

Marketing Analytics

Group-4

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Objective:

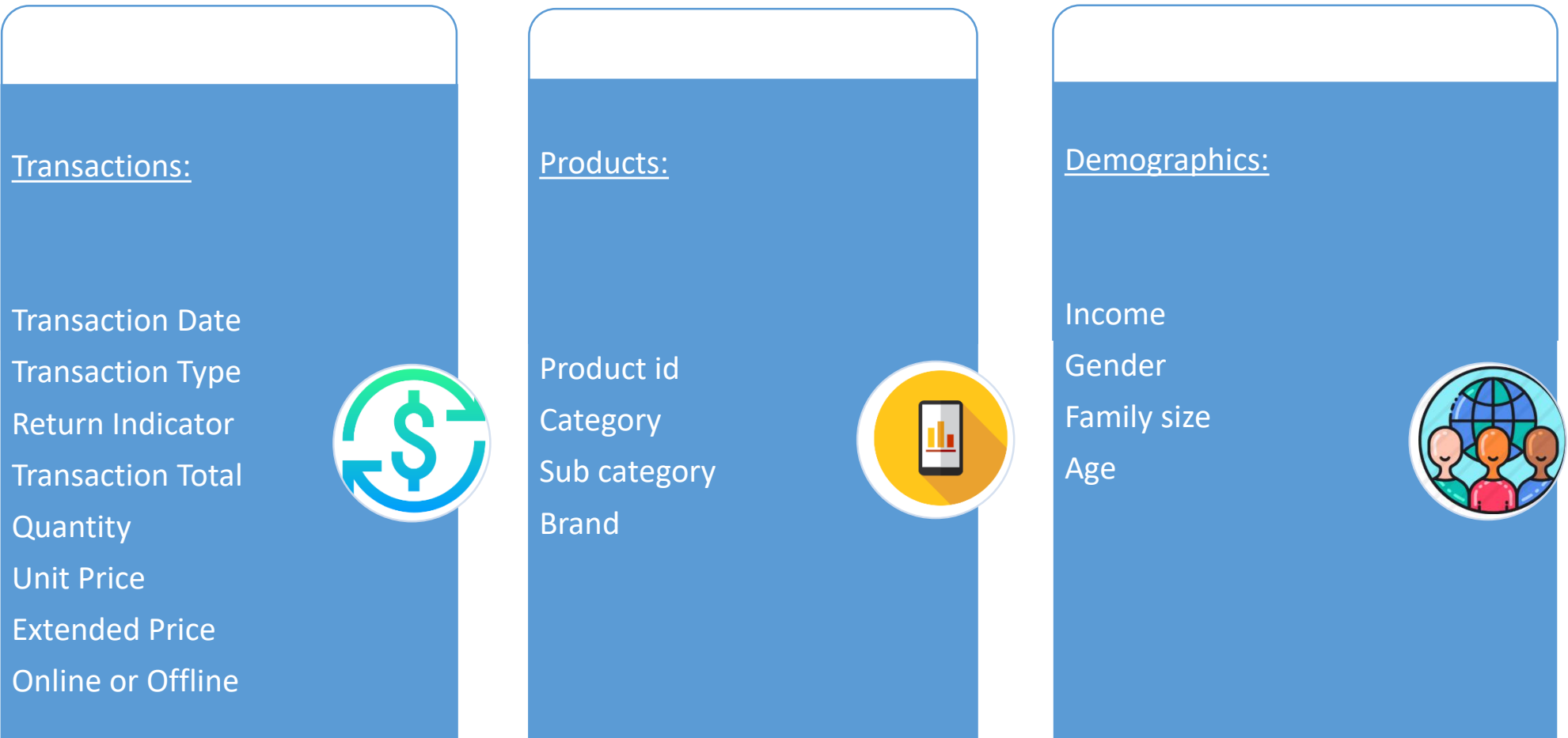
To identify our best and valuable customers and develop marketing strategies to retain them and invest in the right customer category to increase company profits.

