

## ABSTRACT

This research addresses the excess volatility in the stock market that is often attributed to sentiment. It is recognized that there are potential benefits of leveraging sentiment for stock market price prediction. This study aims to help investors in make informed transactional decisions and mitigate financial risks. Unlike traditional economic predictions that predominantly rely on objective indicators like market conditions, oil prices, and GDP, this study embraces sentiment-measures derived from textual data, emphasizing their potential to capture more immediate and less biased sentiments from news media. Leveraging the Global Dataset on Events, Locations, and Tone (GDELT) dataset, our study overcomes this hurdle using a structured repository of news events.

Classical statistical and computational intelligence (CI) approaches are employed for stock price predictions, with CI approaches demonstrating superiority. Despite commendable MAPE scores achieved by LSTM models in previous studies (1.5% to 5%), the intricate nature of stock price indices demands further refinement. This research introduces the Stacked Bidirectional Unidirectional Long Short-Term Memory (SBU-LSTM) model, aiming to enhance predictions by capturing complex patterns and dependencies through bidirectional LSTM (BDLSTM) and LSTM layers stacked as a neural network.

The SBU-LSTM model achieves an average MAPE of 0.81% with 48.01 training time. This result outperform ARIMA, RNN, LSTM, BDLSTM, CNN, GRU on model comparison and also other research on Indonesian stock index price prediction, highlights its efficacy of accurate stock price prediction. The study explores the relationship between sentiment variables and stock market dynamics, model configuration optimization, error analysis, and investment strategies, contributing to a comprehensive understanding and refinement of stock price predictions research. In navigating these complexities, the research provides a valuable contribution to the evolving landscape of sentiment-driven stock market predictions.

**Keywords:** Stock Prediction, SBULSTM, LSTM, GDELT, News Sentiment