

ABSTRACT

The movement of a country's currency exchange rate always moves, fluctuating and erratically. Many researchers have tried to predict currency exchange rate movements to be able to make informed decisions. Artificial Neural Network (ANN) and Long Short-Term Memory (LSTM) prediction methods are some of the methods that can be used in prediction problems. Artificial Neural Network (ANN) is an artificial model based on the human brain that tries to mimic the learning process of the human brain. Long Short-Term Memory (LSTM) is a derivative of the Recurrent Neural Network (RNN) algorithm that can study long-term dependencies.

In this study the steps used begin by collecting the data to be used. Next, do data transformation and pre-process data with data mining. After the data is sorted, data analysis is conducted using two predetermined methods. Furthermore, the results of both methods are compared to get the best results. The accuracy rate of the prediction is measured using MAPE (Mean Absolute Percentage Error) and RMSE value (Root Mean Squared Error). This testing process uses time-series data of each type of currency data that you want to predict over a period of 25 years, namely from January 1, 1996, to December 31, 2021. The test was conducted on six types of foreign currency against rupiah namely USD/IDR, JPY/IDR, GBP/IDR, EUR/IDR, CHF/IDR, and CAD/IDR.

The results showed that the method that has better performance in predicting exchange rates is LSTM. This is indicated by the results of the accuracy values measured using the MSE, RMSE, and MAPE values of each model in the method used. The results obtained from data processing using LSTM are closer to zero, while ANN is still far from zero. Therefore, it can be concluded that the Long Short-Term Memory (LSTM) method is better than the Artificial Neural Network (ANN) in predicting foreign exchange rate movements (USD, JPY, EUR, GBP, CHF, CAD) to Rupiah (IDR).

Keywords: *Artificial Neural Network, exchange rates, forecasting, Long Short-Term Memory.*