

January 24, 2025

# **Report**

*On*

## **Customer Segmentation**

**Prepared By:**

**Aditya Kumar Pandey**

**MTech (AI & Data Science)**

**Computer Science and Engineering**

**Indian Institute of Information Technology, Bhagalpur**

## Customer Segmentation (Clustering) Report

### Introduction

Customer segmentation is the process of dividing customers into groups based on similar purchasing habits. This helps businesses create better marketing strategies and improve customer relationships.

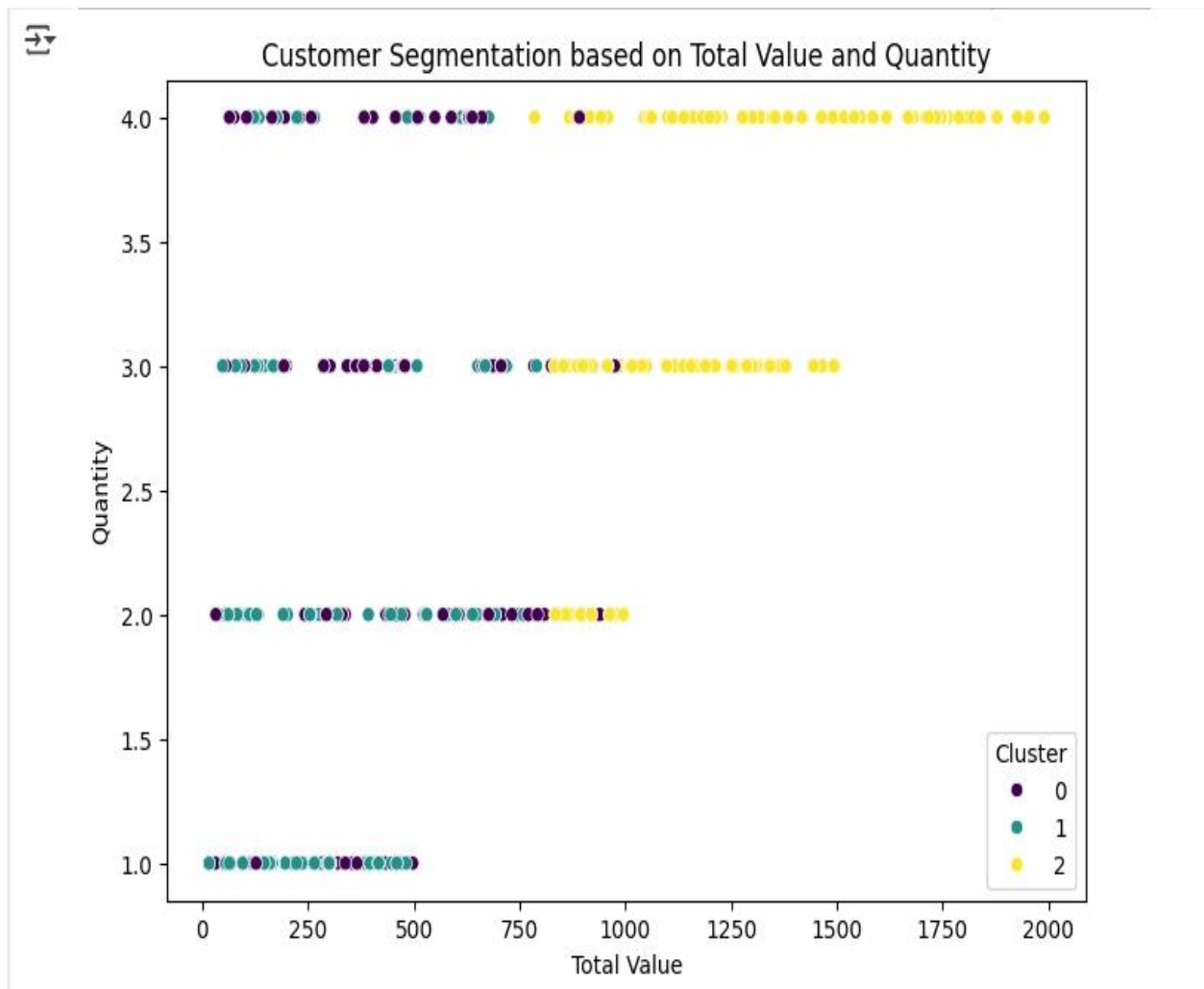
### Methodology

- Clustering Algorithm : K-Means Clustering
- Features Selected: TotalValue (spending amount), Quantity(number of items bought).
- Number of Clusters: 3 (It was determined using the Elbow method).

### Clustering Results

Metric	Value
Number of Clusters	3
DB Index	1.37
Silhouette Score	0.59

## Visualizations



*Fig: Scatter Plot of Customer Segments: TotalValue vs. Quantity*

## Scatter Plot Analysis

- This Scatter plots show how customers are grouped based on their spending (TotalValue) and purchasing quantity (Quantity).
- Here I have also shown the distribution of TotalValue across clusters.
- **Cluster 0 (Purple):** Represents low spenders with minimal purchase quantities.
- **Cluster 1 (Teal):** Indicates moderate spenders with consistent purchasing behavior.
- **Cluster 2 (Yellow):** Represents high spenders with higher purchase values and quantities.

- Customers in **cluster 2** exhibit significantly higher spending compared to the other clusters, which can help in targeted marketing and personalized offers.

## **Conclusion**

The clustering analysis successfully segmented customers into distinct groups, providing actionable insights for targeted marketing campaigns and loyalty programs.