



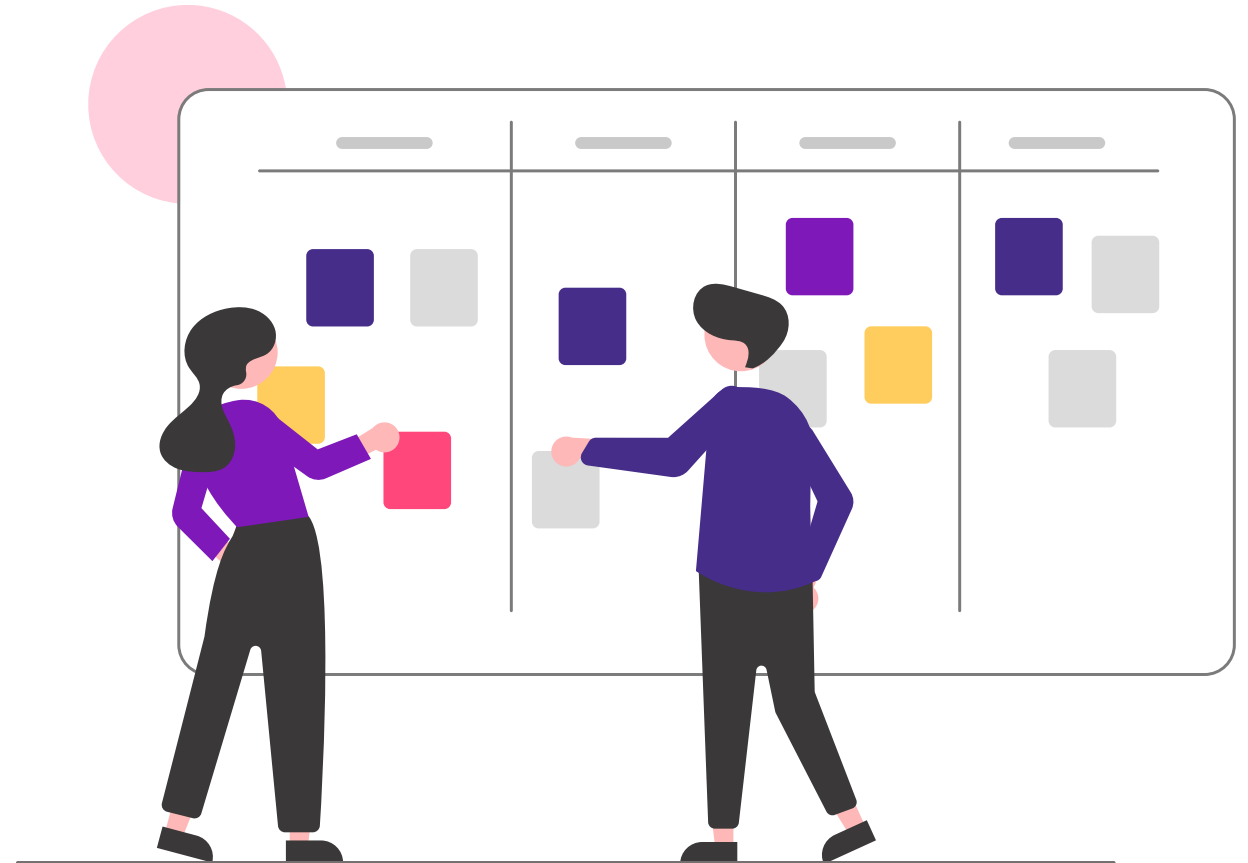
Data-Driven Customer Segmentation **RFM & Analyzing Customer Lifetime Value**

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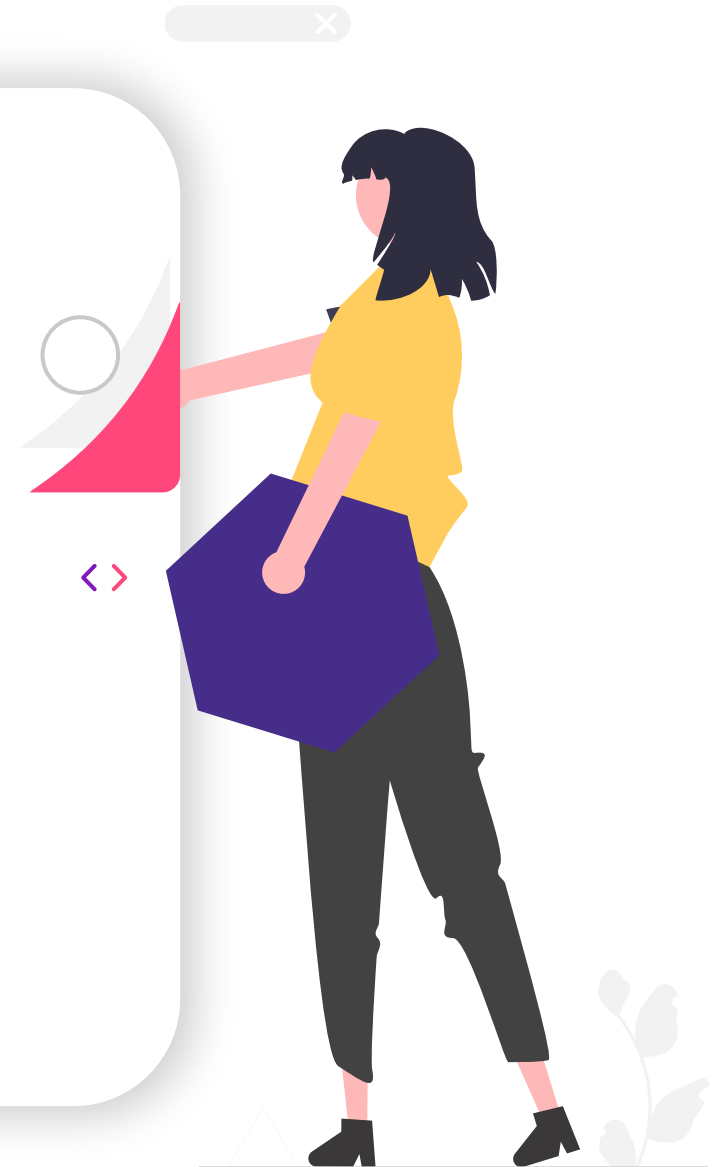
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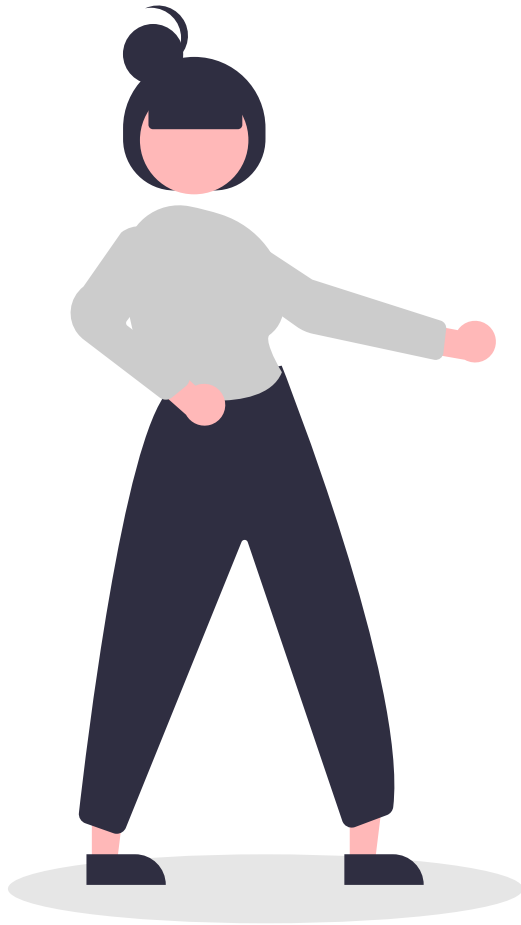
Business Understanding

Currently, online retail players are fiercely competing to win and retain customers, is an expensive affair. That is why it is crucial for success to invest primarily in those customers who are lucrative for the company in the long run. It is important to understand these customers intimately, to engage them with the right channels, and to tailor offers to their context and needs. This can only be achieved by drawing on customer-related metrics of which customer lifetime value (CLV) is first among equals and by interlinking them intelligently as the foundation for effective and efficient marketing.¹

In this project i will discuss how RFM segmentation and CLTV analysis can optimise marketing



