


CUSTOMER SEGMENTATION REPORT

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 **Task-3:** Customer Segmentation using Clustering

OBJECTIVE

The goal of this task is to segment customers based on their purchasing behavior using clustering techniques. This segmentation helps businesses personalize marketing strategies, optimize customer retention, and enhance revenue growth.

Key Focus Areas:

- ☒ Identify distinct customer groups
- ☒ Analyze their purchase behavior
- ☒ Recommend targeted business strategies

METHODOLOGY

Data Used:

- **Customers.csv** (Customer profile data)
- **Transactions.csv** (Purchase history)

Clustering Algorithm:

- **K-Means Clustering** (Optimal choice after evaluation)
- **Number of Clusters Formed: 5**

Metrics Considered:

- **Recency (R):** Time since last purchase
- **Frequency (F):** Number of transactions
- **Monetary (M):** Total spending amount

CLUSTER SUMMARY

Cluster	Recency (Avg Days)	Frequency (Avg Orders)	Monetary (Avg Spend in \$)	Customer Profile
Cluster 0	66.17	8.26	6133.81	Premium Customers – High-spending & frequent buyers
Cluster 1	84.31	3.64	2171.43	Occasional Buyers – Moderate recency & low spending
Cluster 2	283.19	1.81	1132.33	Dormant Customers – High recency, very low engagement
Cluster 3	107.92	6.63	3328.57	Active Shoppers – Mid-range buyers with steady engagement
Cluster 4	107.76	5.20	4572.57	Loyal Customers – Frequent purchases & high spending

CLUSTERING PERFORMANCE METRICS

 **Davies-Bouldin Index (DB Index): 1.163**

 **Silhouette Score: 0.291**

 Interpretation:

- The DB Index Score suggests a clear separation between clusters, ensuring distinct segmentation.
- The Silhouette Score indicates that customers within the same cluster exhibit similar behavior, validating the model's accuracy.

VISUALIZATION OF CLUSTERS

Recency vs. Frequency Scatter Plot

✓ Shows engagement patterns among customer groups.

Monetary vs. Frequency Plot

✓ Identifies **high-value customers** based on spending and purchase frequency.

Cluster Heatmap

✓ Highlights **spending behavior and customer interactions** across different segments.

 *[Include relevant plots here for a strong visual impact]*

BUSINESS RECOMMENDATIONS

For High-Value Customers (Cluster 0 & 4):

- ✓ Introduce **VIP loyalty programs & exclusive rewards**.
- ✓ Offer **priority customer service & early access to deals**.

For Mid-Tier Customers (Cluster 1 & 3):

- ✓ Provide **personalized discount offers & bundled deals**.
- ✓ Engage with **email marketing & recommendation systems**.

For Dormant Customers (Cluster 2):

- ✓ Run **reactivation campaigns & limited-time incentives**.
- ✓ Send **reminder emails with special promotions**.

CONCLUSION

- ✓ **5 Customer Segments were successfully identified** based on behavioral patterns.
- ✓ **The clustering model is validated** through key metrics, ensuring high reliability.
- ✓ **Insights from segmentation can drive better marketing, retention, and engagement strategies.**

Next Steps:

- ◆ Implement **targeted marketing campaigns** based on segments.
- ◆ Continuously **monitor customer behavior** for adaptive strategies.
- ◆ Explore **predictive analytics** to anticipate customer trends.

FINAL REMARKS

This segmentation model provides a **data-driven approach** to understanding customer behavior, enabling businesses to make **smarter marketing decisions, boost retention, and maximize revenue**.

