

ABSTRAK

Perkembangan layanan streaming musik seperti *Spotify* dan *Apple Music* mendorong pentingnya analisis terhadap persepsi pengguna untuk mendukung peningkatan kualitas layanan. Penelitian ini bertujuan merancang dan mengimplementasikan model *Aspect-Based Sentiment Analysis* (ABSA) berbasis IndoBERT untuk menganalisis sentimen pengguna berdasarkan lima aspek layanan, yaitu *Sound/Music Quality*, *Content & Playlists*, *Performance & User Experience*, *App Features*, dan *Premium Services & Pricing*, membandingkan sentimen antara kedua platform, serta menerapkan *Explainable Artificial Intelligence* (XAI) menggunakan metode *Local Interpretable Model-agnostic Explanations* (LIME) untuk meningkatkan interpretabilitas model. Data penelitian berupa ulasan berbahasa Indonesia aplikasi *Spotify* dan *Apple Music* yang diperoleh dari *Google Play Store*. Tahapan penelitian meliputi pengumpulan data, *Preprocessing*, pelabelan aspek dan sentimen, *fine-tuning* IndoBERT, evaluasi model menggunakan *Accuracy*, *Precision*, *Recall*, dan *F1-Score*, serta interpretasi hasil menggunakan LIME. Hasil penelitian menunjukkan bahwa model IndoBERT memperoleh nilai *Accuracy* sebesar 94,69% dan *Macro F1-Score* sebesar 93,67%, yang menunjukkan bahwa model mampu mengklasifikasikan sebagian besar ulasan pengguna secara tepat serta memiliki performa yang seimbang pada setiap kelas sentimen. Hasil analisis memperlihatkan bahwa *Apple Music* memperoleh persentase sentimen positif yang lebih tinggi dibandingkan *Spotify* pada seluruh aspek yang dianalisis. Aspek *Sound/Music Quality* menjadi aspek dengan tingkat kepuasan tertinggi, sedangkan *Performance & User Experience* serta *Premium Services & Pricing* menjadi aspek yang paling banyak memperoleh sentimen negatif. Selain itu, penerapan LIME berhasil memberikan interpretasi terhadap hasil prediksi dengan mengidentifikasi kata-kata yang paling berpengaruh dalam proses klasifikasi. Penelitian ini tidak hanya menghasilkan analisis sentimen yang akurat dan mudah diinterpretasikan melalui penerapan LIME, tetapi juga memberikan perbandingan sentimen pengguna *Spotify* dan *Apple Music* berdasarkan lima aspek layanan, sehingga menghasilkan informasi yang lebih rinci dan komprehensif mengenai persepsi pengguna terhadap kedua platform.

Kata kunci: *Aspect-Based Sentiment Analysis*, IndoBERT, LIME, Analisis Sentimen, *Spotify*, *Apple Music*.

ABSTRACT

The rapid growth of music streaming services such as Spotify and Apple Music has increased the need to analyze user perceptions in order to support service quality improvement. This study aims to design and implement an Aspect-Based Sentiment Analysis (ABSA) model based on IndoBERT to analyze user sentiment across five service aspects, namely Sound/Music Quality, Content & Playlists, Performance & User Experience, App Features, and Premium Services & Pricing, compare sentiment between the two platforms, and apply Explainable Artificial Intelligence (XAI) using the Local Interpretable Model-agnostic Explanations (LIME) method to improve model interpretability. The dataset consisted of Indonesian-language user reviews of Spotify and Apple Music collected from the Google Play Store. The research stages included data collection, Preprocessing, aspect and sentiment labeling, IndoBERT fine-tuning, model evaluation using Accuracy, Precision, Recall, and F1-Score, followed by result interpretation using LIME. The experimental results show that the proposed IndoBERT model achieved an Accuracy of 94.69% and a Macro F1-Score of 93.67%, indicating that the model is capable of correctly classifying most user reviews while maintaining balanced performance across sentiment classes. Furthermore, the analysis revealed that Apple Music obtained a higher percentage of positive sentiment than Spotify across all analyzed aspects. The Sound/Music Quality aspect achieved the highest level of user satisfaction, while Performance & User Experience and Premium Services & Pricing received the highest proportion of negative sentiment on both platforms. In addition, LIME successfully provided interpretable explanations by identifying the most influential words contributing to the model's sentiment predictions. This study not only provides accurate and interpretable aspect-based sentiment analysis through the integration of IndoBERT and LIME, but also offers a comparative analysis of user sentiment between Spotify and Apple Music across five service aspects, resulting in a more comprehensive understanding of user perceptions toward both music streaming platforms.

Keywords: Aspect-Based Sentiment Analysis, IndoBERT, LIME, Sentiment Analysis, Spotify and Apple Music.