

Customer Segmentation Report

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Overview

We used **K-Means Clustering** in this project through which we grouped customers based on their spendings and purchase frequency. This was done to identify different customer types, which can help in better marketing, personalized offers, and business decision-making.

How Many Clusters?

After testing different cluster sizes (from 2 to 10), we found that the best number of clusters was **4**, based on the **Davies-Bouldin Index**.

Clustering Performance

Davies-Bouldin Index: 0.72127971818163

(Lower is better, meaning well-separated clusters)

What Do These Clusters Mean?

Cluster	Customer Type	Characteristics
0	High Spenders	Frequent buyers, premium customers
1	Regular Customers	Moderate spenders, occasional buyers
2	Budget Shoppers	Low spenders, infrequent buyers
3	Inactive Customers	Rare buyers, potential churn risk

Each group has unique spending behaviours, allowing businesses to create personalized strategies for each segment.

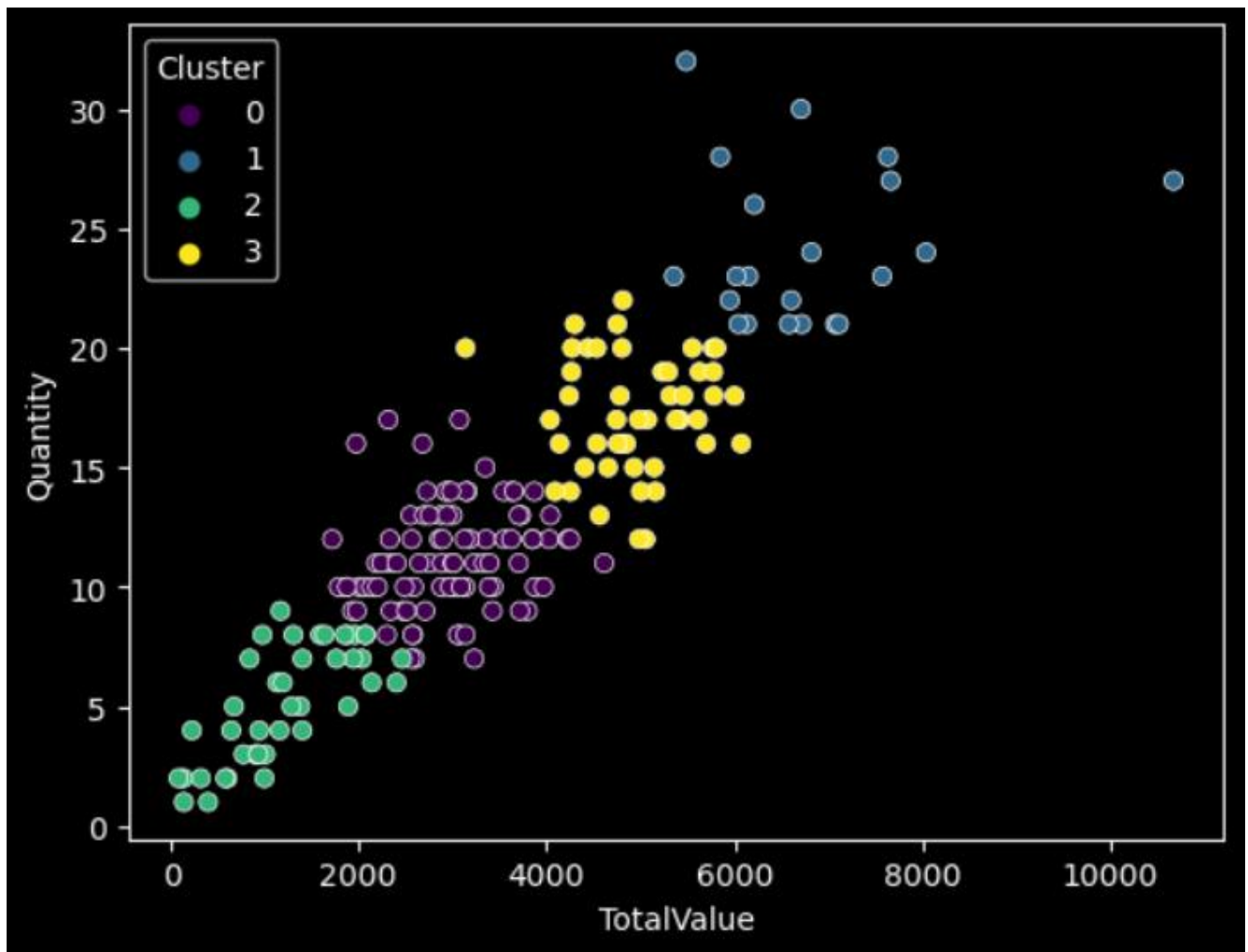
Visualizing the Clusters

We made a scatter graph showing customers grouped by total spending and quantity purchased. Each cluster is highlighted in a different colour, making it easy to see different customer patterns.

What Can We Do with These Insights?

- **High Spenders** - Reward them with premium deals.
- **Regular Customers** - Keep them engaged with personalized offers.
- **Budget Shoppers** - Give them discounts & bundle deals.
- **Inactive Customers** - Bring them back with special re-engagement campaigns.

By understanding these groups, businesses can target the right customers with the right strategies instead of using a one-size-fits-all approach.



Conclusion

This analysis gave us clear customer segments, helping businesses create smarter marketing strategies and better customer engagement. With more data and refinement, we can further improve these insights for even better decision-making!