Data Understanding



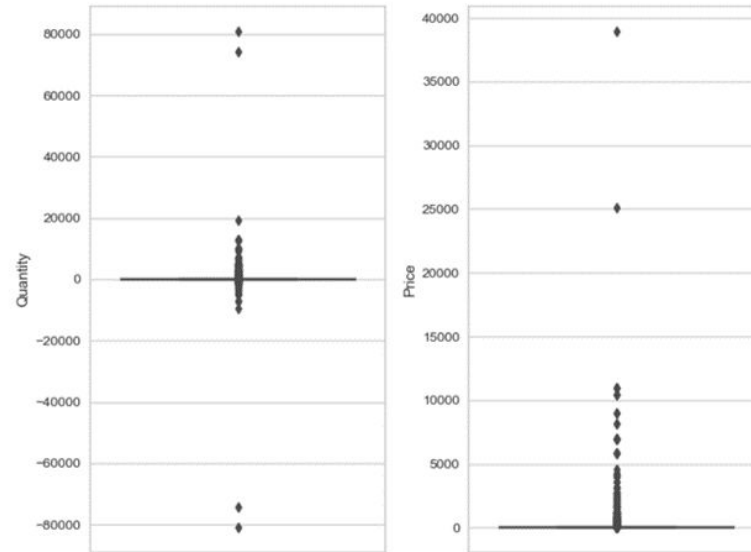
This is a transaction dataset containing all transactions that occurred between 01/12/2009 and 09/12/2011, operating in the online retail sector. The company mainly sells unique all-occasion gifts. Many customers of the company are wholesalers.

1.044.848 Row & 8 Feature

Invoice	: Invoice number
Stock Code	: Product(item) code
Description	: Product name
Quantity	: The quantities of each product per transaction
Invoice Date	: The day and time when a transaction was generated
Price	: Product price
Customer ID	: Customer Number
Country	: The name of the customers Country

Data Cleaning

Column	Non-Null	Count	Dtype
Invoice	1027017	non-null	Object
StockCode	1027017	non-null	Object
Description	1027017	non-null	Object
Quantity	1027017	non-null	int64
InvoiceDate	1027017	non-null	datetime64
Price	1027017	non-null	Float64
Customer ID	1027017	non-null	Float64
Country	1027017	non-null	Object



Missing value :

Invoice	0.000000
StockCode	0.000000
Description	0.409150
Quantity	0.000000
InvoiceDate	0.000000
Price	0.000000
Customer ID	22.518778
Country	0.000000

Action

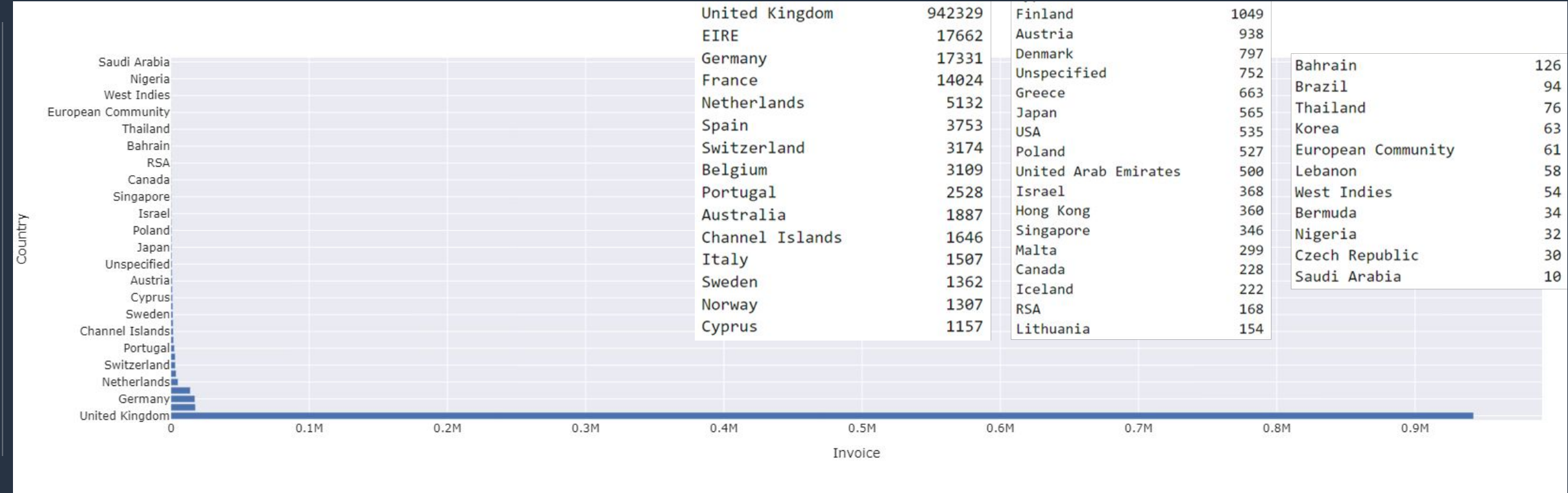
- Delete Zero values in Price
- Fill null value in Customer ID with Non User non login user
- Drop Duplicated Data

EDA



Exploratory Data Analysis

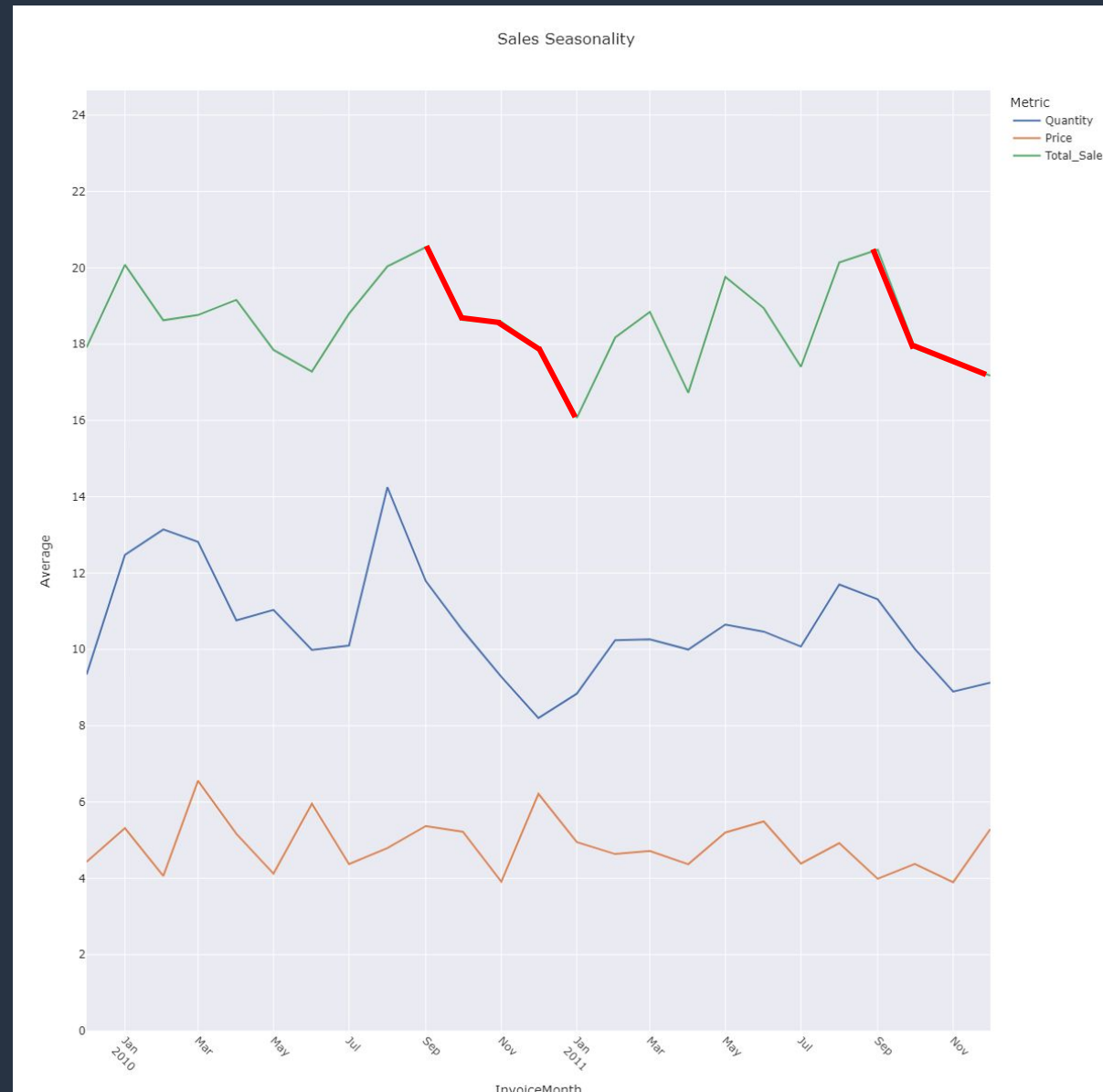
Total Invoices Based on Country



Top 5 Country With Most Customers

Country	Percentage	Total
UK	91 %	5408
Germany	1.8 %	107
France	1.6 %	96
Spain	0.7 %	41
Belgium	0.5%	29



