

# Customer Segmentation

Customer Segmentation Using  
Unsupervised Clustering for a Groceries  
Firm



# Introduction



**Objective: To segment customers into groups based on similarities to optimize marketing strategies, better serve customer needs, and increase customer retention**



## **Importance of Customer Segmentation**

Helps in personalized marketing  
Enhances product recommendations  
Tailors campaigns to distinct customer needs

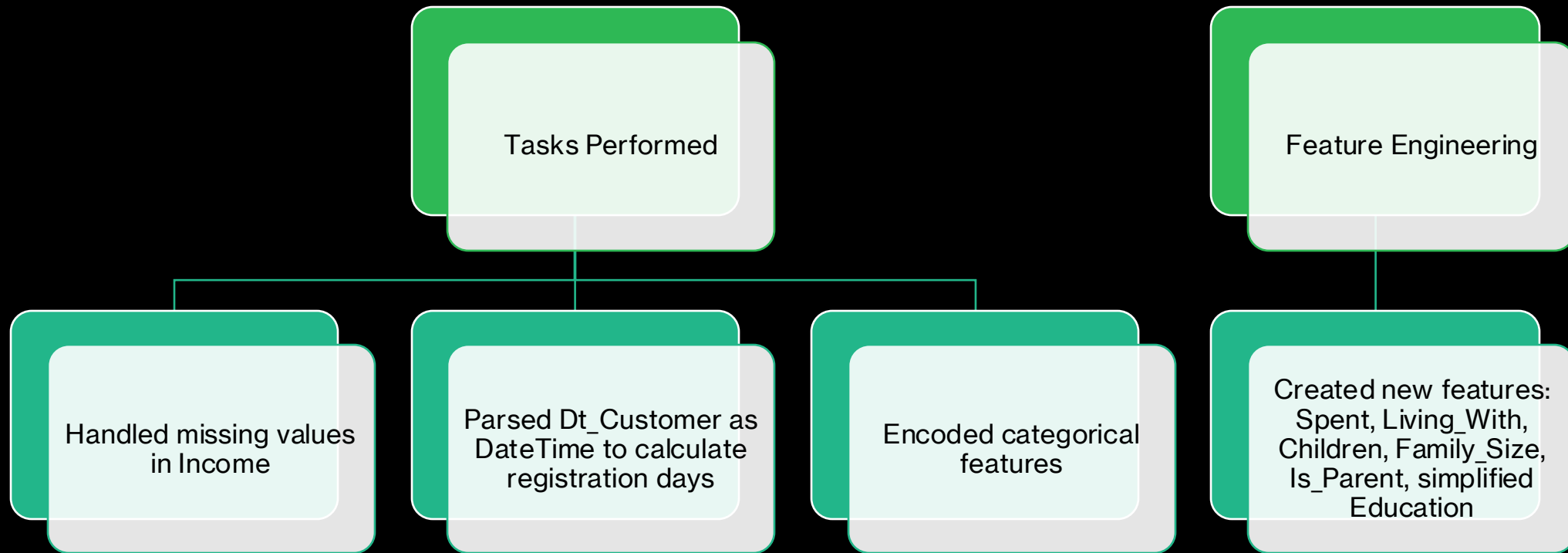


# Business Problem

- Key Challenge: How can the grocery firm modify products and services according to distinct customer behaviors and improve customer engagement?
- Goal: Use clustering to identify customer segments for targeted marketing



# Data Cleaning



# Data Exploration

- Key Insights
  - + Anomalies found in Age
  - + Skewed distribution in Income and Spending
- Visualization: Display a few key feature distributions using bar charts or histograms to demonstrate variability



# Dimensionality Reduction

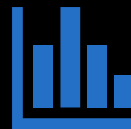


Why PCA?



PCA  
Implementation

Reduced to 3  
dimensions using  
Principal Component  
Analysis for easier  
visualization and  
clustering



Visualization: Show a scatter  
plot of the reduced dataset



# Clustering Approach



Clustering Method:  
Agglomerative  
Clustering

Why Agglomerative  
Clustering?

- A hierarchical clustering method that merges clusters until the optimal number of clusters is achieved

Elbow Method

- Used to determine the optimal number of clusters

Visualization: Show  
the elbow plot that  
guided the cluster  
selection

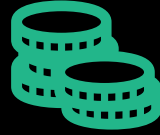
# Cluster Profiles

- Cluster
  - + Parents, families of 2-5 members, majority with teenagers, older, lower-income group
- Cluster
  - + Younger parents, smaller families, typically one young child, lower income
- Cluster
  - + High-income group, mostly couples, no children, spans all ages
- Cluster
  - + Parents, families of 2-4, often single parents, majority have teenagers, relatively older





# Spending Patterns by Cluster



## Spending Habits

Cluster 2: Highest spending across categories

Cluster 0: Higher spending despite lower income

Cluster 1: Lower overall spending



## Product Category Analysis

Focus on products like Wines, Meat, Sweets, Fish and customer preferences by cluster



Visualization: Use bar or pie charts to visualize spending by cluster

# Campaign Effectiveness

- Marketing Campaigns
  - + Campaigns had limited engagement, with few participants overall
  - + Cluster 2: Low response to deals or promotions, but higher organic spending
  - + Cluster 0 & Cluster 3: Most responsive to deals
- Opportunity: Improve campaigns for Cluster 2, create better-targeted campaigns for all groups

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# Key Insights & Applications

- Targeted Marketing
  - + Personalized marketing strategies based on family structure and income/spending
- Income-Specific Offers
  - + Budget-friendly offers for low-income groups and premium offerings for high-income groups
- Family Dynamics
  - + Target single parents in Cluster 3 and young families in Cluster





# Conclusion

- Summary
  - + Performed customer segmentation using PCA and Agglomerative Clustering
  - + Identified four distinct customer groups based on spending, family structure, and income
- Next Steps
  - + Implement targeted marketing strategies tailored to each cluster to increase engagement and sales
  - + Develop better, more personalized campaigns based on insights from cluster profiling

