



ABSTRAK

PT. Maestro Wisata Raya menghadapi kendala operasional dalam pengelolaan data pelanggan dan transaksi yang masih dilakukan secara manual dan terfragmentasi antar divisi. Hal ini menyebabkan perusahaan kesulitan dalam mengidentifikasi pola perilaku pelanggan untuk menentukan strategi pemasaran yang tepat sasaran. Penelitian ini bertujuan membangun aplikasi *Customer Relationship Management (CRM)* bernama *MaestroInsight* dengan menerapkan metode *Hierarchical Clustering* untuk melakukan segmentasi pelanggan. Metode ini menggunakan model *RFM (Recency, Frequency, Monetary)* yang dinormalisasi dengan *Min-Max Scaling* dan dihitung jaraknya menggunakan *Euclidean Distance* serta *Ward Linkage*. Hasil penelitian menunjukkan bahwa sistem berhasil mengelompokkan pelanggan ke dalam lima segmen, yaitu *Loyal Customer*, *Potential Customer*, *Budget Hunter*, *Seasonal Traveler*, dan *At-Risk Customer*. Validasi menggunakan *Silhouette Score* menghasilkan nilai *overall* sebesar 0.4799, yang mengindikasikan kualitas pengelompokan dalam kategori cukup dan layak digunakan. Implementasi aplikasi ini memungkinkan perusahaan mengintegrasikan data secara terpusat dan merancang program loyalitas serta promosi melalui *email* yang lebih personal dan terukur berdasarkan karakteristik setiap segmen pelanggan.

Kata Kunci: *CRM, Hierarchical Clustering, RFM, Segmentasi Pelanggan, Silhouette Score*.



ABSTRACT

PT. Maestro Wisata Raya faces operational challenges in managing customer and transaction data, which are still handled manually and fragmented across divisions. This causes the company to struggle in identifying customer behavior patterns to determine targeted marketing strategies. This research aims to develop a Customer Relationship Management (CRM) application named MaestroInsight by implementing the Hierarchical Clustering method for customer segmentation. This method utilizes the RFM (Recency, Frequency, Monetary) model, normalized using Min-Max Scaling, and measured via Euclidean Distance and Ward Linkage. The results show that the system successfully categorizes customers into five strategic segments: Loyal Customer, Potential Customer, Budget Hunter, Seasonal Traveler, and At-Risk Customer. Validation using the Silhouette Score yielded an overall value of 0.4799, indicating that the clustering quality is in the "fair" category and viable for use. The implementation of this application enables the company to integrate data centrally and design personalized, measurable loyalty programs and email promotions based on the specific characteristics of each customer segment.

Keywords: CRM, Hierarchical Clustering, RFM, Customer Segmentation, Silhouette Score.