Our approach:

- Customer segmentation
- Customer Lifetime value
- Targeting customers

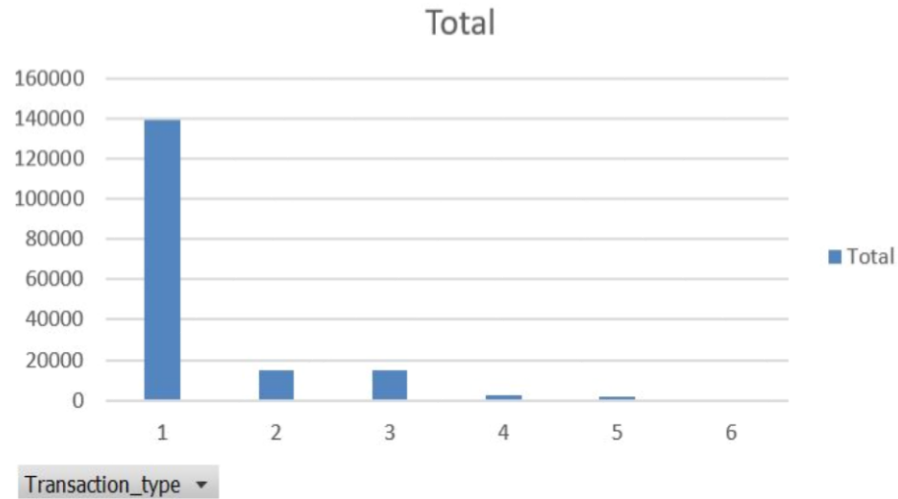
Data Description:

- We have a panel dataset containing transactional records of 19,936 households during six years period (Dec 1998 to Nov 2004)

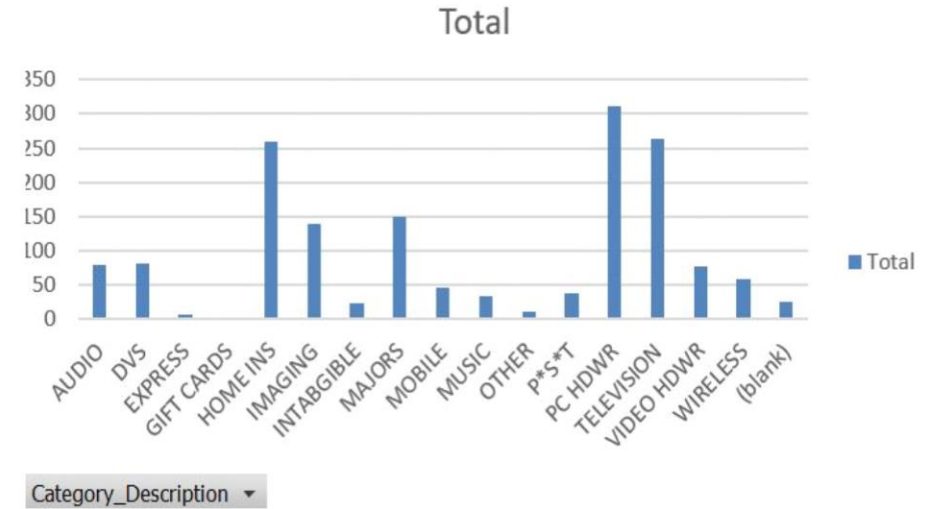


Data Exploration:

