ABSTRAK

Pesatnya perkembangan *e-commerce* menyebabkan meningkatnya volume data transaksi yang tersimpan pada *platform digital*, termasuk *dataset YooChoose* yang memiliki karakteristik *big data* dan menyimpan informasi penting terkait pola pembelian konsumen. Penelitian ini menerapkan algoritma *Frequent Pattern Growth* (*FP-Growth*) untuk melakukan *Frequent Itemset Mining* pada *dataset yoochoose-buys* dengan tujuan mengidentifikasi kombinasi produk yang sering dibeli secara bersamaan. Proses penelitian meliputi tahapan *preprocessing* data berupa *data cleaning*, *data selection*, *data reduction*, serta transformasi data ke dalam bentuk *Boolean Matrix*, dilanjutkan dengan pembentukan *FP-Tree* dan ekstraksi *frequent itemset* untuk menghasilkan aturan asosiasi menggunakan metrik *support* dan *confidence*. Evaluasi dilakukan dengan menguji variasi nilai *minimum support* dan *minimum confidence* terhadap jumlah aturan yang dihasilkan. Hasil pengujian menunjukkan bahwa pada nilai *min_support* sebesar 0.002, jumlah aturan menurun dari 24 aturan pada *min_confidence* 0.0 menjadi 16 aturan pada *min_confidence* 0.4, 6 aturan pada *min_confidence* 0.6, dan tidak menghasilkan aturan pada *min_confidence* 1.0, sedangkan jumlah aturan terbanyak diperoleh pada kombinasi *min_support* 0.001 dan *min_confidence* 0.0 dengan total 180 aturan. Hasil ini menunjukkan bahwa algoritma *FP-Growth* mampu mengekstraksi pola pembelian secara efektif pada dataset *e-commerce* berskala besar, dimana pengaturan nilai ambang batas parameter berpengaruh terhadap jumlah dan selektivitas aturan asosiasi yang dihasilkan dan dapat dimanfaatkan sebagai dasar analisis perilaku konsumen serta strategi pemasaran.

Kata kunci: *FP-Growth*, *Frequent Itemset Mining*, *Association Rule*, *E-commerce*, *YooChoose*.

ABSTRACT

The rapid development of e-commerce has led to an increase in the volume of transaction data stored on digital platforms, including the YooChoose dataset, which has big data characteristics and stores important information related to consumer purchasing patterns. This study applies the Frequent Pattern Growth (FP-Growth) algorithm to perform Frequent Itemset Mining on the yoochoose-buys dataset with the aim of identifying combinations of products that are often purchased together. The research process includes data preprocessing stages in the form of data cleaning, data selection, data reduction, and data transformation into a Boolean Matrix, followed by the formation of an FP-Tree and frequent itemset extraction to produce association rules using support and confidence metrics. The evaluation was carried out by testing the variation in minimum support and minimum confidence values against the number of rules produced. The test results show that at a min_support value of 0.002, the number of rules decreased from 24 rules at min_confidence 0.0 to 16 rules at min_confidence 0.4, 6 rules at min_confidence 0.6, and no rules at min_confidence 1.0. while the highest number of rules was obtained with a combination of min_support 0.001 and min_confidence 0.0, with a total of 180 rules. These results show that the FP-Growth algorithm is capable of effectively extracting purchasing patterns in large-scale e-commerce datasets, where the threshold parameter settings affect the number and selectivity of the association rules produced and can be used as a basis for consumer behavior analysis and marketing strategies.

Keywords: FP-Growth, Frequent Itemset Mining, Association Rule, E-commerce, YooChoose.