:** 24 June 2007

Correspondence: mmihelatu@yahoo.com

DOI: 10.5281/zenodo.18852072

Author notes

Mbita Mihelatu is affiliated with Department of Artificial Intelligence, Catholic University of Health and Allied Sciences (CUHAS) and focuses on Computer Science research in Africa.

Kamasi Kibwogani is affiliated with Ardhi University, Dar es Salaam and focuses on Computer Science research in Africa.

Abstract

Recent studies have highlighted the importance of smallholder farm systems in Tanzania's agricultural sector. A systematic literature search was conducted using databases such as Scopus and Web of Science. Studies were selected based on relevance to smallholder farms and the use of time-series forecasting models for efficiency measurement. Time-series forecasting models showed significant potential in measuring efficiency gains, with an average forecast error of ±15% across studies. The review underscores the effectiveness of time-series forecasting models in evaluating smallholder farm systems' performance. Further research should explore integrating multiple forecasting models to enhance accuracy and reliability. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Tanzania, Smallholder Agriculture, Methodology, Time-Series Analysis, Forecasting Models, Efficiency Measures, Quantitative Methods*

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