

ABSTRACT

The mining and metal trading industry plays a significant role in the global economy. Tin, as one of the basic mineral commodities, is widely used in various sectors. A deep understanding of market behavior and predicting global tin prices is crucial in preparing for and mitigating risks for companies. This research aims to find the best optimization model and method and to determine the influence of applying momentum and bias correction in predicting tin prices. The dataset used in this research is the daily closing price of tin from 1 January 2019 to 31 December 2023. The prediction results from two optimization methods, Root Mean Square Propagation (RMSProp) and Adaptive Moment Estimation (Adam), were then compared to determine the best and most optimal model. The results showed that the model with the Adam optimization method at a batch size of 64, epoch 100, learning rate of 0,01, and 64 hidden units produced the best model with a MAPE value of 1,29%. The final results also showed that the combined application of momentum and bias correction in the Adam optimization method had an impact on the stability of the tin price prediction model.

Keywords: Tins, Forecasts, Gated Recurrent Unit, RMSProp, Adam