ABSTRACT

The Composite Stock Price Index (IHSG) is a key indicator that reflects the performance of the Indonesian capital market. The movement of the IHSG is highly fluctuative and influenced by various economic factors, making the forecasting process a challenging task. Classical time series models such as ARIMA are effective in capturing linear patterns, but they often fail to accommodate the non-linear characteristics that commonly appear in financial data. Therefore, a hybrid approach that combines ARIMA and Long Short-Term Memory (LSTM) is employed in this study to improve forecasting accuracy. This research uses historical IHSG data from September 1, 2022 to August 29, 2025, consisting of 715 daily observations, which adequately represent the dynamics of the Indonesian capital market. The forecasting process is conducted in two stages: modeling the linear component using ARIMA and modeling the non-linear component of the ARIMA residuals using LSTM. Diagnostic test results indicate that several ARIMA models do not fully satisfy the assumptions related to residual autocorrelation and heteroskedasticity, so the remaining non-linear patterns are further captured by LSTM. Model performance is evaluated using the Mean Absolute Percentage Error (MAPE), and the results show that the hybrid ARIMA(1,1,1)–LSTM model produces the best performance with a MAPE value of 1.0886%. The small error value indicates that the model is able to represent the IHSG movement accurately. The ten-day-ahead forecasts show a gradual downward trend in the IHSG, declining from 7,883.25 at the beginning of the forecast period to 7,828.42 at the end, without extreme fluctuations. These findings indicate that combining ARIMA and LSTM improves forecasting quality compared to using a single model in capturing both linear and non-linear patterns in IHSG data.

Keywords: IHSG, Forecasting, ARIMA, LSTM, Hybrid Model, Time Series