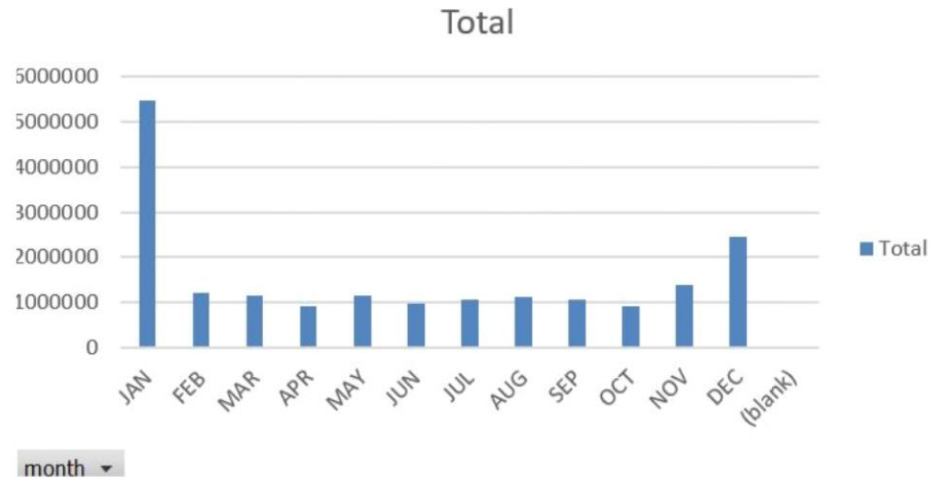
Count of ORIGINAL_TICKET_NBR



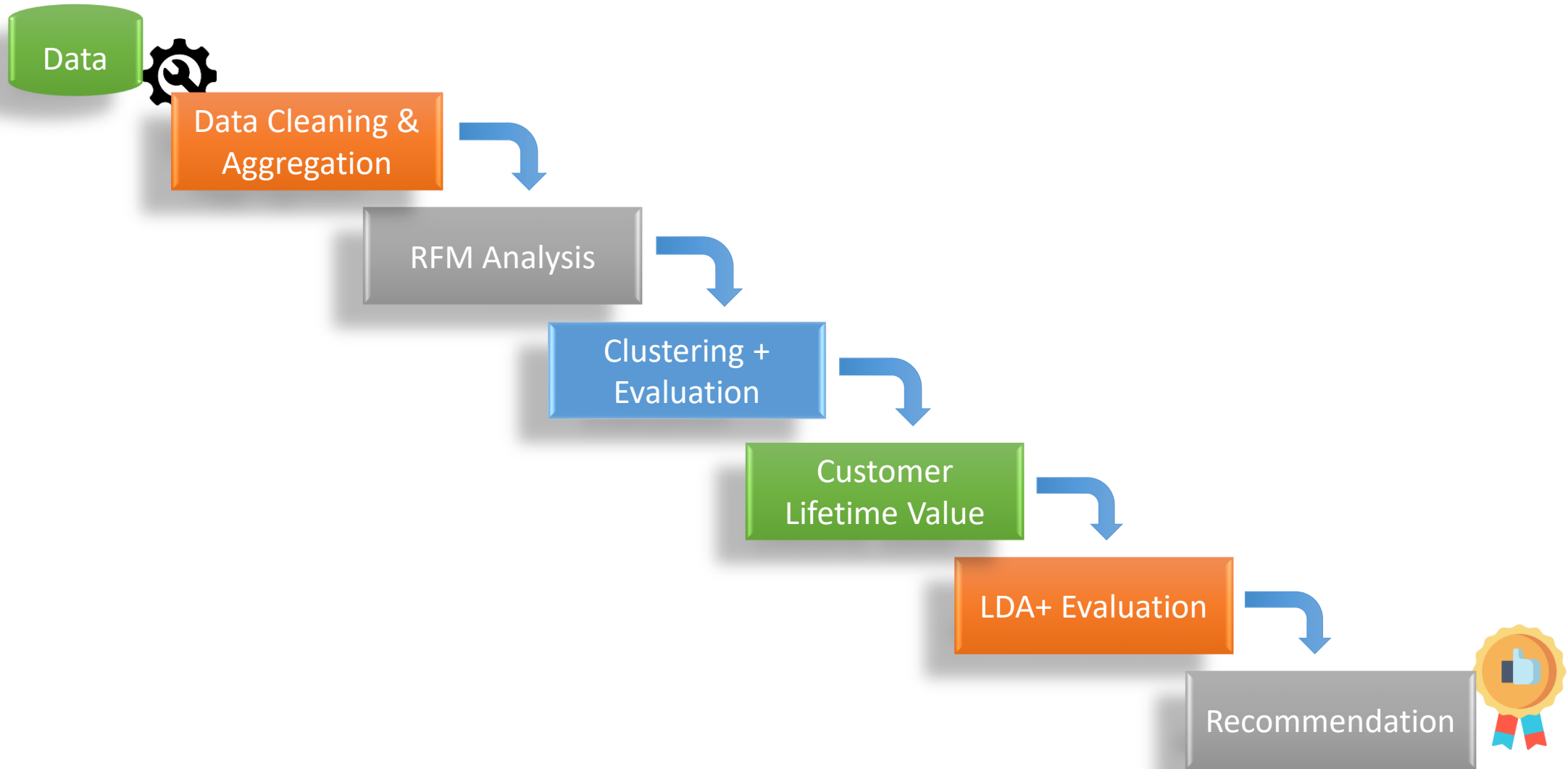
Average of EXTENDED_PRICE



Sum of EXTENDED_PRICE



Overview: Methodology:

