ABSTRACT

The price of meat in Central Java experiences significant fluctuations, especially during certain periods such as holidays and other important events. This price instability can impact consumers, traders, and regional economic policies. Therefore, an accurate forecasting method is needed to help various stakeholders anticipate price Chenges. This study applies the Fuzzy Time Series (FTS) method using the Chen, Lee, and Tsaur models to forecast beef prices in Central Java. The research method consists of several stages, including collecting beef price data from the Commodity Price and Production Information System (SiHaTi), dividing the data into training and testing sets, constructing fuzzy intervals, fuzzifying data, establishing Fuzzy Logical Relationships, and implementing each forecasting model. The Chen and Lee models are used to develop forecasting patterns based on fuzzy relationships, while the Tsaur model enhances this approach by applying a Markov chain to improve prediction accuracy. The study results show that the Fuzzy Time Series model can effectively capture price fluctuation patterns. Based on the symmetric Mean Absolute Percentage Error (sMAPE) calculation, the testing data results show that the Chen model has an sMAPE of 1.045%, the Lee model 0.819%, and the Tsaur model 1.192%. Based on the sMAPE values of the three models, it can be concluded that all FTS models perform well in forecasting beef price data. However, the Lee model provides the highest accuracy compared to the Chen and Tsaur models. Therefore, the next forecasting value obtained using the Lee model is Rp. 134,074.64.

Keywords: Fuzzy Time Series, Forecasting, Meat Price, Chen model, Lee model, Tsaur model, Markov chain.