ABSTRAK

Industri ritel kosmetik memiliki penjualan yang fluktuatif sehingga menyulitkan perencanaan stok dan strategi bisnis. Penelitian ini bertujuan membangun model prediksi penjualan harian menggunakan algoritma Random Forest dengan pendekatan CRISP-DM berdasarkan data transaksi tahun 2025 sebanyak 21.052 baris yang setelah proses pembersihan menjadi 19.921 baris. Hasil penelitian menunjukkan model mampu memberikan prediksi yang baik dengan nilai MAE sebesar Rp481.666,36, RMSE sebesar Rp810.137,89, dan MAPE sebesar 6,35%, dengan variabel paling berpengaruh yaitu *avg_net_price*, *total_quantity*, dan num_transactions. Model diimplementasikan dalam dashboard berbasis *Streamlit* untuk membantu pengelolaan stok dan pengambilan keputusan berbasis data.

Kata Kunci: Prediksi Penjualan, *Random Forest Regressor*, CRISP-DM, *Machine Learning*, Ritel Kosmetik.

ABSTRACT

The cosmetics retail industry has fluctuating sales, making it difficult to plan stock and business strategies. This study aims to build a daily sales prediction model using the Random Forest algorithm with the CRISP-DM approach based on 2025 transaction data of 21,052 rows, which after the cleaning process became 19,921 rows. The results show that the model is able to provide good predictions with an MAE value of Rp481,666.36, RMSE of Rp810,137.89, and MAPE of 6.35%, with the most influential variables being avg_net_price, total_quantity, and num_transactions. The model is implemented in a Streamlit-based dashboard to assist stock management and data-driven decision making.

Keywords: *Sales Prediction, Random Forest Regressor, CRISP-DM, Machine Learning, Cosmetic Retail.*

UBP KARAWANG