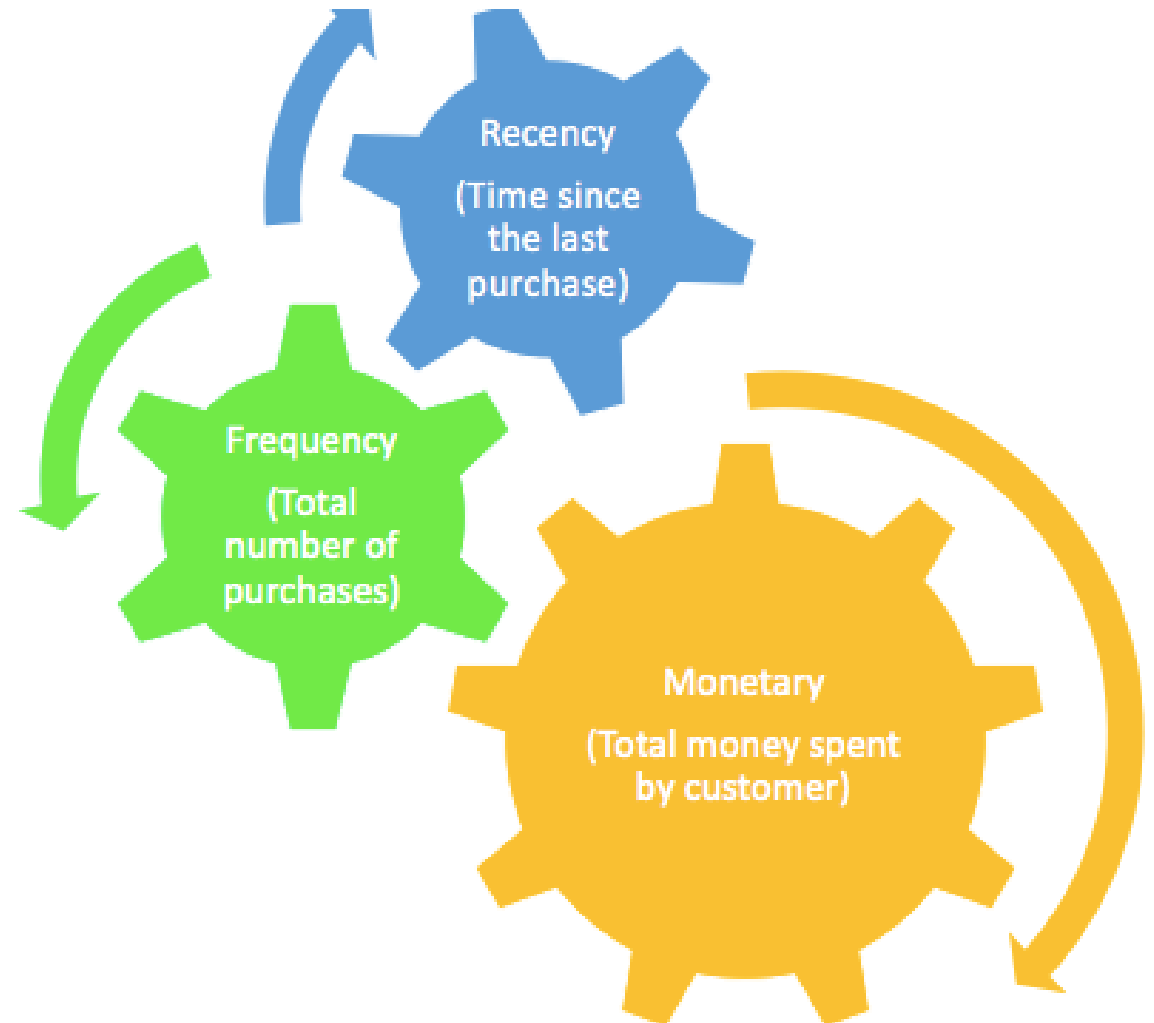


Customer Segmentation: RFM Analysis

- We used “Behavior based segmentation” to segment our customers.
- We segmented the customers based on RFM analysis.

RFM analysis is a behavioral based segmentation technique that uses **past purchase behavior** to divide customers into groups to determine quantitatively which customers are the best ones by examining:

- how recently a customer has purchased (**Recency**)
- how often they purchase (**Frequency**)
- and how much the customer spends (**Monetary**)



