



Customer Segmentation Report

1. Introduction

This analysis combines data from Customers, Transactions, and Products to gain insights into customer purchasing patterns. The datasets were merged to create a complete view of transactions, forming the basis for clustering.

2. Methodology

- **Data Preparation:** Customer profiles were linked with transaction and product data, creating a detailed matrix of purchase values for each customer and product.
- **Scaling:** Data was standardized using StandardScaler to handle differences in purchase volumes and values.
- **Clustering:** KMeans was used to group customers into five clusters, chosen for a balance between detail and simplicity.
- **Evaluation:** The Davies-Bouldin Index (1.1646) was used to assess cluster quality, showing reasonable separation and cohesion.

3. Results

- **Clusters Identified:** Five distinct customer groups were formed.
- **Cluster Trends:** The clusters reveal patterns linked to regions and signup dates, reflecting customer preferences and behaviors over time.

- **Moderate Clustering Quality:** The DB Index suggests the clusters are fairly distinct but could be improved with further refinement.

4. Business Implications

- **Tailored Marketing:** Each cluster represents a specific customer type (e.g., frequent buyers, high-value customers), enabling targeted campaigns and localized strategies.
- **Better Engagement:** Insights can help customize customer interactions, boosting satisfaction and loyalty.
- **Future Improvements:** Additional data or alternative algorithms may uncover more refined clusters.

5. Conclusion

This segmentation offers useful insights into customer behavior, providing a foundation for smarter marketing and CRM strategies. These findings can support better decision-making to drive growth and engagement.