ABSTRACT

Investment refers to the activity of allocating capital with the objective of optimizing returns or generating profit. Stock investment offers the potential for high returns, but it also entails substantial risk due to price volatility. Stock price index indices serve as indicators to monitor stock price movements within the capital market. The LQ45 stock price index comprises 45 selected stocks characterized by high liquidity, large market capitalization, and solid corporate performance. One approach to mitigating investment risk is to analyze price movement patterns through time series modeling. This study aims to compare two time series forecasting methods, Autoregressive Integrated Moving Average (ARIMA) and Fuzzy Time Series (FTS) Markov Chain, in predicting the closing prices of the LQ45 stock price index. The selection of the optimal model is based on predictive accuracy, as measured by the lowest Root Mean Squared Error (RMSE). The data utilized in this research consists of the daily closing prices of the LQ45 stock price index from June 2, 2022, to January 15, 2024, totaling 400 observations for training and from January 16 to June 28, 2024, totaling 100 observations for testing. The results of the study indicate that the best forecasting model is the FTS Markov Chain, as it yields a lower RMSE value compared to the best ARIMA model (1,1,0). Furthermore, based on the Mean Absolute Percentage Error (MAPE) of 0.5621% on the testing data, and since this value is below 10%, the FTS Markov Chain demonstrates a highly accurate forecasting capability.

Keywords: Investing, Stock Index, Forecasting, ARIMA, Fuzzy Time Series, Markov Chain, Model Accuracy.