

ABSTRAK

Mohamad Fiqih Aldiyanto. 2026. Sistem Rekomendasi Produk *Skincare* Berbasis Item Menggunakan *Cosine Similarity* dan *Weighted Sum*. Tugas Akhir. Program Sarjana.

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Perkembangan industri (*skincare*) yang semakin pesat menyebabkan meningkatnya jumlah dan variasi produk *skincare* sehingga pengguna sering mengalami kesulitan dalam menentukan produk yang sesuai dengan kebutuhan kulit mereka. Penelitian ini bertujuan untuk merancang dan mengimplementasikan sistem rekomendasi produk *skincare* berbasis *website* menggunakan metode *Item-Based Collaborative Filtering* (IBCF) dengan algoritma *Cosine Similarity* dan *Weighted Sum*.

Dataset yang digunakan berasal dari *Kaggle* dan terdiri dari 8.000 data produk *skincare* yang mencakup atribut *Product ID*, *Product Name*, *Brand*, *Category*, *Skin Type*, *Main Ingredients*, *Rating*, dan *Price*. Karena *dataset* tidak memiliki data interaksi pengguna secara langsung, penelitian ini membentuk data interaksi menggunakan 50 pengguna sintetis untuk menghasilkan matriks *user-item* sebagai dasar perhitungan rekomendasi. *Cosine Similarity* digunakan untuk menghitung tingkat kemiripan antar produk, sedangkan *Weighted Sum* digunakan untuk menghitung prediksi *rating* dan menentukan peringkat rekomendasi.

Sistem diimplementasikan dalam bentuk aplikasi berbasis *website* tanpa proses registrasi akun. Evaluasi dilakukan menggunakan *Mean Absolute Error* (MAE) dan *Root Mean Squared Error* (RMSE) terhadap 24.000 data pengujian. Hasil evaluasi menunjukkan nilai MAE sebesar 0,9792 dan RMSE sebesar 1,1522. Hasil penelitian menunjukkan bahwa metode *Item-Based Collaborative Filtering* dengan *Cosine Similarity* dan *Weighted Sum* mampu menghasilkan rekomendasi produk *skincare* yang relevan berdasarkan pola *rating* pengguna.

Kata Kunci: Sistem Rekomendasi, Produk *Skincare*, *Item-Based Collaborative Filtering*, *Cosine Similarity*, *Weighted Sum*, MAE, RMSE, *Website*.

ABSTRACT

Mohamad Fiqih Aldiyanto. 2026. *Item-Based Skincare Product Recommendation System Using Cosine Similarity and Weighted Sum*. Undergraduate Thesis. Bachelor program Informatics Engineering, Universitas Muhammadiyah Jember.

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The rapid growth of the skincare industry has led to an increasing number and variety of skincare products, making it difficult for users to select products that suit their skin needs and characteristics. This study aims to design and implement a website-based skincare product recommendation system using the Item-Based Collaborative Filtering (IBCF) method with Cosine Similarity and Weighted Sum algorithms.

The dataset used in this study was obtained from Kaggle and consists of 8,000 skincare product records, including Product ID, Product Name, Brand, Category, Skin Type, Main Ingredients, Rating, and Price attributes. Since the dataset does not contain direct user interaction data, synthetic interaction data from 50 users were generated to construct a user-item matrix as the basis for recommendation calculations. Cosine Similarity was used to measure the similarity between products, while Weighted Sum was applied to predict ratings and determine recommendation rankings.

The system was implemented as a website-based application without requiring user registration. System evaluation was conducted using Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE) on 24,000 testing data. The evaluation results showed an MAE value of 0.9809 and an RMSE value of 1.1528. The results indicate that the Item-Based Collaborative Filtering method with Cosine Similarity and Weighted Sum is capable of generating relevant skincare product recommendations based on user rating patterns.

Keywords: Recommendation System, Skincare Products, Item-Based Collaborative Filtering, Cosine Similarity, Weighted Sum, MAE, RMSE, Website.