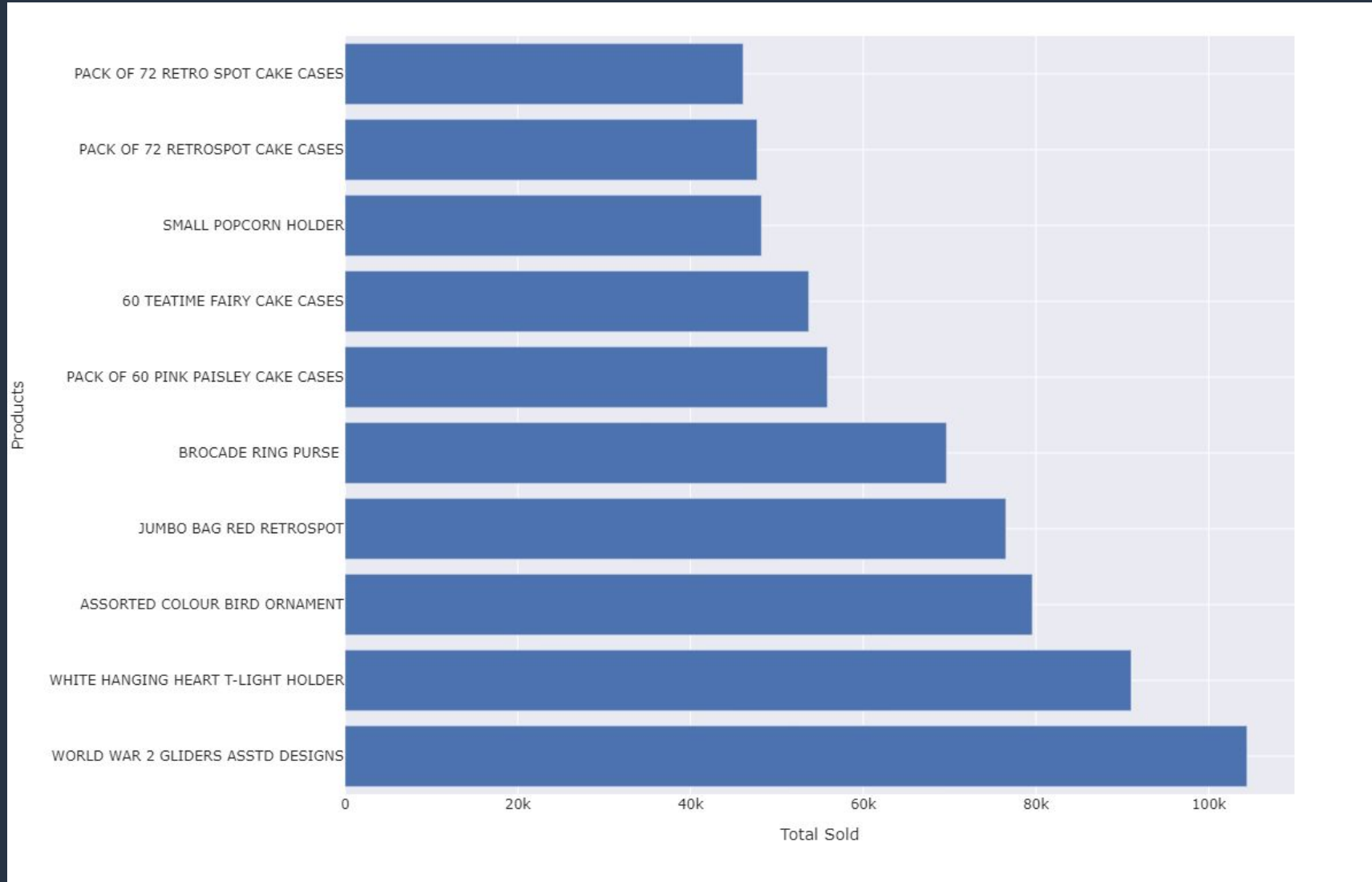


Sales Seasonality

1.027.017 Order
5.939 Customers
Drop In every
September - December

There are several factors related to the decline in sales from September to December, one of which is that many people in the UK have started preparing for holiday spending. This may lead to a decrease in spending on non-essential items, such as gifts. Another factor is the competition in offering promotions and discounts to attract customers, this can lead to a decline in sales for retailers who do not offer competitive promotions or discounts, hence the need for competitor data and longer sales data to see the cause of the decline.

