ABSTRACT

World gold prices are one of the key indicators in the global economy as they function as a safe haven asset and an investment instrument. The high volatility of gold prices leads to uncertainty in price movements, thus requiring accurate forecasting methods to support decision making by investors and economic actors. This study aims to compare the performance of Gated Recurrent Unit (GRU), Multi-Layer Perceptron (MLP), and a hybrid GRU-MLP model in forecasting world gold prices, as well as to determine the best metod based on forecasting error rates. The data used consist of daily world gold prices, which are transformed into a supervised learning format using a sliding window technique with a window size of 30 days to capture short term price movement patterns. The data are then divided into training, validation, and testing sets and normalized using the Min-Max Scaling method. Model performance is evaluated using Mean Absolute Percentage Error (MAPE) on the test data. The results show that the GRU model achieves a MAPE value of 2.58%, the MLP model 1.04%, and the hybrid GRU-MLP model 2.75%. The MLP model has the lowest error rate and is therefore identified as the best performing method in this study, demonstrating the highest accuracy in forecasting world gold prices.

Keywords: Deep Learning, Forecasting, GRU, Hybrid GRU–MLP, MAPE, MLP, World Gold Price