ABSTRACT

Forecasting rice prices plays a crucial role in maintaining economic stability and food security in Indonesia, as rice is the country's primary food commodity. This research aims to compare the Holt Winters Exponential Smoothing and Fuzzy Time Series Cheng methods in forecasting the average monthly price of premium rice at the milling level. The study uses secondary time series data sourced from Statistics Indonesia (BPS), covering the period from January 2018 to April 2025. The dataset is divided into training data (January 2018–December 2024) and testing data (January 2025–April 2025). Both methods were implemented through a Python-based Graphical User Interface (GUI), allowing users to input data, run the forecasting process, and view visualization results more easily. Forecast accuracy was assessed using the Symmetric Mean Absolute Percentage Error (sMAPE), which measures the relative error of predictions. The results indicate that the Fuzzy Time Series Cheng method achieved higher accuracy than Holt Winters Exponential Smoothing, with a sMAPE of 1,62% compared to 2,28%. This suggests that the Fuzzy Time Series Cheng method is more effective in capturing the fluctuating patterns of rice price data. The findings are expected to support decision-making in food price control and the development of more targeted distribution policies.

Keywords: forecasting; time series; Holt Winters; Fuzzy Time Series Cheng; premium rice price