Top 10 Product

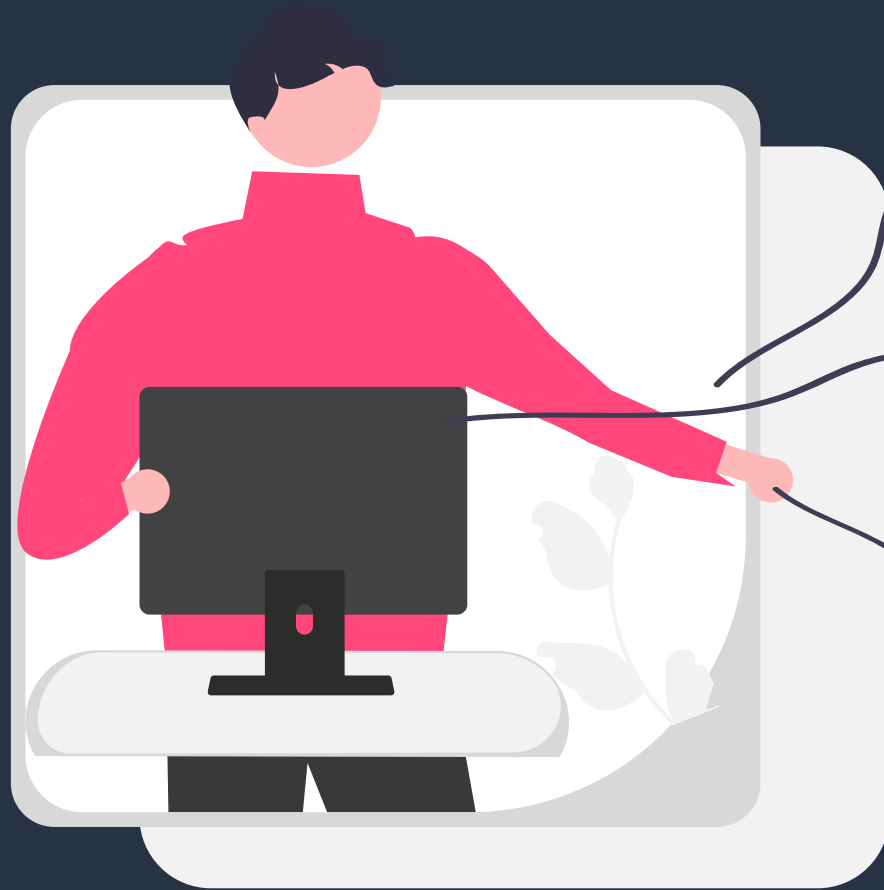


RFM



Recency
Frequency
Monetary

RFM



01

Recency

Represents the recency of the customer

02

Frequency

Transaction count for each user

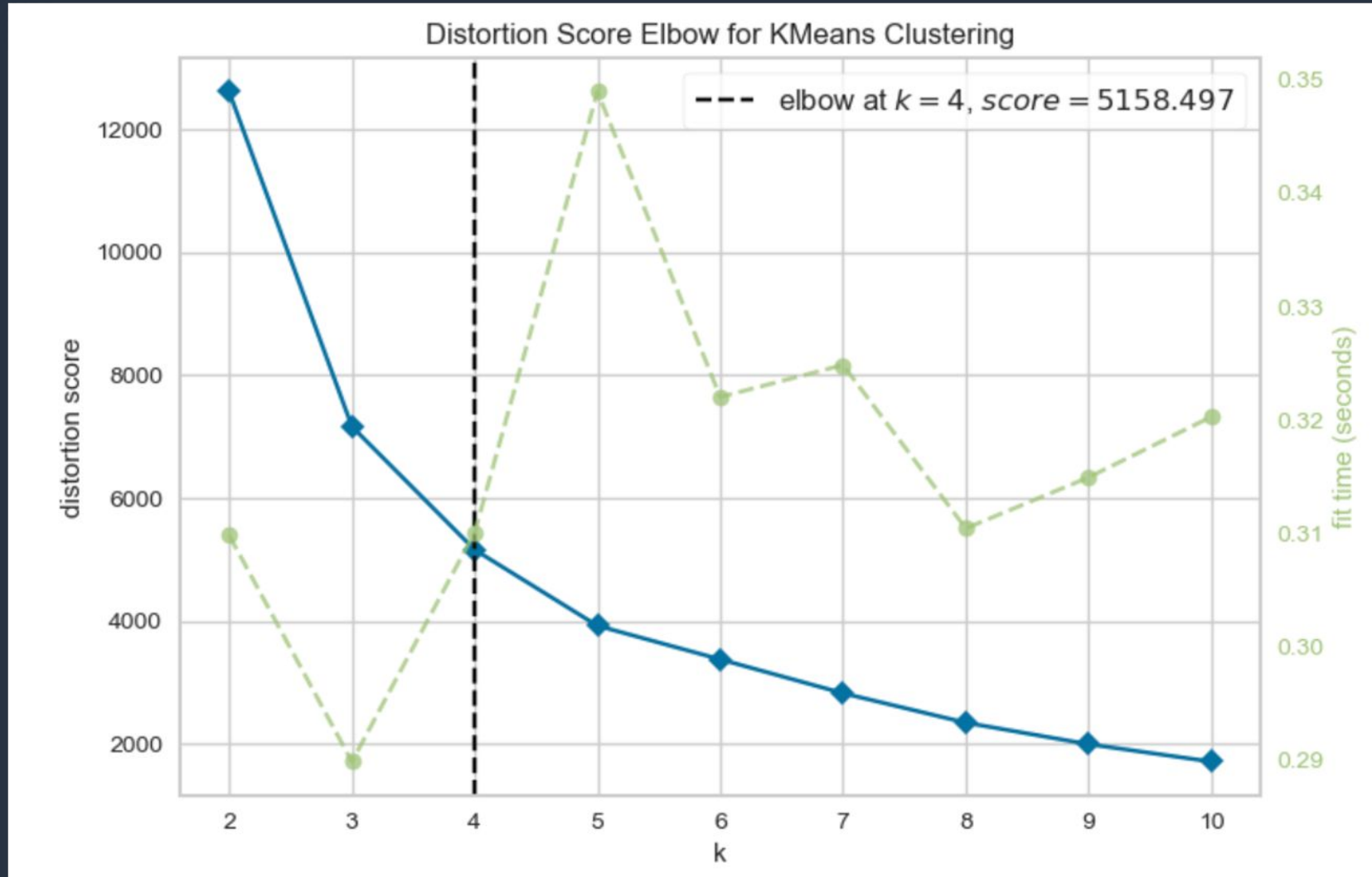
03

Monetary

Represents the total amount of money each user spends

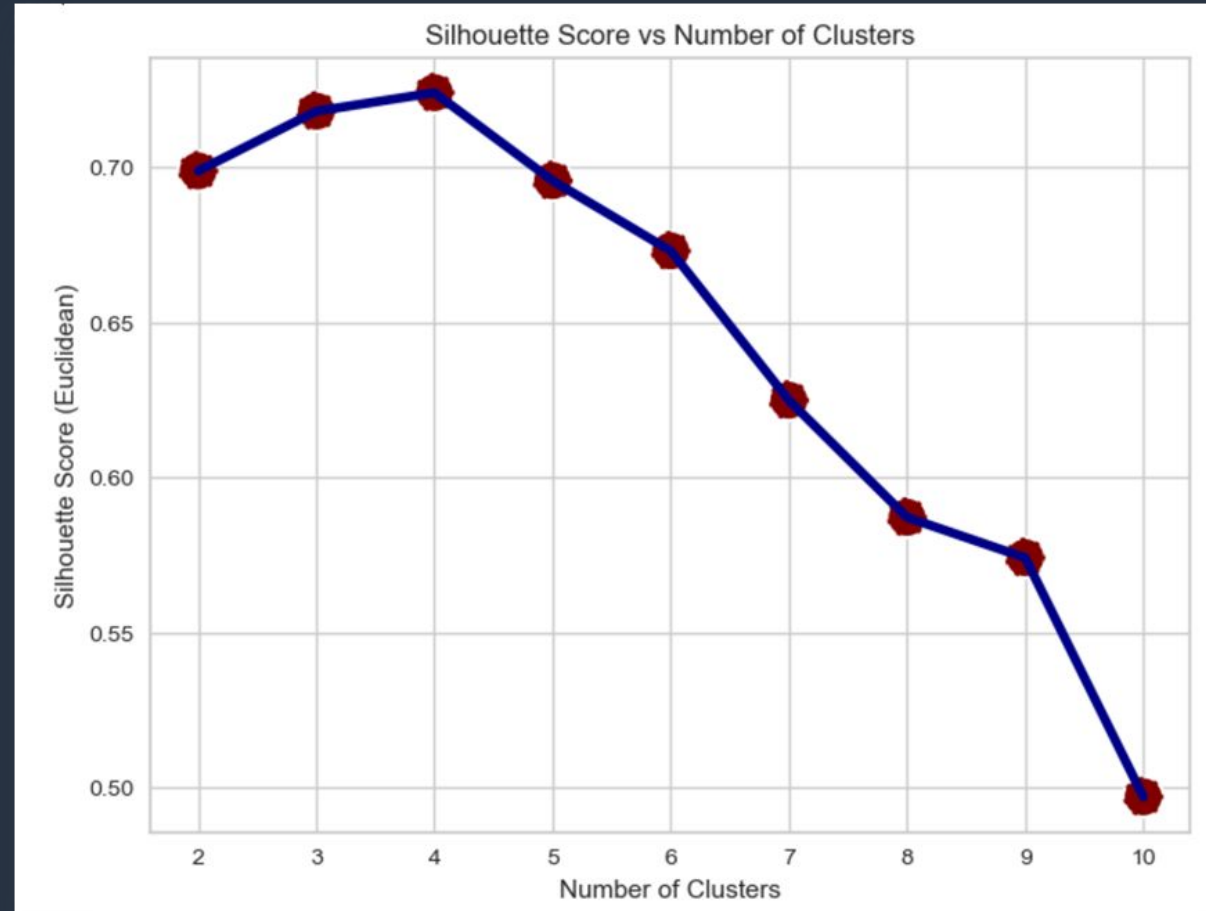
ELBOW

Elbow Method



K = 4

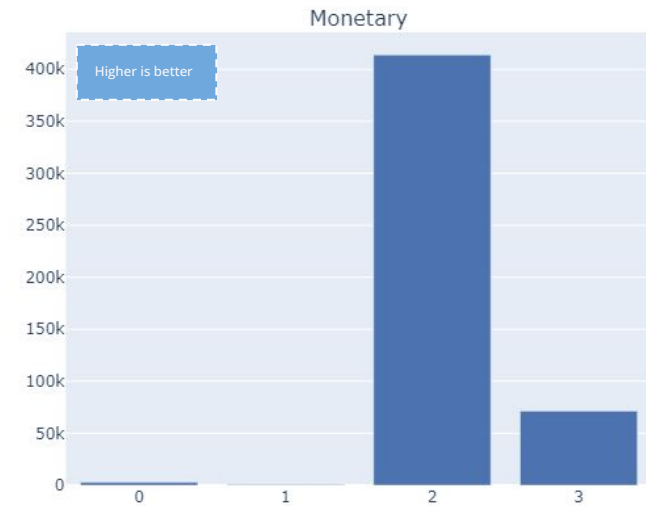
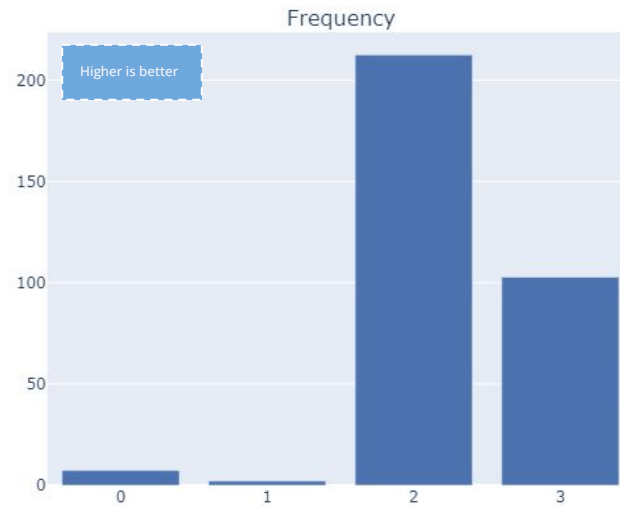
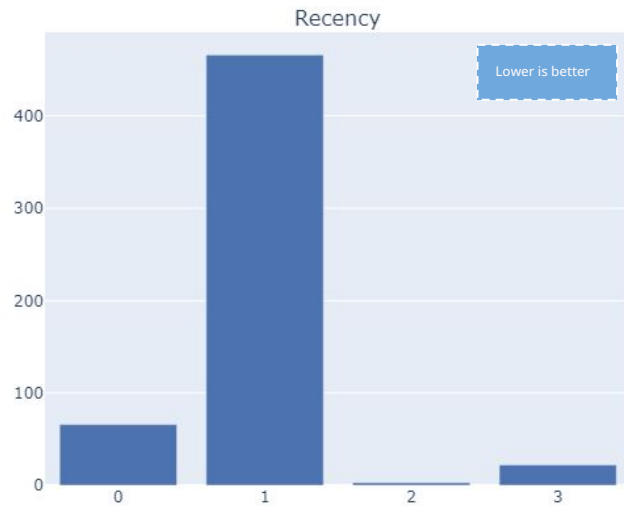
Silhouette Method



K = 4

Based on the Elbow and Silhouette Method, it can be concluded that the optimal value of k is 4

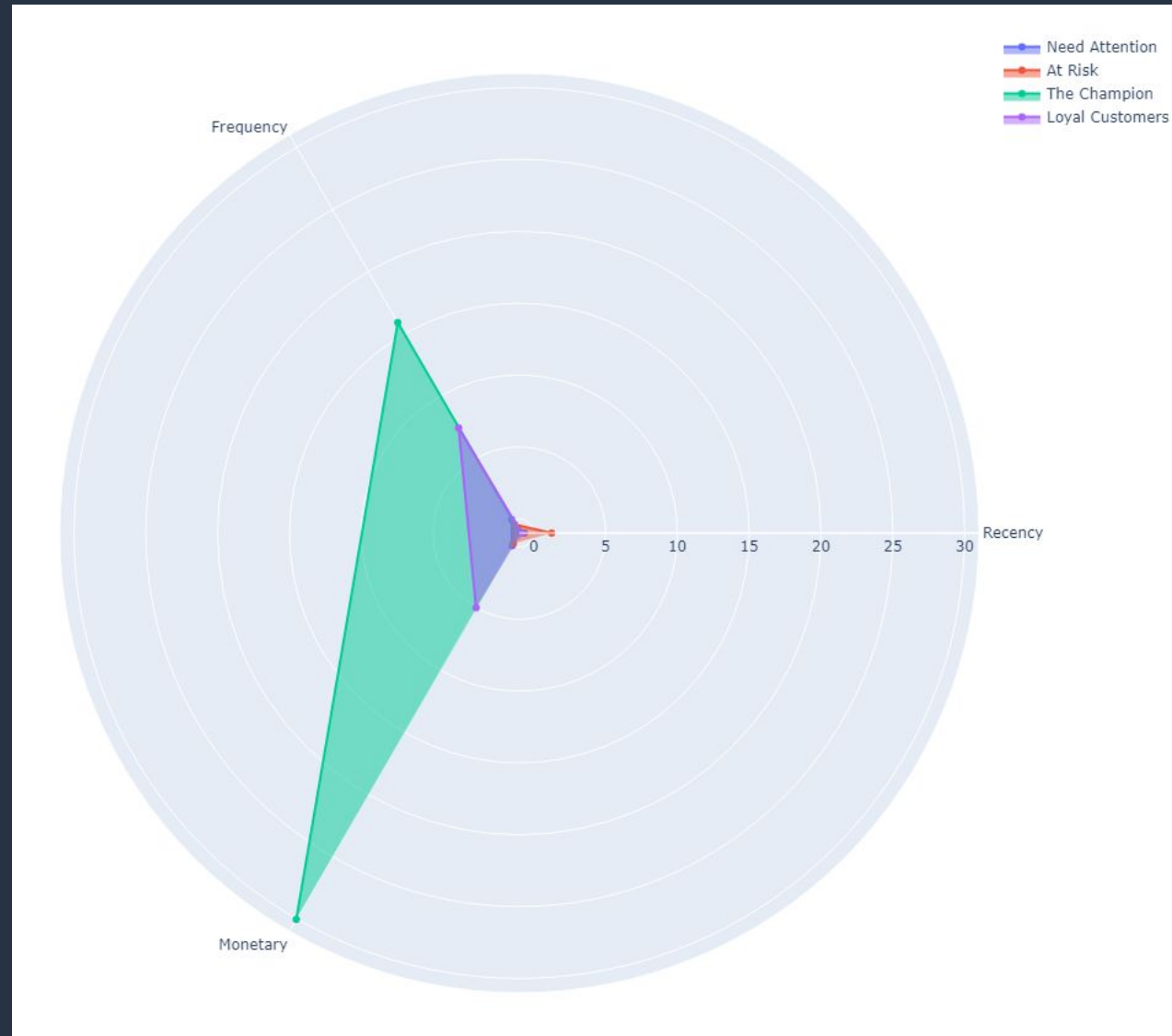
Segmentation Based on RFM



0 = Need Attention
1 = At Risk
2 = The Champion
3 = Loyal Customer

RFM

Segmentation Based on RFM



RFM

Segmentation Based on RFM



...

The Champion

