

INTISARI

Pertumbuhan jumlah investor saham di Indonesia yang menembus angka 4 juta pada pertengahan 2022 merupakan tanda bahwa masyarakat Indonesia semakin sadar pentingnya berinvestasi terutama pada pasar modal. Di Indonesia, Indeks Harga Saham Gabungan (IHSG) merupakan salah satu yang sering menjadi acuan investor pada perdagangan pasar modal. Namun, pergerakan harga saham sangat dinamis sehingga dapat menimbulkan kerugian sehingga investor harus berhati-hati dalam mengambil keputusan. Salah satu teknik yang dapat digunakan dalam memprediksi pergerakan harga saham yaitu menggunakan *machine learning*.

Penelitian ini mencoba untuk menganalisa tingkat keakuratan prediksi close price IHSG menggunakan metode *machine learning*, yaitu *Nonlinear Auto-Regressive Exogenous Model (NARX) Neural Network* dan *Long Short-Term Memory (LSTM)*. Penelitian ini diawali dengan *pre-processing data* IHSG, lalu menyusun model prediksi menggunakan metode NARX *Neural Network* dan metode LSTM lalu kemudian dilakukan *step-ahead prediction*.

Hasil penelitian menunjukkan bahwa metode *NARX neural network* akurat dalam memprediksi *close price* IHSG aktual dengan nilai tingkat keakuratan *mean square error* (MSE) sebesar 2.510,7. Metode LSTM juga akurat dalam memprediksi *close price* IHSG aktual dengan tingkat keakuratan MSE sebesar 5.482,798. Berdasarkan perbandingan nilai MSE, metode NARX *neural network* memiliki tingkat keakuratan yang lebih tinggi untuk memprediksi *close price* IHSG dibandingkan dengan metode LSTM.

Kata Kunci: Indeks Harga Saham Gabungan, prediksi, NARX *neural network*, LSTM

ABSTRACT

The growth in the number of stock investors in Indonesia, which exceeded 4 million in mid-2022, is a sign that the Indonesian people are increasingly aware of the importance of investing, especially in the capital market. In Indonesia, the Composite Stock Price Index (IHSG) is one that is often used as a reference for investors in the capital trading market. However, stock price movements are very dynamic so that they can cause losses, so investors must be careful in making decisions. Machine learning is one technique that can be used to predict stock price movements.

This study attempts to analyze the accuracy of IHSG close price predictions using machine learning methods, namely the Nonlinear Auto-Regressive Exogenous Model (NARX) Neural Network and Long Short-Term Memory (LSTM). This research begins with pre-processing IHSG data, then constructs a prediction model using the NARX Neural Network method and the LSTM method and then performs step-ahead predictions.

The results showed that the NARX neural network method was accurate in predicting the actual close price of the IHSG with an accuracy rate of 2,510.7 for the mean square error (MSE). The LSTM method is also accurate in predicting the actual ISHG close price with an MSE accuracy level of 5,482,798. Based on the MSE comparison value, the NARX neural network method has a higher level of accuracy for predicting the ISHG closing price compared to the LSTM method.

Keywords: *IHSG, prediction, NARX neural network, LSTM*