

ABSTRAK

Rambut memiliki fungsi penting untuk menunjang penampilan sekaligus melindungi kulit kepala. Masalah rambut seperti ketombe, *dermatitis seboroik*, dan kerontokan semakin banyak dialami masyarakat akibat gaya hidup tidak sehat. Maraknya perkembangan industri *hair care* saat ini menyebabkan beragam produk di pasaran, namun justru menyulitkan konsumen menemukan produk yang sesuai dengan kondisi rambut dan kulit kepala mereka. Penelitian ini bertujuan menerapkan metode *Knowledge-Based Filtering* menggunakan algoritma *Cosine Similarity* untuk membangun sistem rekomendasi produk *hair care* berbasis web yang mampu memberikan rekomendasi personal dan relevan tanpa memerlukan data historis pengguna. Sistem dibangun menggunakan *knowledge base* yang mencakup 13 jenis permasalahan rambut dan kulit kepala serta 69 kandungan aktif dengan pembobotan skala prioritas berdasarkan pakar. Pengujian kinerja sistem dilakukan pada 1 pengguna pakar (User ID 17) dengan 13 skenario preferensi permasalahan rambut dan kulit kepala yang berbeda-beda. Hasil evaluasi menggunakan metrik *Precision@K*, *Recall@K*, dan *F1-Score* menunjukkan rata-rata *Precision* 64,6%, *Recall* 43,4%, dan *F1-Score* 42,8%, dengan ditemukannya *trade-off* antara *precision* dan *recall* yang dipengaruhi oleh distribusi dataset. Evaluasi usabilitas menggunakan *System Usability Scale* (SUS) yang melibatkan 10 responden menghasilkan skor rata-rata 62, tergolong kategori *Good*. Sistem ini terbukti efektif memberikan rekomendasi yang relevan sekaligus mengatasi permasalahan *cold start* yang umum terjadi pada sistem rekomendasi konvensional.

Kata Kunci: *Hair Care*, Sistem Rekomendasi, *Knowledge-Based Filtering*, *Cosine Similarity*, *F1-Score*

ABSTRACT

Hair plays an important role in supporting appearance while also protecting the scalp. Hair problems such as dandruff, seborrheic dermatitis, and hair loss are increasingly experienced by people due to unhealthy lifestyles. The rapid growth of the hair care industry has introduced a wide variety of products on the market, yet this abundance makes it difficult for consumers to find products that truly suit their hair and scalp condition. This study aims to apply the Knowledge-Based Filtering method using the Cosine Similarity algorithm to develop a web-based hair care product recommendation system capable of delivering personalized and relevant recommendations without requiring users' historical data. The system was built using a knowledge base covering 13 types of hair and scalp problems and 69 active ingredients with expert-based priority-scale weighting. System performance testing was conducted on 1 expert user (User ID 17) across 13 different preference scenarios for hair and scalp problems. The evaluation results using Precision@K, Recall@K, and F1-Score metrics showed an average Precision of 64.6%, Recall of 43.4%, and F1-Score of 42.8%, revealing a trade-off between precision and recall influenced by the dataset distribution. Usability evaluation using the System Usability Scale (SUS) involving 10 respondents produced an average score of 62, classified under the Good category. This system proved effective in providing relevant recommendations while addressing the cold start problem commonly found in conventional recommendation systems.

Keywords: Hair Care, Recommendation System, Knowledge-Based Filtering, Cosine Similarity, F1-Score