4
Customers

Loyal Customers

37
Customers

Need Attention

3870
Customers

At Risk

2028
Customers

CLV



Customers Lifetime Value

Customers Lifetime Value

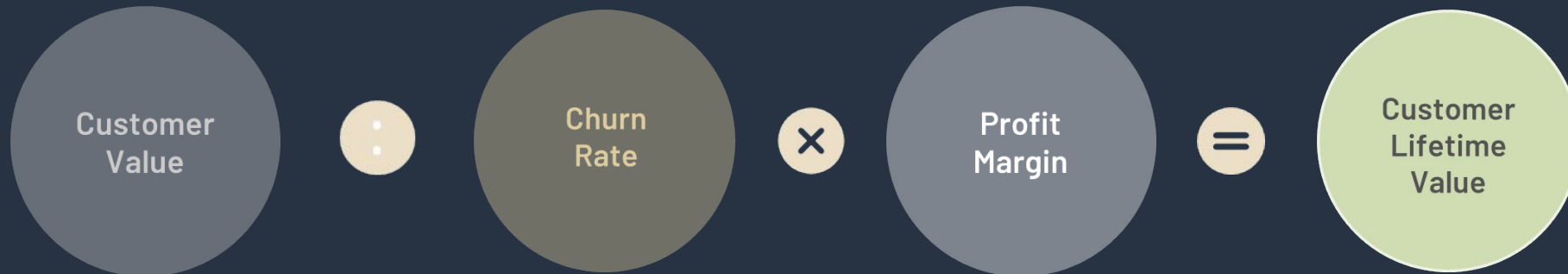
Customer life time value (CLTV) is a crucial metric that businesses use to measure the total revenue generated from a customer throughout their relationship with the company. It considers various factors, including average purchase value, repurchase frequency, and the average lifespan of a customer relationship.

CLTV provides valuable insights into the long-term profitability of a customer relationship, enabling businesses to make informed decisions about customer acquisition, retention, and marketing strategies. By understanding CLV, businesses can identify their most valuable customers and focus their efforts on retaining them.