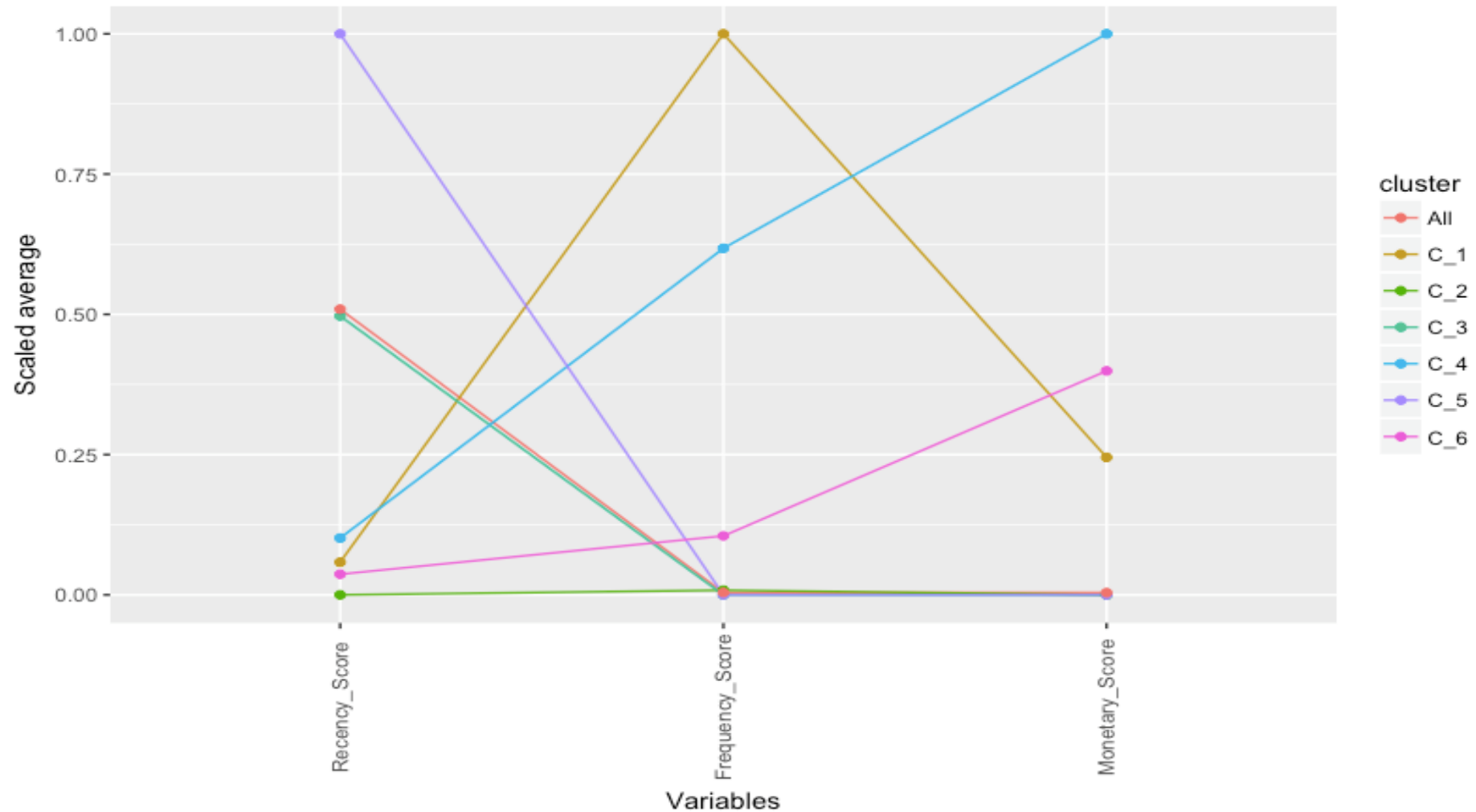
K-means Clustering Results



| | seg | Recency_Score | Frequency_Score | Monetary_Score |
|----|-----|---------------|-----------------|----------------|
| 1: | 1 | 1.192308 | 3.384615 | 1.615385 |
| 2: | 2 | 1.000000 | 1.018693 | 1.000000 |
| 3: | 3 | 2.624143 | 1.001124 | 1.000674 |
| 4: | 4 | 1.333333 | 2.466667 | 3.533333 |
| 5: | 5 | 4.256437 | 1.000000 | 1.000701 |
| 6: | 6 | 1.115607 | 1.248555 | 2.005780 |

- ➡ Premium Customer
- ➡ New Customer
- ➡ Valuable Customer

Clusters vs RFM Scores:



Which customers to target?



