

ABSTRAK

Perkembangan media sosial X (Twitter) menjadikannya sumber opini publik *real-time*, seperti pada kasus "oplosan Pertamina". Analisis sentimen ini penting bagi PT Pertamina untuk evaluasi strategi komunikasi. Namun, volume data yang besar dan bahasa informal di media sosial menjadi tantangan untuk pengolahan manual. Penelitian ini mengimplementasikan metode *Long Short-Term Memory* (LSTM) untuk mengklasifikasikan tanggapan di platform X terkait kasus tersebut menjadi sentimen positif dan negatif. Data dikumpulkan dan melalui tahap *preprocessing* seperti *cleaning*, *case folding*, *tokenizing*, *normalization*, penghapusan *stopword*, dan *stemming*. Fitur diekstraksi menggunakan *TF-IDF*. Data dibagi dengan rasio 70:30 (*training* dan *testing*) menggunakan *stratified sampling* mengingat ketidakseimbangan kelas (13,2% positif, 86,8% negatif). Model LSTM dibangun dengan dua lapisan, *regularization L2*, *dropout*, dan *batch normalization* untuk mencegah *overfitting*. Evaluasi menggunakan metrik *accuracy*, *precision*, *recall*, dan **F1-score**. Hasil menunjukkan model LSTM berkinerja baik dengan akurasi 94,10%, *precision* positif 81,30%, *recall* positif 71,94%, dan **F1-score** positif 76,34%. Temuan mengindikasikan LSTM efektif menangani data teks sekuensial dan kontekstual media sosial, sehingga dapat menjadi alat handal untuk pemetaan persepsi publik secara otomatis. Implikasi penelitian menyediakan peta sentimen akurat bagi PT Pertamina dan landasan empiris untuk pengembangan sistem analisis sentimen serupa di Indonesia.

Kata kunci: Analisis Sentimen, *Long Short-Term Memory* (LSTM), Media Sosial X, Oplosan Pertamina, *Natural Language Processing*, *TF-IDF*, *Deep Learning*.

ABSTRACT

*The development of social media X (Twitter) has become a real-time source of public opinion, as in the case of "Pertamax adulteration". This sentiment analysis is important for PT Pertamina to evaluate communication strategies. However, the large volume of data and informal language on social media pose challenges for manual processing. This study implements the Long Short-Term Memory (LSTM) method to classify responses on platform X regarding the case into positive and negative sentiments. Data were collected and went through preprocessing stages such as cleaning, case-folding, tokenizing, normalization, stopword removal, and stemming. Features were extracted using TF-IDF. The data were split with a 70:30 ratio (training and testing) using stratified sampling considering the class information (13.2% positive, 86.8% negative). The LSTM model was built with two layers, L2 regularization, dropout, and batch normalization to prevent overfitting. Evaluation used accuracy, precision, recall, and *F1-score* metrics. The results show that the LSTM model performed well with an accuracy of 94.10%, a positive precision of 81.30%, a positive recall of 71.94%, and a positive F1-score of 76.34%. The findings indicate that LSTM effectively handles sequential and contextual social media text data, making it a reliable tool for automatically mapping public perception. The implications of this research provide an accurate sentiment map for PT Pertamina and an empirical basis for the development of a similar sentiment analysis system in Indonesia.*

Keywords: Sentiment Analysis, Long Short-Term Memory (LSTM), Social Media X, Pertamax Mixing Case, Natural Language Processing, TF-IDF, Deep Learning.