Customers Lifetime Value

CLV can be calculated with the following formula :



Feature Engineering

1. Customer Value:

- **Customer Value = Average Order Value (AOV) x Purchase Frequency**
 - Average Order Value (AOV) = Total Price / Total Transaction
 - Purchase Frequency = Total Transaction / Total Number of Customers

3. Profit Margin

- **Profit Margin = Total Price x 0.10**
(Assumed Profit Margin)

2. Churn Rate

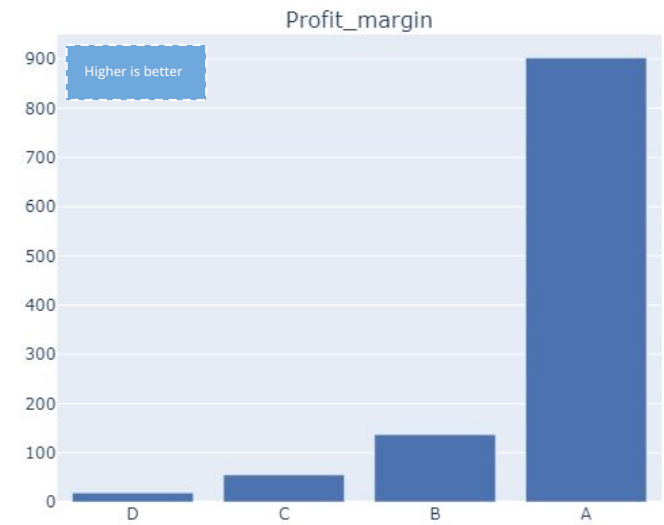
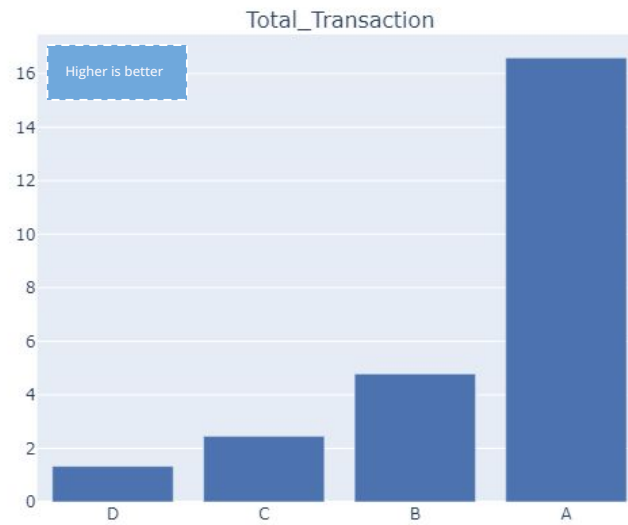
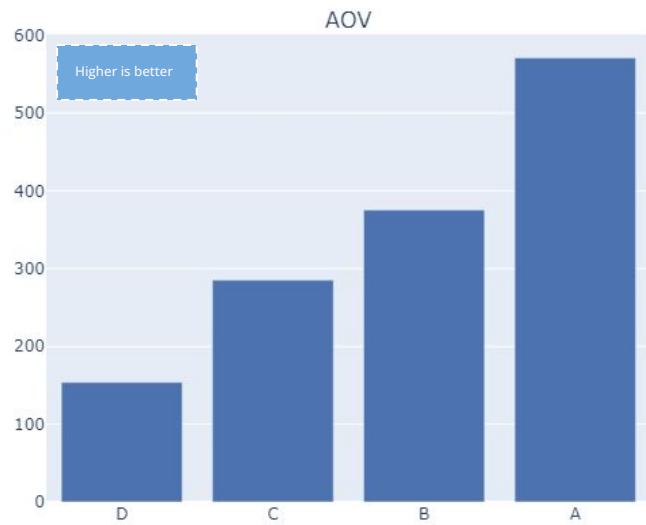
- **Churn Rate = 1 - Repeat Rate**
 - Repeat Rate = (Number of customers making multiple purchases) / (Total customers)

