

**SISTEM REKOMENDASI SKINCARE BERBASIS WEBSITE DENGAN
METODE LEXICON-BASED SENTIMENT ANALYSIS, DECISION TREE
REGRESSION, DAN SUPPORT VECTOR MACHINE**

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ABSTRAK

Skincare merupakan produk kecantikan yang penting untuk merawat kulit, menjaga kebersihan, kelembaban, dan melindungi kulit dari paparan radikal bebas serta sinar matahari. Perkembangan *skincare* di Indonesia serta semakin bertambahnya produk *skincare* yang beredar dapat membingungkan pengguna dalam memilih produk yang tepat. Sistem rekomendasi *skincare* dapat menjadi solusi dalam memberikan rekomendasi produk *skincare*. *FemaleDaily Reviews* adalah platform berbagi ulasan penggunaan *skincare* yang dapat dijadikan acuan rekomendasi. Ulasan *rating* bintang, ulasan teks, dan rekomendasi *thumbs up/thumbs down* memiliki karakteristik yang berbeda-beda. Penelitian ini bertujuan mengembangkan sistem rekomendasi yang menggabungkan metode *lexicon-based sentiment analysis*, *decision tree regression*, dan *support vector machine* yang mengakomodasi ketiga jenis ulasan tersebut. *Lexicon-based sentiment analysis* digunakan untuk memproses ulasan berbentuk teks sehingga didapatkan nilai *rating* implisit. *Decision tree regression* digunakan untuk melakukan prediksi pada masing-masing nilai *rating* implisit dan eksplisit. Model klasifikasi SVM menggabungkan hasil prediksi kedua *rating* tersebut untuk menentukan apakah suatu produk direkomendasikan atau tidak. Sistem ini diimplementasikan dalam bentuk *website* sehingga pengguna dapat menerima rekomendasi produk yang sesuai dengan usia dan jenis kulitnya. Hasil evaluasi menunjukkan bahwa model *decision tree regression* cukup baik dengan rata-rata skor R^2 untuk prediksi *rating* 0.265917 dan 0.197513 untuk prediksi *rating text*. Nilai rata-rata MAE untuk prediksi *rating* sebesar 0.578331 dan 0.473217 untuk prediksi *rating text*. Evaluasi model SVM dengan tambahan fitur *rating_text* mengalami peningkatan dibandingkan model yang hanya menggunakan *rating* dengan rata-rata *accuracy* 0.953818, *precision* 0.971238, *recall* 0.975148, dan *F1-score* 0.981362. Sistem rekomendasi *skincare* berhasil dikembangkan dalam bentuk *website* dengan hasil pengujian *blackbox* valid. Hasil UAT menunjukkan rata-rata 4.382 dan termasuk kategori baik. Dari uji reliabilitas menggunakan *Cronbach's Alpha* didapatkan nilai 0,849 dimana melebihi batas nilai 0,7 yang berarti kuesioner tersebut dapat diandalkan. Berdasarkan semua pengujian yang dilakukan, dapat disimpulkan bahwa sistem rekomendasi *skincare* berbasis *website* telah berhasil dikembangkan sesuai dengan tujuan penelitian.

Kata Kunci: *decision tree regression*, *lexicon-based sentiment analysis*, sistem rekomendasi, *skincare*, *support vector machine*, ulasan.

**WEBSITE-BASED SKINCARE RECOMMENDATION SYSTEM USING
LEXICON-BASED SENTIMENT ANALYSIS, DECISION TREE
REGRESSION, AND VECTOR MACHINE SUPPORT METHODS**

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ABSTRACT

Skincare is an essential part of skin care routines, aimed at maintaining cleanliness, hydration, and protecting the skin from free radicals and sunlight. With the growing number of skincare products available in Indonesia, users often face challenges in selecting the right products. To address this issue, a skincare recommendation system can provide suitable suggestions. FemaleDaily Reviews is a platform that offers product reviews and can be utilized for developing a recommendation system. This research aims to develop a recommendation system that integrates lexicon-based sentiment analysis, decision tree regression, and support vector machine (SVM) methods to accommodate three types of reviews: star ratings, text reviews, and thumbs up/thumbs down recommendations. Lexicon-based sentiment analysis is used to process text reviews and generate implicit rating values. Decision tree regression is applied to predict both implicit and explicit rating values, while the SVM classification model combines these predictions to determine product recommendations. The system is implemented as a website, enabling users to receive recommendations based on their age and skin type. Evaluation results indicate that the decision tree regression model has an average R^2 score of 0.265917 for rating prediction and 0.197513 for text rating prediction. The average MAE value is 0.578331 for rating prediction and 0.473217 for text rating prediction. Evaluation of the SVM model with the addition of the rating_text feature has improved compared to the model that only uses ratings with an average accuracy of 0.953818, precision 0.971238, recall 0.975148, and F1-score 0.981362. The developed skincare recommendation system has been successfully tested with valid blackbox testing results, achieving an average score of 4.382 in User Acceptance Testing (UAT), indicating a good category. Reliability testing using Cronbach's Alpha yielded a value of 0.849, exceeding the 0.7 threshold, indicating that the questionnaire is reliable. Based on the tests conducted, it can be concluded that the website-based skincare recommendation system has been successfully developed and meets the research objectives.

Keywords: *decision tree regression, lexicon-based sentiment analysis, recommender system, skincare, support vector machine, reviews.*