

ABSTRAK

Penelitian ini menggunakan data nilai tukar Rupiah terhadap *USD* dan *JPY*. Data yang digunakan merupakan data nilai tukar harian dari Oktober 2014 hingga Oktober 2022. Data tersebut telah diolah dengan melakukan normalisasi, feature sliding window, serta dilatih dan diuji menggunakan arsitektur LSTM dengan kombinasi *hyperparameter*. Penelitian ini berhasil menunjukkan bahwa penambahan *hidden layer* pada model *LSTM* dapat secara signifikan mengurangi nilai *RMSE* dan *MAPE*, sehingga meningkatkan performa keseluruhan model. Selain itu, hasil eksperimen menunjukkan bahwa algoritma optimizer *Adam* memiliki performa training yang lebih unggul dibandingkan *SGD*. Khususnya, dalam peramalan nilai tukar IDR/USD, penggunaan kombinasi *stacked layer* dan *optimizer Adam* berhasil mengurangi *MAPE* sebesar 6,217%, sementara untuk nilai tukar JPY/IDR, pengurangan *MAPE* mencapai 6,811%. Temuan ini menegaskan bahwa arsitektur yang digunakan memiliki potensi untuk diimplementasikan dalam model peramalan data time series.

Kata Kunci: LSTM, prediksi, deret waktu

ABSTRACT

This research utilized the exchange rate data of Rupiah against USD and JPY. The data consisted of daily exchange rates spanning from October 2014 to October 2022. Preprocessing steps included normalization and feature sliding window, followed by training and testing the data using the LSTM architecture with various hyperparameter combinations. This study successfully demonstrated that adding hidden layers to the LSTM model significantly reduces the values of RMSE and MAPE, thereby enhancing the overall performance of the model. Additionally, experimental results revealed that the Adam optimizer outperforms SGD in terms of training performance. Specifically, in forecasting the IDR/USD exchange rate, the combination of stacked layers and the Adam optimizer led to a 6,217% reduction in MAPE, while for the JPY/IDR exchange rate, the reduction in MAPE reached 6,811%. These findings affirm that the employed architecture holds potential for implementation in time series data forecasting models.

Keywords: *LSTM, forecasting, timeseries*