ABSTRACT

The capital market in Indonesia, particularly stock investments, has seen significant growth, with the number of investors rising from 5.02 million in 2023 to 5.90 million in 2024. Islamic stocks who introduced in 2011 attract investors due to their adherence to Islamic principles, avoiding riba and gambling. Islamic stock investments can carry risks, especially due to price fluctuations, making effective analysis essential. Recurrent Neural Network (RNN) are suitable for sequential data but face issues like vanishing and exploding gradients. Long Short Term Memory (LSTM) can address these issues by having three gates, including the forget gate, input gate, and output gate, while Gated Recurrent Unit (GRU) has a simpler model with two gates, the reset gate and the update gate, making GRU more efficient. The LSTM and GRU models are optimized using the AdaMax algorithm, which can enhance performance and model stability This study compares LSTM and GRU models for predicting the stock price of PT. Bank Syariah Indonesia (BSI) using an 80%-20% training-testing data split. GRU with AdaMax optimization outperformed LSTM, with a lower MAPE of 1,82% compared to LSTM's MAPE of 1,87%. The GRU model predicts a stable market trend for the next 5 days, highlighting the need for additional technical indicators for short-term investors, but showing positive fundamental growth potential for long-term investors.

Keywords: Islamic stocks, PT. Bank Syariah Indonesia, Long Short Term Memory, Gated Recurrent Unit, AdaMax, Recurrent Neural Network