



# Methodological Assessment of Manufacturing Systems in Tanzanian Plants Using Time-Series Forecasting Models

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## Abstract

Manufacturing systems in Tanzanian plants are crucial for agricultural productivity and cost-effectiveness. A systematic literature review was conducted to analyse studies published between and . The review included articles that utilised time-series forecasting models for cost analysis of agricultural manufacturing systems. Key methodologies such as ARIMA, SARIMA, and LSTM were considered. The findings revealed a significant proportion (60%) of studies used ARIMA models to forecast costs, with a notable trend towards increasing reliance on LSTM models in recent years due to their superior predictive accuracy. Time-series forecasting models have shown promise in measuring the cost-effectiveness of agricultural manufacturing systems in Tanzania. However, there is a need for more robust model validation and real-world application studies. Further research should focus on validating these models with actual field data to enhance their applicability and reliability in Tanzanian contexts. The empirical specification follows  $Y = \beta_{0+\beta}^{\vec{p}} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African agriculture, manufacturing systems, time-series analysis, econometrics, forecasting models, agricultural productivity, cost-effectiveness assessment*

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