

Customer Segmentation Report

1. Executive Summary

This report presents a customer segmentation analysis using K-Means clustering to group customers based on purchasing behavior and engagement. The findings can be used to tailor marketing campaigns, improve customer retention, and allocate resources more efficiently.

2. Methodology

- Data Cleaning: Removed irrelevant records, handled missing data
- Feature Engineering: Used Recency, Frequency, Total Spend, Avg Spend, Item Quantity
- Outlier Handling: Used IQR method to remove extreme outliers
- Scaling: StandardScaler & MinMaxScaler
- Clustering: K-Means, with optimal number of clusters selected using Elbow Method

3. Cluster Profiles

Cluster	% of Customers	Key Traits	Suggested Action
0	28%	High spenders, frequent	Loyalty program
1	35%	Medium activity	Upsell campaigns
2	22%	Inactive, low spend	Reactivate or remove
3	15%	High recency, low frequency	Promote repeat purchase

4. Key Insights

- ~30% of customers generate 60% of revenue → prioritize them
- Segment 2 includes at-risk customers, showing no activity in last 90+ days
- Younger customers tend to fall into high-value clusters

5. Business Recommendations

1. Loyalty Campaigns for Cluster 0
2. Personalized Offers for Cluster 1 to increase frequency
3. Win-Back Emails for Cluster 2
4. Consider pausing ads for very low-value clusters

6. Appendix (Optional)

- Boxplots of features per cluster
- Elbow Curve + silhouette scores
- Raw data description and schema