4. CLTV Calculation:

- **CLTV = (Customer Value / Churn Rate) x Profit Margin**

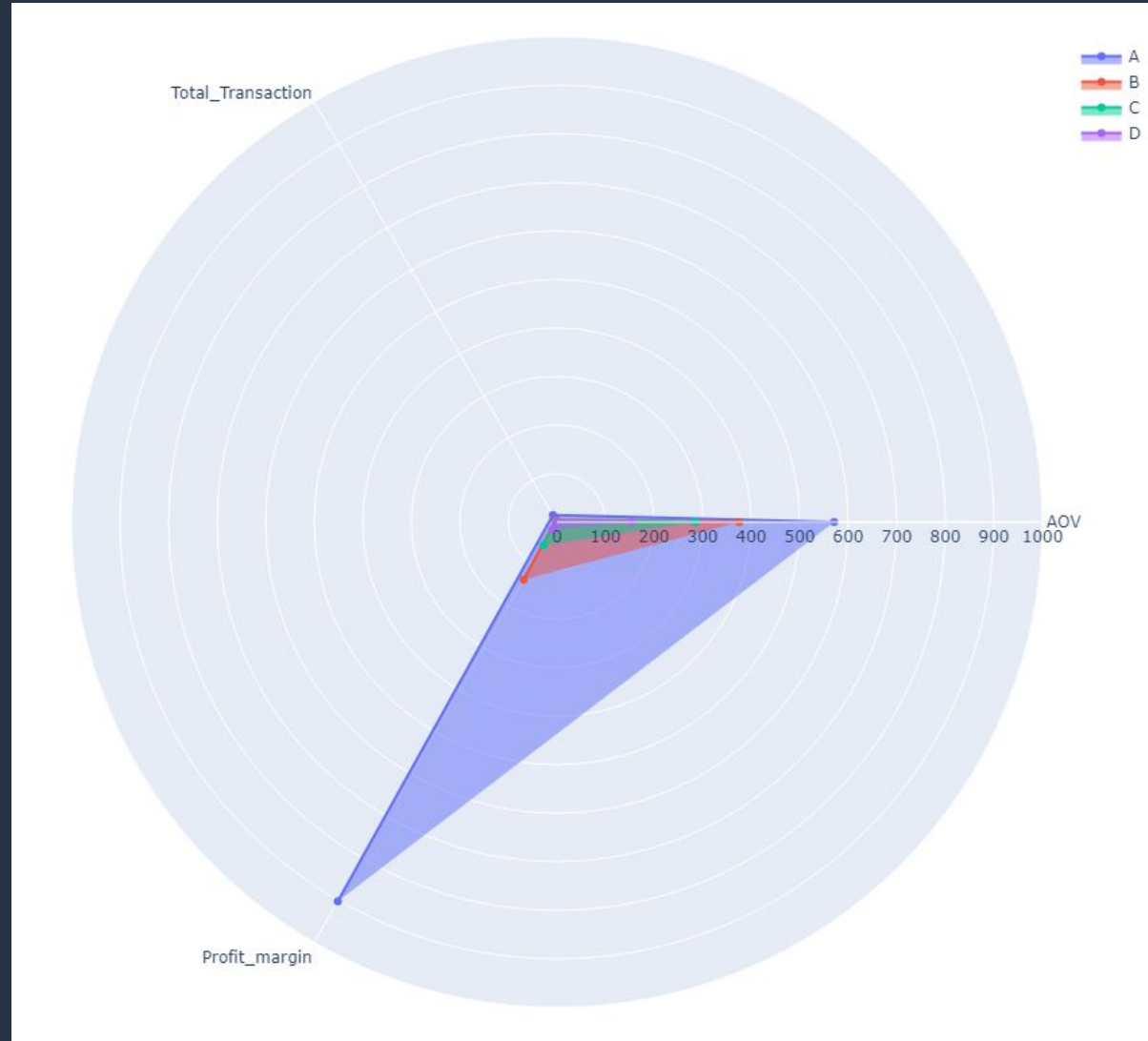
CLV

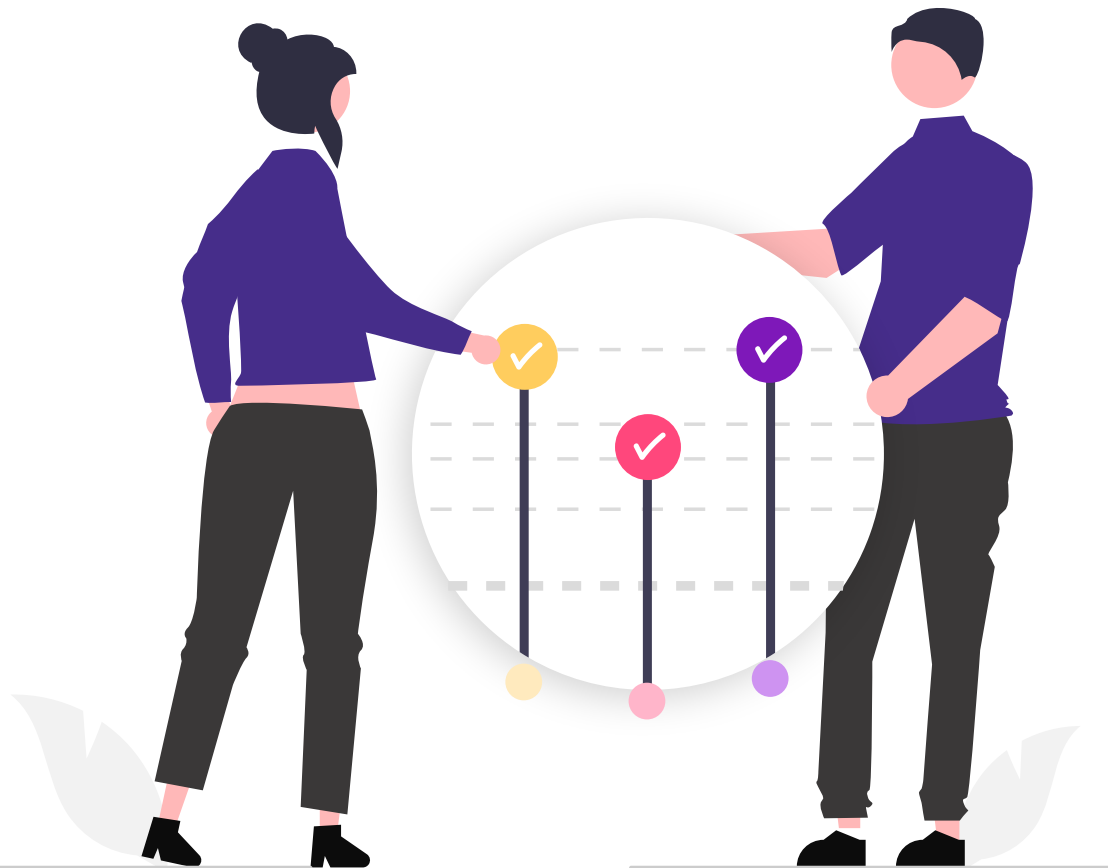
Segmentation Based on CLTV



CLV

Segmentation Based on CLTV





At Risk

Personalized Engagement

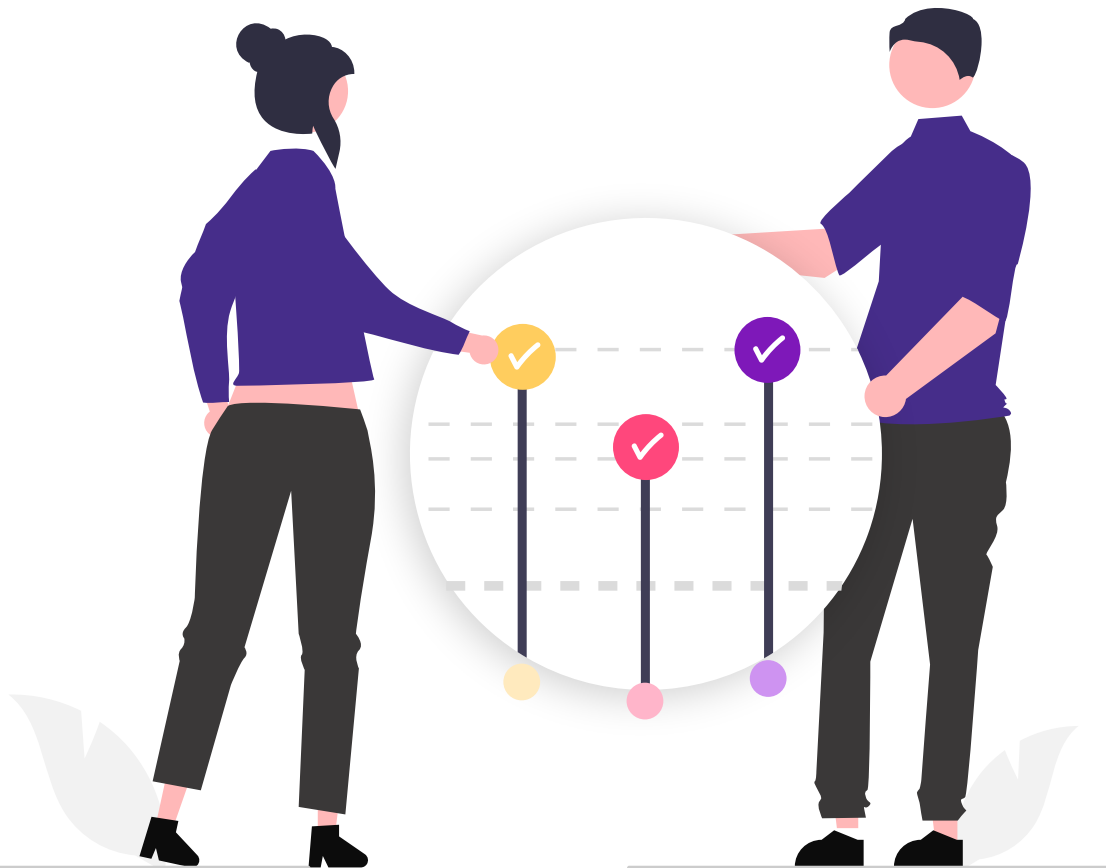
Engage with at-risk customers through personalized messages, seeking their feedback and addressing any concerns or issues they may have. This proactive approach demonstrates your commitment to retaining their business.

Win-Back Offers

Design tailored win-back offers that address the specific reasons behind their lapse in purchases. This targeted approach increases the likelihood of re-engagement.

Reactivation Campaigns

Implement targeted reactivation campaigns aimed at reconnecting with inactive customers. Offer a special welcome-back gift or discount to encourage their return.



Need Attention

Personalized Outreach

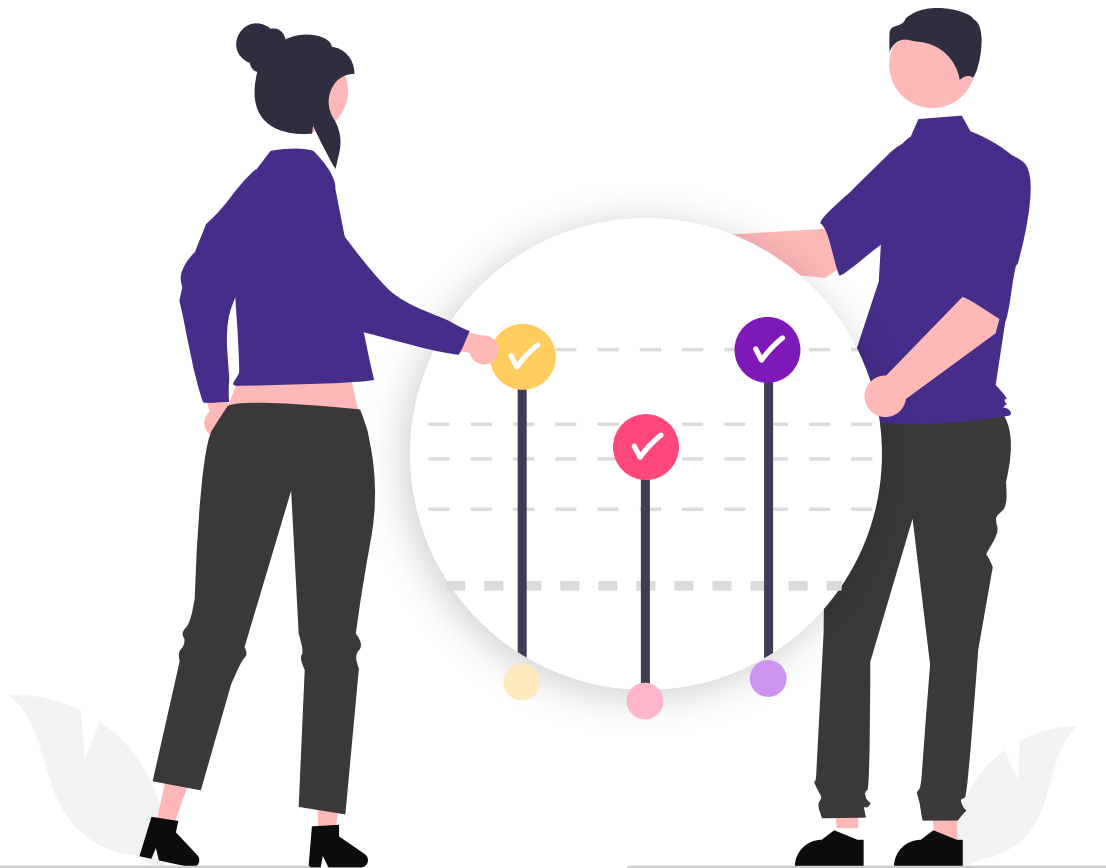
Instead of generic promotional emails, tailor outreach to individual customers based on their past purchases, browsing history, and interests. This personalized approach increases relevance and engagement.

