

ABSTRACT

This study conducts a comparative forecasting analysis of stock prices for five blue-chip companies listed on the Indonesia Stock Exchange (IDX): BBKA.JK, BBRI.JK, TLKM.JK, ASII.JK, and UNVR.JK. Using historical daily closing price data from January 2004 to April 2025, the dataset is divided into 80% training, 10% validation, and 10% testing sets. The study implements three predictive models: Autoregressive Integrated Moving Average (ARIMA), Artificial Neural Network (ANN), and Long Short-Term Memory (LSTM), each evaluated using Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), and Mean Absolute Percentage Error (MAPE). Forecasting is further extended for the period of May to August 2025. Results show that LSTM consistently outperforms ARIMA and ANN in all evaluation metrics across all five stocks, demonstrating its superiority in capturing nonlinear patterns and long-term dependencies. ANN delivers stable performance for moderately volatile stocks, while ARIMA remains relevant for linear and stationary data. These findings suggest that deep learning models, particularly LSTM, are more suitable for financial forecasting in emerging and volatile markets such as Indonesia.

Keywords: ARIMA, Artificial Neural Network, Short-Term Memory, Stock Price Prediction, Blue-Chip, Indonesia Stock Exchange, Machine Learning, Deep Learning