Abstract

Gross Domestic Product (GDP) is an indicator that becomes a benchmark for a country's economic performance. One of the factors that significantly affect GDP is export activity. However, the problem that occurs is that the export value is relatively fluctuating, this is because commodity prices are always changing every time. Therefore, we need a system that can predict commodity prices accurately. The research contributions are to compare performance of several methods in commodity forecasting and build a system using artificial intelligence approach based on compared methods that has ability to forecast export commodities prices. In this study performance of several methods such as Decision Tree, Random Forest, and Long Short-Term Memory (LSTM) are compared to determine the best method in forecasting several export commodities in Indonesia. The commodities that were forecasted are the main commodities from each sector that dominates exports in Indonesia, namely palm oil from the manufacturing sector, coffee from the agricultural sector, and coal from the mining sector. The experiments in this study were conducted by testing several hyperparameters to determine the best model. To evaluate models, Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), and Mean Absolute Percentage Error (MAPE) are used. The results show that LSTM has the lowest error among other methods with MAPE of 0.121, 0.494, and 0.282 in forecasting coal, coffee, and palm oil price respectively. Therefore, LSTM has proven to be the best method among Random Forest and Decision Tree in forecasting export commodity prices in Indonesia.