# ABSTRACT

*The massive development of technology and the demand to implement it in daily life and business processes make its own challenges in the maintenance and improvisation process. The step taken is to conduct sentiment analysis research using social media comment data to find out the development aspects that still require attention and action at the Meteorology, Climatology and Geophysics Agency (BMKG) in terms of information quality, service quality, and system quality. By utilizing the Knowledge Discovery in Databases (KDD) methodology framework, the concept of hybrid learning model LSTM + XLM-RoBERTa, designing a multilabel case model and labeling process using the OpenAI API, the results show accuracy 0.22, precision 0.5, recall 0.66 and f1-score 0.55 for topic output and accuracy 0.91, precision 0.88, recall 0.85, and f1-score 0.87 for sentiment output. In addition, it successfully extracted 33 subtopics with details (6 service quality, 8 system quality, 17 information quality, 1 others, and 1 outlier) using BERTopic. In this study, it was found that the LSTM model was unsuitable for multi-label sentiment analysis cases from the poor performance of the model when predicting topics. However, this LSTM model is still very good in single-label cases which can be seen in the predict sentiment results. In addition, BERTopic's performance in determining the sub-aspects of each topic is quite good as evidenced by the diverse results.*



***Keywords: BERTopic, BMKG, Hybrid Learning, InfoBMKG, LSTM, Sentiment Analysis, XLM-RoBERTa***