Target your Customers

- We used the demographic variables to target our customers.
- We have also created some new variables to build customer profile:
 - # of online transactions
 - # of returns
 - # different categories purchased
 - # of stores visited

Linear discriminant analysis:

| | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] |
|-----------------------|--------|------------|-------------|-------------|--------------|------------|
| seg | 1.00 | 2.0000000 | 3.00000000 | 4.0000000 | 5.00000000 | 6.0000000 |
| Age_H.Head | 50.32 | 48.4642775 | 48.69178496 | 49.8461538 | 49.273231958 | 49.4358974 |
| Income | 6.16 | 6.1010797 | 5.67668378 | 6.6923077 | 5.562394400 | 6.7051282 |
| Total_transactions | 123.48 | 15.4670342 | 7.13349441 | 115.0769231 | 4.026550809 | 49.1538462 |
| Total_online | 8.12 | 0.2883069 | 0.06297191 | 0.5384615 | 0.003137823 | 0.1410256 |
| Total_returns | 13.72 | 1.6758557 | 0.79099970 | 9.2307692 | 0.390055515 | 4.7628205 |
| Total_diff_categories | 10.56 | 4.5173444 | 2.64497131 | 11.3076923 | 1.805454984 | 8.5705128 |
| Gender | 0.32 | 0.3363198 | 0.37571731 | 0.3076923 | 0.413227130 | 0.3205128 |
| No_of_Children | 0.80 | 0.5940731 | 0.47447901 | 0.6153846 | 0.406951484 | 0.4615385 |
| No_of_stores | 2.84 | 1.6113025 | 1.24569616 | 3.5384615 | 1.073859522 | 2.1858974 |

What Next



The study of RFM analysis on our customers divided the customers into segments based on their Recency, Frequency and Monetary scores.

But there is one important question, which still needs to be answered...

What value does each customer provide to us?

Is every customer driving equal amount of profit for our company?

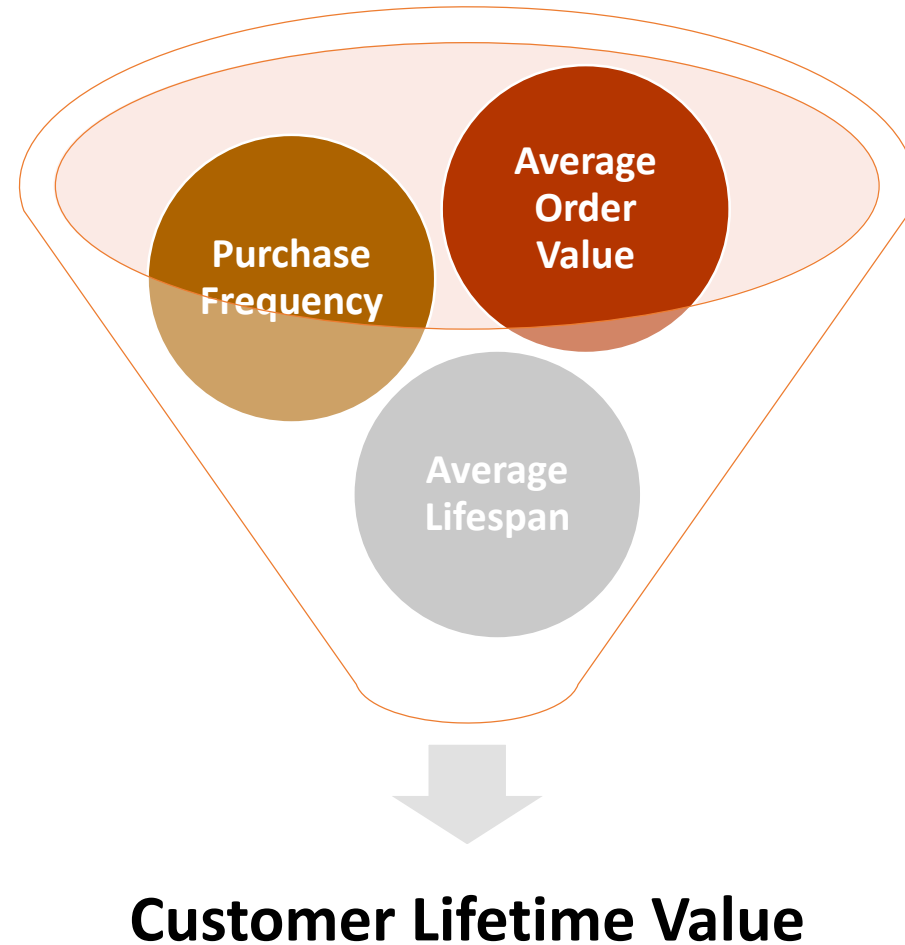
What is customer lifetime value?

