# ABSTRACT

The growth of social media has encouraged people to actively share opinions and responses to various public issues. One topic that attracted significant public attention on social media was the Land and Building Tax (PBB) policy in Pati Regency in 2025, which generated extensive discussions on platforms such as X and YouTube. The large volume and diversity of opinions make manual analysis difficult, thus requiring automated approaches through sentiment analysis. However, a single opinion often discusses more than one aspect, making Aspect-Based Sentiment Analysis (ABSA) necessary to identify sentiments more specifically based on the aspects being discussed. This study aims to develop an ABSA system for Indonesian social media data by utilizing topic modeling to extract aspects and by comparing the performance of two transformer architectures, namely IndoBERTweet and DistilBERTIndo. The dataset was collected from public discussions on X and YouTube related to the PBB policy in Pati Regency in 2025. Aspect extraction was conducted using BERTopic, while aspect and sentiment classification were performed through fine-tuning transformer models. The training process was optimized using Bayesian Optimization with the Tree-structured Parzen Estimator (TPE) algorithm to obtain optimal hyperparameter combinations. The results of BERTopic identified five main aspects in the public discussions: PBB Policy, Regent, Government, Security Forces, and Demonstration. In the multi-label aspect classification task, DistilBERTIndo achieved the best performance with an F1-Macro score of 0.89 and a Hamming Loss of 0.09. Meanwhile, in the multi-class sentiment classification task, IndoBERTweet obtained higher performance with an accuracy of 0.80 and an F1-Macro score of 0.77. The findings indicate that the ABSA approach is capable of mapping public opinions based on the discussed aspects and identifying the sentiment tendencies associated with each aspect in social media discussions.

**Keywords:** *Aspect-Based Sentiment Analysis, BERTopic, DistilBERTIndo, IndoBERTweet, Bayesian Optimization*.