Relevancy in Promotions

Ensure that promotions and discounts align with the preferences and needs of customers in this cluster. Avoid overwhelming them with irrelevant offers that fail to capture their attention.

Loyalty Program Tiers

Consider introducing tiered loyalty programs, providing progressively attractive benefits as customers increase their engagement and repeat purchases.



Loyal customers

Exclusive Shopping Experiences

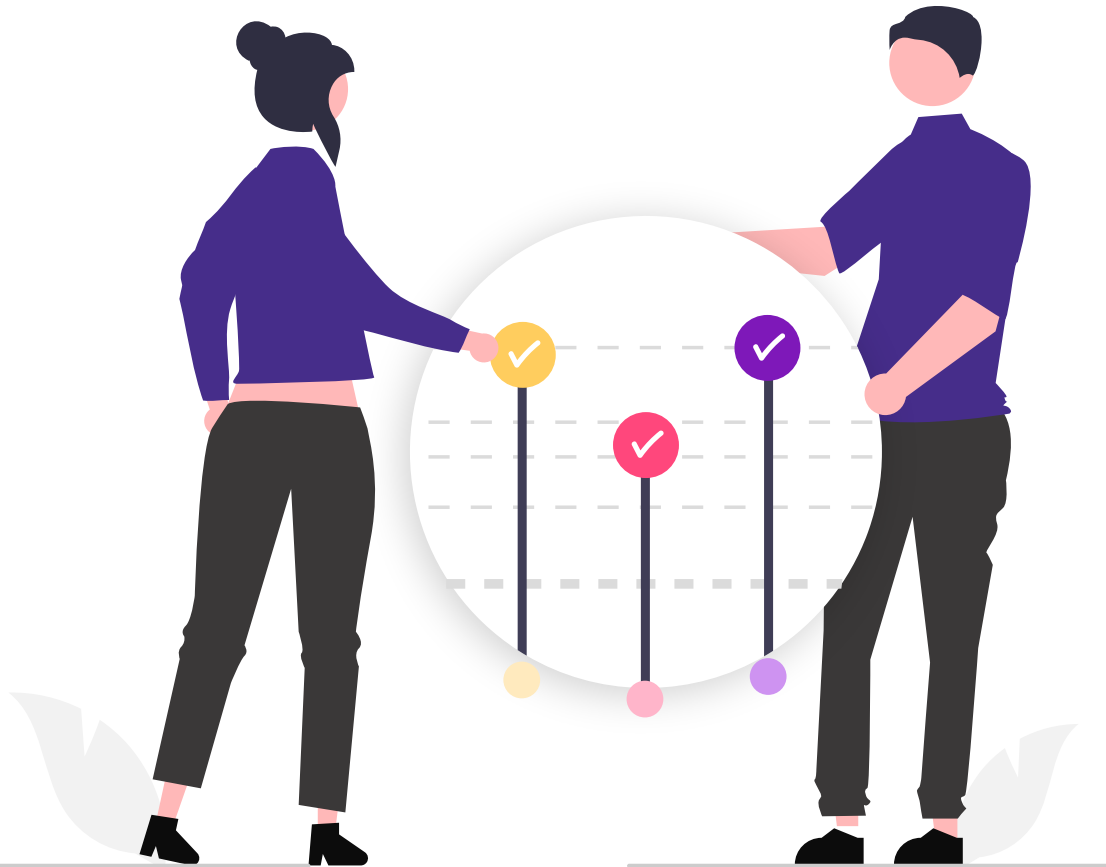
Create exclusive shopping experiences for loyal customers, such as private sales, early access to new products, or personalized consultations with product experts.

Subscription Services

Offer subscription services tailored to their preferences, providing regular deliveries of their favorite products or exclusive access to new items.

Community Access

Create an online community or forum exclusively for loyal customers, fostering a sense of belonging and encouraging peer-to-peer engagement.



The Champion

Exclusive Access

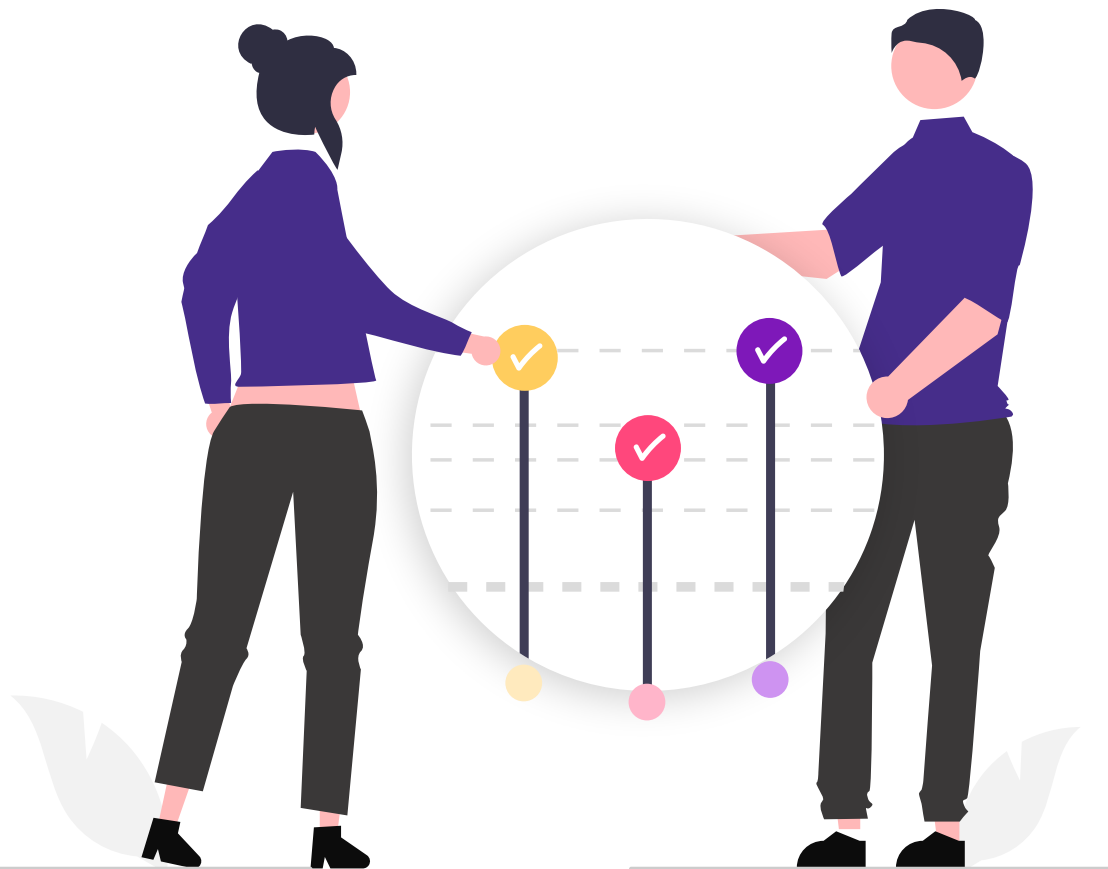
•Provide exclusive access to new products, limited-edition items, or special events as a reward for their loyalty. This exclusivity enhances their sense of value and appreciation.

Personalized Recommendations

Utilize purchase history and expressed preferences to provide personalized product recommendations, showcasing complementary items or upgrades that align with their interests.

Early Bird Benefits

Offer early access to sales, exclusive discounts, or sneak peeks of new products to VIP customers, further solidifying their loyalty.



Recommendation for non login users

Make the login process easier

One of the reasons why consumers do not log in is because the process is considered too complicated, so improvements need to be made to make the login process easier by providing more diverse login options, for example by using a social media account or email.

Offer incentives for consumers who log in

Offer incentives to consumers who log in, for example in the form of discounts, vouchers or rewards points. This can encourage consumers to log in and make purchases more often.



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