ABSTRACT

Digital transformation in education has encouraged the use of applications such as Sekolah.mu, which provides learning services for students, educators, university students, and the general public. User reviews of the Sekolah.mu application have now reached hundreds of thousands on the Google Play Store, and this feedback serves as an important source of information regarding users' perceptions of the application's services, content, and stability. The large volume and diversity of reviews make manual evaluation inefficient. Based on this, the present study aims to analyze user sentiment and identify dominant topics within the reviews using a combination of sentiment analysis and topic modeling approaches. This research adopts the Knowledge Discovery in Database (KDD) framework to extract insights from review data. In the analysis process, the Long Short-Term Memory (LSTM) algorithm is used to identify both positive and negative sentiments, while the Non-Negative Matrix Factorization (NMF) algorithm is applied to uncover underlying themes within the reviews. LSTM was selected for its reliability in capturing long-term memory dependencies, while NMF was utilized to cluster keywords into specific topics. The results indicate that the LSTM algorithm achieved an accuracy of 90.18%, along with consistent precision and recall for both sentiment categories. Meanwhile, the NMF model identified six relevant topics, with topics 0, 1, 3, and 4 dominated by positive sentiment, while topics 2 and 5 were dominated by negative sentiment. To facilitate the classification process, a simple Streamlit-based interface was developed to allow users to predict sentiment and topic directly from textual input. This combination of methods provides an analytical solution that helps developers better understand user perceptions and needs. The findings of this study are expected to serve as a strategic foundation for improving application quality and enhancing user satisfaction and loyalty toward the Sekolah.mu application.

Keywords— deep learning , LSTM, NMF, Sekolah.mu, sentiment analysis, topic modeling