

ABSTRAK

Penelitian ini dilatarbelakangi oleh tantangan dalam memprediksi pergerakan harga saham sektor keuangan syariah yang memiliki karakteristik dan volatilitas yang berbeda dengan saham konvensional. Ketidakpastian dan fluktuasi harga saham syariah membutuhkan metode prediksi yang akurat untuk membantu investor dalam pengambilan keputusan. Penelitian ini membandingkan kinerja algoritma Long Short-Term Memory (LSTM) dan Recurrent Neural Network (RNN) dalam memprediksi harga saham pada sektor keuangan syariah. Dataset yang digunakan berasal dari dua bank syariah di Indonesia selama periode 2022 hingga pertengahan 2024, dengan fitur-fitur seperti Open, High, Low, Close, Adjusted Close, dan Volume. Metode CRISP-DM digunakan dalam pemrosesan data, dan pengujian dilakukan dengan pembagian data 60:40 70:30 dan 80:20 serta variasi epoch (30, 50, 80). Hasil menunjukkan bahwa RNN memiliki performa lebih baik dibandingkan LSTM, dengan akurasi tertinggi 58% untuk RNN dan 53% untuk LSTM. Dalam hal Mean Squared Error (MSE) dan Root Mean Squared Error (RMSE), model LSTM mencatat MSE sebesar 0.5744, sementara RNN menunjukkan nilai MSE yang lebih tinggi. Evaluasi juga menggunakan precision, recall, dan F1-score. Kesimpulannya, RNN lebih unggul dalam prediksi harga saham di sektor keuangan syariah.

Kata Kunci : Perbandingan algoritma, Saham, LSTM, RNN, Prediksi.

ABSTRACT

This research is motivated by the challenges of predicting stock price movements in the Islamic financial sector, which exhibit characteristics and volatility distinct from conventional stocks. The uncertainty and fluctuations of Islamic stock prices require accurate prediction methods to assist investors in decision-making. This study compares the performance of the Long Short-Term Memory (LSTM) and Recurrent Neural Network (RNN) algorithms in predicting stock prices in the Islamic financial sector. The dataset used consists of data from two Islamic banks in Indonesia during the period from 2022 to mid-2024, featuring attributes such as Open, High, Low, Close, Adjusted Close, and Volume. The CRISP-DM methodology was employed for data processing, and testing was conducted with data splits of 60:40, 70:30, and 80:20, along with epoch variations (30, 50, 80). The results indicate that RNN outperformed LSTM, achieving the highest accuracy of 58% for RNN and 53% for LSTM. In terms of Mean Squared Error (MSE) and Root Mean Squared Error (RMSE), the LSTM model recorded an MSE of 0.5744, while RNN showed higher MSE values. The evaluation also utilized precision, recall, and F1-score metrics. In conclusion, RNN demonstrated superior performance in predicting stock prices in the Islamic financial sector.

Keywords: Algorithm comparison, Stocks, LSTM, RNN, Prediction.