Customer Segmentation and Clustering Report

Executive Summary:

This report discusses the customer segmentation conducted using clustering techniques on customer profiles and transaction data. The objective was to segment customers into distinct groups to aid in targeted marketing and strategic business decisions.

Clustering Approach:

1.Data Preprocessing:

●The data was combined from Customers.csv and Transactions.csv to create a unified profile for each customer.
●Features such as TotalSpend, PurchaseFrequency, and product preferences were used for clustering.

2.Clustering Algorithm:

●K-Means clustering was applied to partition customers into 4 clusters, based on the Davies-Bouldin Index (DBI) evaluation.

●The DBI value suggested that 4 clusters provide optimal separation of customer segments.

3.Cluster Visualization:

●The clusters were visualized using 2D plots (e.g., PCA or t-SNE) to illustrate the separation of customer groups based on the clustering results.

Key Insights:

1.High-Value Segment:

Customers who spend frequently and in large amounts form a separate cluster, which represents the most valuable group.
Targeting this segment with loyalty programs and exclusive offers will help increase retention.

2.Frequent Shoppers with Low Spend:

●A segment that frequently buys products but spends less was identified. These customers can be encouraged to purchase higher-value items through discounts or bundling.

3.Infrequent Shoppers:

●A segment of customers who rarely purchase but have the potential for high value if re-engaged.

Clustering Metrics:

Davies-Bouldin Index (DBI): A measure of cluster validity indicating the separation of clusters.
Silhouette Score: Measured the quality of clusters, showing high consistency within clusters and low overlap between them.

Conclusion:

The clustering analysis provides a solid foundation for customer segmentation, allowing the company to develop strategies tailored to each group. By understanding the behavior of these clusters, the company can optimize marketing

efforts and improve customer engagement.