- Customer Lifetime Value is the projected revenue that a customer will generate during their lifetime.
- Using CLV, a company can derive actionable information that enables managers to design strategies for customers that matter in the long-run rather than focusing solely on increasing short-term profits.



Customer Lifetime Value:

- **Average order value** = Total revenue/No. of orders
- **Purchase frequency** = No. of orders/Unique customers
- **Customer value** = Average Order Value * Purchase Frequency
- **Average Lifetime Span** = $1 / \text{Retention Rate}$



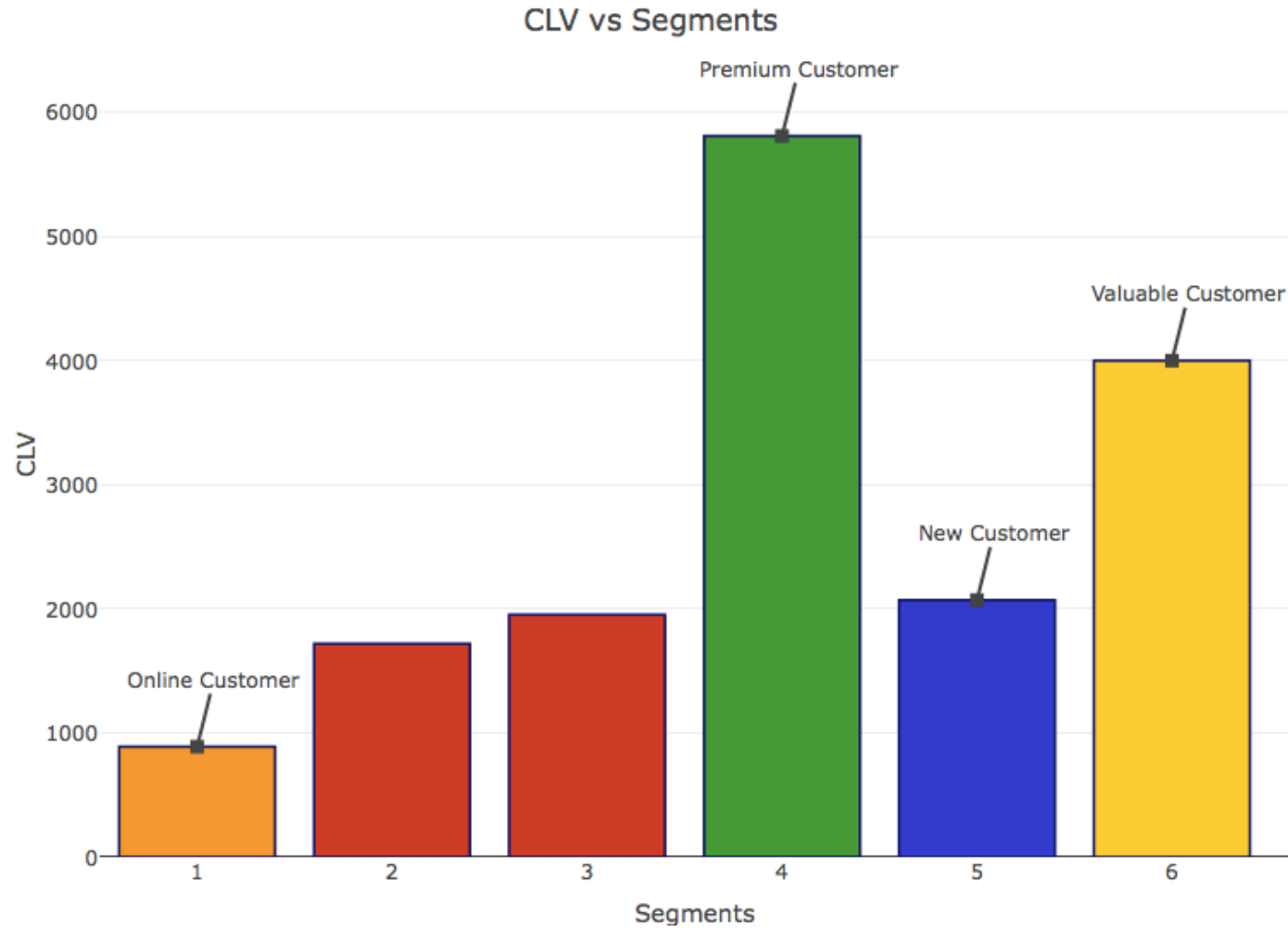
CLV of Segments



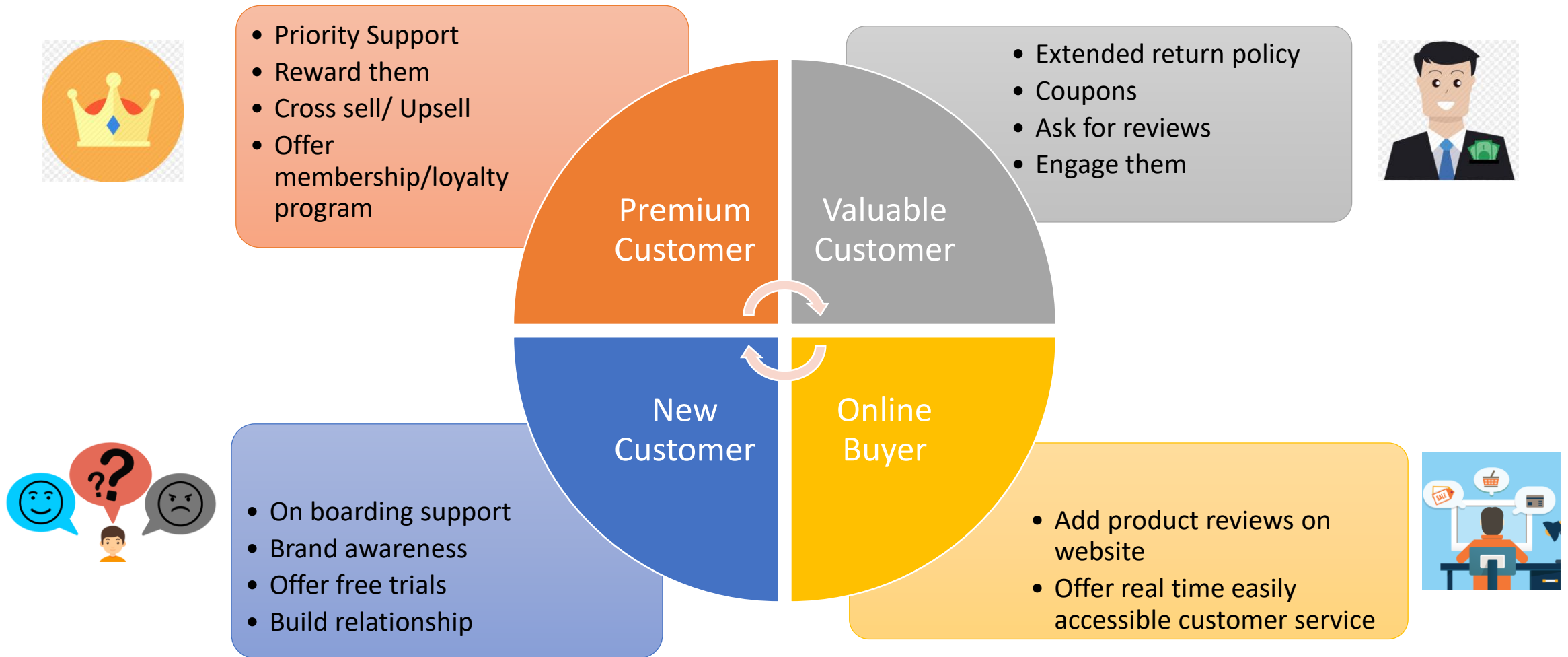
| | seg | Recency_Score | Frequency_Score | Monetary_Score | CLV |
|----|-----|---------------|-----------------|----------------|-----------|
| 1: | 1 | 1.192308 | 3.384615 | 1.615385 | 889.9868 |
| 2: | 2 | 1.000000 | 1.018693 | 1.000000 | 1719.6798 |
| 3: | 3 | 2.624143 | 1.001124 | 1.000674 | 1953.6519 |
| 4: | 4 | 1.333333 | 2.466667 | 3.533333 | 5810.6477 |
| 5: | 5 | 4.256437 | 1.000000 | 1.000701 | 2070.9108 |
| 6: | 6 | 1.115607 | 1.248555 | 2.005780 | 4000.3631 |

- ➡ Premium Customer
- ➡ New Customer
- ➡ Valuable Customer

CLV of Segments



Managerial Insights:



Data Challenges:

- There are households which have return transactions without any purchase record for some items.
- Transaction types for returns are categorized as transaction type 2 or 4, however returns can occur in any transaction type.
- Missing values



Thank you!