

ABSTRACT

Suboptimal drug management can have significant impacts, such as increasing operational costs due to the accumulation of unsold goods, or lost sales opportunities due to stock shortages. Problems regarding drug management have occurred in pharmaceutical services in Indonesia, such as in one of the pharmaceutical installations, there were complaints regarding prescriptions that were not served. This happened because there was no stock of drugs at the pharmaceutical installation. This study compares the Apriori, FP-Growth, and Hash Based algorithms in Market Basket Analysis related to drug sales data. The parameters that will be used in this study are association rules, computation time, accuracy level, lift ratio, and memory usage. The results of the comparison of association rules in the Apriori, FP-Growth, and Hash Based algorithms produce 5 association rules. Based on the computation time and lift ratio, the FP Growth algorithm produces a computation time of 0.4660 seconds and a lift ratio of 1.589940, which is superior to other algorithms. Based on the level of accuracy, the Hash Based algorithm obtains the greatest accuracy compared to other algorithms, which is 100%. Then, based on memory usage, the FP-Growth algorithm requires the smallest capacity compared to other algorithms, which is 280.60 MB. The results of this study can provide an explanation regarding the comparison of the three algorithms and find association rule patterns in managing drug stock.

Keywords: *Apriori, Association rules, FP-Growth, Hash Based, Support*

ABSTRAK

Pengelolaan obat yang tidak optimal dapat menimbulkan dampak signifikan, seperti meningkatnya beban biaya operasional yang terjadi akibat penumpukan barang yang tidak terjual, ataupun hilangnya peluang penjualan karena kekosongan stok. Permasalahan mengenai pengelolaan obat telah terjadi pada layanan farmasi yang ada di Indonesia, seperti pada salah satu instalasi farmasi, adanya keluhan terkait resep yang tidak dilayani. Hal tersebut terjadi karena tidak tersedianya stok obat di instalasi farmasi. Penelitian ini melakukan perbandingan dari algoritma Apriori, FP-Growth, dan Hash Based dalam *Market Basket Analysis* terkait data penjualan obat. Parameter yang akan digunakan pada penelitian ini yaitu aturan asosiasi, waktu komputasi, tingkat akurasi, *lift ratio*, dan *memory usage*. Hasil perbandingan aturan asosiasi pada algoritma Apriori, FP-Growth, dan Hash Based menghasilkan 5 aturan asosiasi. Berdasarkan waktu komputasi dan *lift ratio* algoritma FP Growth menghasilkan waktu komputasi selama 0,4660 detik dan *lift ratio* sebesar 1,589940, dimana lebih unggul dibandingkan dengan algoritma lainnya. Berdasarkan tingkat akurasi, algoritma Hash Based memperoleh akurasi terbesar dibandingkan dengan algoritma lainnya, yaitu sebesar 100%. Kemudian, berdasarkan *memory usage*, algoritma FP-Growth membutuhkan kapasitas paling kecil dibanding algoritma lainnya yaitu sebesar 280,60 MB. Hasil penelitian ini dapat memberikan penjelasan mengenai perbandingan ketiga algoritma tersebut dan menemukan pola aturan asosiasi dalam mengelola stok obat.

Kata Kunci: *Apriori, Association rules, FP-Growth, Hash Based, Support*