

ABSTRAK

Bookshop Sanata Dharma memiliki data transaksi penjualan yang belum dimanfaatkan secara optimal sebagai dasar rekomendasi barang. Penelitian ini bertujuan menerapkan algoritma *Efficient High-Utility Itemset Mining* (EFIM) untuk menghasilkan *High Utility Itemset* (HUI) yang digunakan sebagai dasar pengembangan sistem rekomendasi *Constraint-Based Recommendation* berbasis web. Penelitian dilakukan melalui tahapan *preprocessing* data, penambangan HUI menggunakan algoritma EFIM, serta evaluasi menggunakan beberapa nilai *minimum utility* berdasarkan jumlah HUI, jumlah item unik, *Average U-Support*, *Average U-Confidence*, dan waktu proses. Hasil penelitian menunjukkan bahwa nilai *minutil* 0,5% merupakan parameter yang paling optimal dengan menghasilkan 134 HUI dan 56 item unik, serta nilai *Average U-Support* 0,012064, *Average U-Confidence* 0,717003, dan waktu proses 0,7983 detik. Hasil HUI berhasil diimplementasikan sebagai dasar sistem rekomendasi. Pengujian menunjukkan seluruh fungsi sistem berjalan dengan baik, sedangkan *beta testing* memperoleh nilai *usability* rata-rata 89,31%, sehingga sistem dinilai mudah digunakan dan mampu membantu pengguna menemukan buku atau item yang relevan.

Kata Kunci : *Efficient High-Utility Itemset Mining* (EFIM), *Constraint-Based Recommendation*, *High Utility Itemset*, sistem rekomendasi, *Bookshop* Sanata Dharma.

ABSTRACT

Bookshop Sanata Dharma possesses sales transaction data that have not been optimally utilized as a basis for product recommendations. This study aims to implement the Efficient High-Utility Itemset Mining (EFIM) algorithm to generate *High Utility* Itemsets (HUI), which serve as the foundation for developing a web-based Constraint-Based Recommendation system. The *reSearch* consisted of data preprocessing, HUI mining using the EFIM algorithm, association rule generation, and performance evaluation using several minimum utility (minutil) thresholds based on the number of HUIs, the number of unique items, Average U-Support, Average U-Confidence, and execution time. The results indicate that a minutil value of 0.5% is the optimal threshold, producing 134 *High Utility* Itemsets (HUIs) and 56 unique items, with an Average U-Support of 0.012064, an Average U-Confidence of 0.717003, and an execution time of 0.7983 seconds. The generated HUIs were successfully implemented as the basis of the recommendation system. System testing showed that all system functions operated properly, while beta testing achieved an average usability score of 89.31%, indicating that the system is easy to use and effectively assists users in discovering relevant books or related items.

Keywords: Efficient High-Utility Itemset Mining (EFIM), Constraint-Based Recommendation, *High Utility* Itemset, Recommendation System, *Bookshop* Sanata