

Abstrak (Indonesia)

Aplikasi *Mobile JKN* merupakan layanan digital BPJS Kesehatan yang digunakan untuk memudahkan peserta dalam mengakses layanan administrasi dan informasi kesehatan. Namun, ulasan pengguna di *Google Play Store* masih menunjukkan berbagai keluhan terkait kemudahan penggunaan, stabilitas aplikasi, dan kualitas fitur. Penelitian terdahulu umumnya hanya melakukan analisis sentimen secara umum sehingga belum mampu menggambarkan persepsi pengguna secara spesifik pada setiap aspek kualitas aplikasi. Oleh karena itu, penelitian ini menerapkan pendekatan sentiment multiaspek menggunakan algoritma *Random Forest* untuk mengklasifikasikan sentimen positif dan negatif pada aspek kemudahan pengguna, stabilitas aplikasi, dan kualitas fitur. Data penelitian diperoleh melalui proses web scraping pada ulasan aplikasi *Mobile JKN* di *Google Play Store* sebanyak 5.000 ulasan. Tahapan penelitian meliputi *Preprocessing* teks, ekstraksi fitur menggunakan TF-IDF, reduksi dimensi menggunakan TruncatedSVD, penanganan ketidakseimbangan data menggunakan *SMOTE*, serta klasifikasi menggunakan *Random Forest*. Proses pelatihan model dilakukan menggunakan *GridSearchCV* dan 10-Fold Cross Validation untuk memperoleh parameter terbaik. Hasil penelitian menunjukkan bahwa model *Random Forest* mampu memberikan performa yang baik pada klasifikasi sentimen multiaspek. Nilai *F1-Score* yang diperoleh pada aspek kemudahan pengguna sebesar 0.8651, kualitas fitur sebesar 0.8517, dan stabilitas aplikasi sebesar 0.7758. Hasil analisis menunjukkan bahwa aspek kemudahan pengguna dan kualitas fitur didominasi sentimen positif, sedangkan aspek stabilitas aplikasi masih didominasi sentimen negatif akibat adanya kendala seperti error dan crash. Dengan demikian, pendekatan sentiment multiaspek mampu memberikan gambaran yang lebih rinci terhadap kualitas aplikasi *Mobile JKN* berdasarkan persepsi pengguna.

Kata kunci: analisis sentimen multiaspek, *Mobile JKN*, *Random Forest*, TF-IDF, *SMOTE*.

Abstract (English)

Mobile JKN is a digital service application developed by BPJS Kesehatan to facilitate users in accessing healthcare information and administrative services. However, user reviews on the Google Play Store still indicate various issues related to ease of use, application stability, and feature quality. Previous studies generally focused on general sentiment analysis and were unable to provide specific insights into each application quality aspect. Therefore, this study applies a multi-aspect sentiment analysis approach using the Random Forest algorithm to classify positive and negative sentiments on the aspects of user convenience, application stability, and feature quality. The research data were collected through web scraping of 5,000 Mobile JKN user reviews from the Google Play Store. The research stages included text Preprocessing, feature extraction using TF-IDF, dimensionality reduction using TruncatedSVD, handling imbalanced data using SMOTE, and sentiment classification using Random Forest. The model training process was conducted using GridSearchCV and 10-Fold Cross Validation to obtain the best parameters. The results show that the Random Forest model achieved good performance in multi-aspect sentiment classification. The F1-Score obtained for the user convenience aspect was 0.8651, feature quality was 0.8517, and application stability was 0.7758. The analysis results indicate that the user convenience and feature quality aspects were dominated by positive sentiments, while the application stability aspect was still dominated by negative sentiments due to issues such as errors and crashes. Therefore, the multi-aspect sentiment analysis approach is able to provide more detailed insights into the quality of the Mobile JKN application based on user perceptions.

Keywords: multi-aspect sentiment analysis, Mobile JKN, Random Forest, TF-IDF, SMOTE.