

ABSTRACT

Indonesia, situated on the Pacific Ring of Fire, is highly prone to natural disasters. To support disaster mitigation, as part of its disaster mitigation efforts, the Meteorology, Climatology, and Geophysics Agency (BMKG) provides the InfoBMKG to quickly deliver information via social media, especially X. However, the public has criticized delays, data inaccuracies, and lack of detail.

This study evaluates public perception of InfoBMKG using the IS Success Model, which includes three key dimensions: Information Quality, Service Quality, and System Quality. The analysis follows the framework Knowledge Discovery in Databases (KDD) framework, starting with the collection of over 25,000 tweets via web crawling using Tweet-Harvest and X API. After the preprocessing stage, approximately 10,000 tweets were analyzed using the TF-IDF method and machine learning models.

The classification models applied include Support Vector Machine (SVM) for multilabel topic classification and binary sentiment classification, as well as BERTopic for topic exploration. The SVM model demonstrated performance with 81% accuracy in topic classification. The System Quality dimension achieved the highest F1-score (0,89), while Service Quality had the lowest (0,74). In sentiment analysis, SVM reached the highest accuracy on Service Quality (91,58%) and System Quality (83,71%). Negative sentiment dominated public opinion, particularly regarding System Quality (F1-score 0,90).

Topic modeling with BERTopic successfully identified key issues and subtopics across the combination of dimensions and sentiments. The public expressed appreciation for the accuracy of earthquake/weather information and service responsiveness but also raised concerns about delayed updates, platform inconsistencies, notification failures, and app compatibility issues. These findings reinforce the classification results and provide a strategic foundation for improving the InfoBMKG service in the future.

Keywords—InfoBMKG, IS Success Model, Sentiment Analysis, Topic Modeling, Support Vector Machine, BERTopic