

ABSTRACT

Cash outflow is an important component in maintaining the stability of the payment system and liquidity control at Bank Indonesia. The pattern of cash outflow data, which tends to exhibit trend and seasonal components, requires forecasting methods capable of accurately modeling these characteristics. The Fuzzy Time Series (FTS) Saxena Easo method was selected because it can handle uncertainty and fluctuations in time series data through a fuzzy set approach and utilizes percentage changes in forming fuzzy logical relationships, making it more adaptive to changes in data patterns. Meanwhile, the additive Holt Winters method was chosen because it is effective for time series data that contain trend and seasonal components with relatively constant seasonal patterns. This study aims to compare the performance of the FTS Saxena Easo and additive Holt Winters methods in forecasting cash outflow and to determine the method with the best level of accuracy. The data used are monthly time series data from January 2018 to July 2025 consisting of 91 observations, which were divided into training data of 90% (82 observations) and testing data of 10% (9 observations). The research stages include identifying data patterns, applying each method to the training data, and evaluating the forecasting results using the Mean Absolute Percentage Error (MAPE) criterion on the testing data. The results show that the additive Holt Winters method produces a MAPE value of 1.05467%, while the FTS Saxena Easo method produces a MAPE value of 4.45832%. These results indicate that the additive Holt Winters method has a lower error rate and better capability in modeling trend and seasonal patterns in cash outflow data; therefore, it is more recommended for forecasting cash outflow in the study period.

Kata Kunci: Cash outflow; Fuzzy Time Series Saxena Easo; additive Holt Winters; MAPE; forecasting