

# **PREDICTIVE MODELING OF COMPOSITE STOCK PRICE INDEX MOVEMENTS BASED ON MARKET SENTIMENT FROM NEWS HEADLINES USING FINBERT-LSTM**

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## **ABSTRACT**

The highly dynamic stock market is susceptible to fluctuations driven by external factors, such as market sentiment and financial news, so it is necessary to improve the accuracy of stock price predictions. This study aims to analyze the effect of integrating news sentiment analysis on the performance of prediction models compared to using historical data alone by building and comparing two models: FinBERT-LSTM, which incorporates sentiment features, and LSTM, which uses only historical price data. The research process includes translating Indonesian news texts into English, fine-tuning FinBERT for sentiment feature extraction, data normalization using Min-Max Scaling, forming a sequential dataset with a time window of three to fourteen days, and building a 128-unit layered LSTM model with Dropout and two Dense layers. Evaluation is carried out using MSE, RMSE, MAE, MAPE, and prediction accuracy metrics. The results indicated that the FinBERT-LSTM model with a five-day time window performed best, with an MSE of 13,800, an RMSE of 117.44, an MAE of 89.03, a MAPE of 1.26%, and an accuracy of 79.60%. The LSTM model achieved only 72.28% accuracy. Thus, integrating financial news sentiment has been shown to improve the accuracy of stock price predictions.

**Keywords:** FinBERT, LSTM, Stock Price Prediction, Sentiment Analysis, Time Series Modeling.