

ABSTRACT

Stocks are investment instruments with a high level of volatility, requiring appropriate analytical methods to forecast their prices. One of the blue-chip stocks listed on the Indonesia Stock Exchange, PT Telkom Indonesia Tbk (TLKM), exhibits fluctuating price movements influenced by various market factors, resulting in a high level of uncertainty and the need for a forecasting method capable of handling nonlinear and uncertain data. Therefore, this study applies the Chen Fuzzy Time Series method to forecast TLKM stock closing prices and determine the best model based on the Mean Absolute Percentage Error (MAPE) value. The data used consist of the daily closing prices of PT Telkom Indonesia Tbk stocks from January 2, 2025 to December 22, 2025, divided into 90% training data and 10% testing data. The training data were used to build the model and determine the best model based on the MAPE value, while the testing data were used to evaluate the performance of the selected model. The Chen Fuzzy Time Series method was implemented using first, second, third-order variations. The results show that the method is effective for forecasting TLKM stock closing prices, with MAPE values on the training data of 2.47% for the first order, 2.20% for the second order, and 1.93% for the third order, making the third-order model the best-performing model. Furthermore, testing using the third-order model produced a MAPE value of 1.76%, which is categorized as very good because it is below 10%, indicating that the third-order Chen Fuzzy Time Series method provides high forecasting accuracy for the closing prices of PT Telkom Indonesia Tbk stocks.

Keywords: Stock, Chen Fuzzy Time Series, Forecasting, Closing Price, TLKM, MAPE.