

ABSTRAK

Thomas Kresnantoro Chrisadi. 2026. Penerapan Data Mining untuk Mendeteksi Stok Stagnan dalam Optimalisasi Pemasaran Produk pada Toko Plastik T'Four. Skripsi, Program Studi Teknik Informatika, Fakultas Teknik, Universitas PGRI Madiun. Pembimbing: (I) Alim Citra Aria Bima, S.Pd., M.Kom., (II) Pratiwi Susanti, S.Kom., M.MT.

Toko Plastik T'Four sering mengalami penumpukan stok mati (*deadstock*) karena pencatatan transaksi masih manual. Kondisi ini menyulitkan pemilik toko melacak pergerakan barang dan menyusun strategi promosi yang tepat sasaran. Penelitian ini bertujuan membangun sistem informasi untuk mendeteksi barang stagnan dan merekomendasikan paket *bundling* produk menggunakan teknik *data mining*. Pengembangan sistem menggunakan metode *Waterfall* dengan pemodelan *Unified Modeling Language* (UML). Aplikasi dibangun dengan bahasa pemrograman Python melalui *framework* Streamlit dan basis data SQLite. Sistem menggunakan algoritma K-Means untuk mengelompokkan tingkat kelarisan barang, serta algoritma FP-Growth untuk menggali aturan asosiasi keranjang belanja konsumen. Hasil pengujian algoritma menunjukkan K-Means ($k=3$) berhasil mengidentifikasi 9 jenis barang *deadstock* dengan total modal mengendap Rp3.858.000. Algoritma FP-Growth menemukan aturan asosiasi terbaik pada kombinasi Mika Bento, Sedotan Hitam, dan Gelas Cup 16OZ dengan nilai *Lift Ratio* 3,38. Pengujian *Black Box* mengonfirmasi seluruh fitur aplikasi berjalan 100% valid. Evaluasi pengguna melalui kuesioner *System Usability Scale* (SUS) mendapat skor 71,67 (*Acceptable*), membuktikan aplikasi analitik ini layak dan mudah digunakan oleh pengelola toko.

Kata Kunci: *Data Mining*, *Deadstock*, K-Means, FP-Growth, Streamlit.

ABSTRACT

Thomas Kresnantoro Chrisadi. 2026. Application of Data Mining to Detect Stagnant Stock in Optimizing Product Marketing at T'Four Plastic Store. Bachelor's Thesis, Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Advisors: (I) Alim Citra Aria Bima, S.Pd., M.Kom., (II) Pratiwi Susanti, S.Kom., M.MT.

T'Four Plastic Store frequently experiences deadstock accumulation due to manual transaction recording.

This condition makes it difficult for the store owner to track product movement and formulate targeted promotional strategies. This research aims to build an information system to detect stagnant items and recommend product bundling packages using data mining techniques. The system development uses the Waterfall method alongside Unified Modeling Language (UML) modeling. The application is built using the Python programming language through the Streamlit framework and SQLite database. The system implements the K-Means algorithm to cluster product sales levels and the FP-Growth algorithm to extract consumer shopping basket association rules. The algorithm testing results show that K-Means ($k=3$) successfully identified 9 types of deadstock items with a total stagnant capital of Rp3,858,000. The FP-Growth algorithm discovered the best association rule in the combination of Mika Bento, Sedotan Hitam, and Gelas Cup 16OZ with a Lift Ratio of 3.38. Black Box testing confirms that all application features run 100% validly. Furthermore, user evaluation through the System Usability Scale (SUS) questionnaire achieved a score of 71.67 (Acceptable), proving that this analytical application is feasible and easy for the store manager to use.

Keywords: Data Mining, Deadstock, K-Means, FP-Growth, Streamlit.