

## **ABSTRACT**

# **COMPARISON OF ARIMA AND PROPHET METHODS IN PREDICTION OF THE PRICE OF CAYENNE PEPPER IN EAST JAVA PROVINCE**

By

Haidar Fadhila Fiqa 20110022

*The price of cayenne pepper is a seasonal horticultural commodity, so its availability is not consistent throughout the year, causing its price to fluctuate. Fluctuations, instability, and uncertainty in the price of cayenne pepper in the future cause losses for society, especially people who are classified as poor. Therefore, it is necessary to carry out predictive modeling using appropriate methods based on past data. Autoregressive Integrated Moving Average (ARIMA) and Prophet are time series-based prediction methods. The purpose of this study is to compare ARIMA and Prophet to get the optimal model in predicting the price of cayenne pepper in East Java Province for the next three months. ARIMA is effective in modeling trends and seasonal patterns in stable historical data and is good at short-term prediction. Meanwhile, Prophet can predict well for data with or without seasonal effects and is resistant to outliers, missing values, and is good at dealing with trend changes automatically. The results show that ARIMA (7, 1, 7) is better than Prophet with an RMSE value of 18723.92 and MAPE of 19.48%. The prediction results show a periodic decrease in the price of cayenne pepper from May to July 2024. ARIMA results that are better than Prophet can be caused by the data not having outlier values, so the advantages of Prophet in handling outlier data are not relevant. In addition, ARIMA allows for more specific model customization through the selection of parameters (p, d, q) that are optimal for the observed data.*

**Keywords:** *cayenne pepper, East Java, prediction, ARIMA, Prophet*