10 June 2024

CUSTOMER ANALYTICAL REPORT

Customer 360 & RFM Metrics

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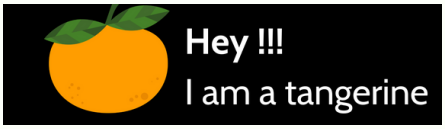

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I. Project overview

The goal of this project is to gain a comprehensive understanding of customers and segment them based on their behavior using the Customer 360 approach. By gathering data from various channels and touchpoints, including demographic, transaction, interaction, and behavioral data, I aim to create a holistic view of each individual customer.

The project will primarily focus on analyzing transaction data using the RFM (Recency, Frequency, Monetary) analysis method. This analysis will be performed over a three-month period, from January 06, 2022, to January 09, 2022. The RFM metrics are essential indicators of customer behavior, where recency reflects engagement, frequency, and monetary value influence customer lifetime value.

To evaluate these metrics, I will employ the Interquartile Range (IQR) method and map the scores to a 4-point scale. The IQR-based scoring will allow us to compare customers within quartile ranges, ensuring fair evaluation.

Furthermore, based on the BCG (Boston Consulting Group) matrix theory, I will classify customers into four groups: Stars, Question Marks, Cash Cows, and Dogs. This classification considers relative market share and market growth rate. In addition to the four BCG segments, there is also a group of lost customers. The categorization of this group depends on whether the business intends to continue targeting and attracting them or not.

By conducting this comprehensive analysis and segmentation, I aim to gain actionable insights into customer behavior, identify valuable customer segments, and develop targeted strategies for each segment.

II. Data Description

The data includes 2 tables: **Customer_Register** (containing the customer's registered contract information) and **Customer_Transaction** (containing the customer's transaction information)

Column Name	Data Type	Meaning	Example
ID	Int	Customer ID	1,2,3,...
Contract	Varchar(50)	ID for a specific contract the customer	SGDN00215
LocationID	Int	ID for the location	8, 75, ...
BranchCode	Int	Branch code	0,1,2, ...
Status	Int	Current status of the customer's account or contract	0, 1, 2, 3
created_date	Date	The date when customer's registration was created	11/25/2011, 6/14/2012, ...
stopdate	Date	The customer's registration was ended	1/5/2012,...

Table 1. Customer_Register

Column Name	Data Type	Meaning	Example
Transaction_id	Int	ID for the transaction	8, 75, ...
CustomerID	Int	Customer ID	1,2,3,...
Purchase_Date	Date	Exact day a customer buys products	1/5/2012,...
GMV	Int	Gross Merchandise Value	95000

Table 2. Customer_Transaction

II. Data Description

The data includes 2 tables: **Customer_Register** (containing the customer's registered contract information) and **Customer_Transaction** (containing the customer's transaction information)

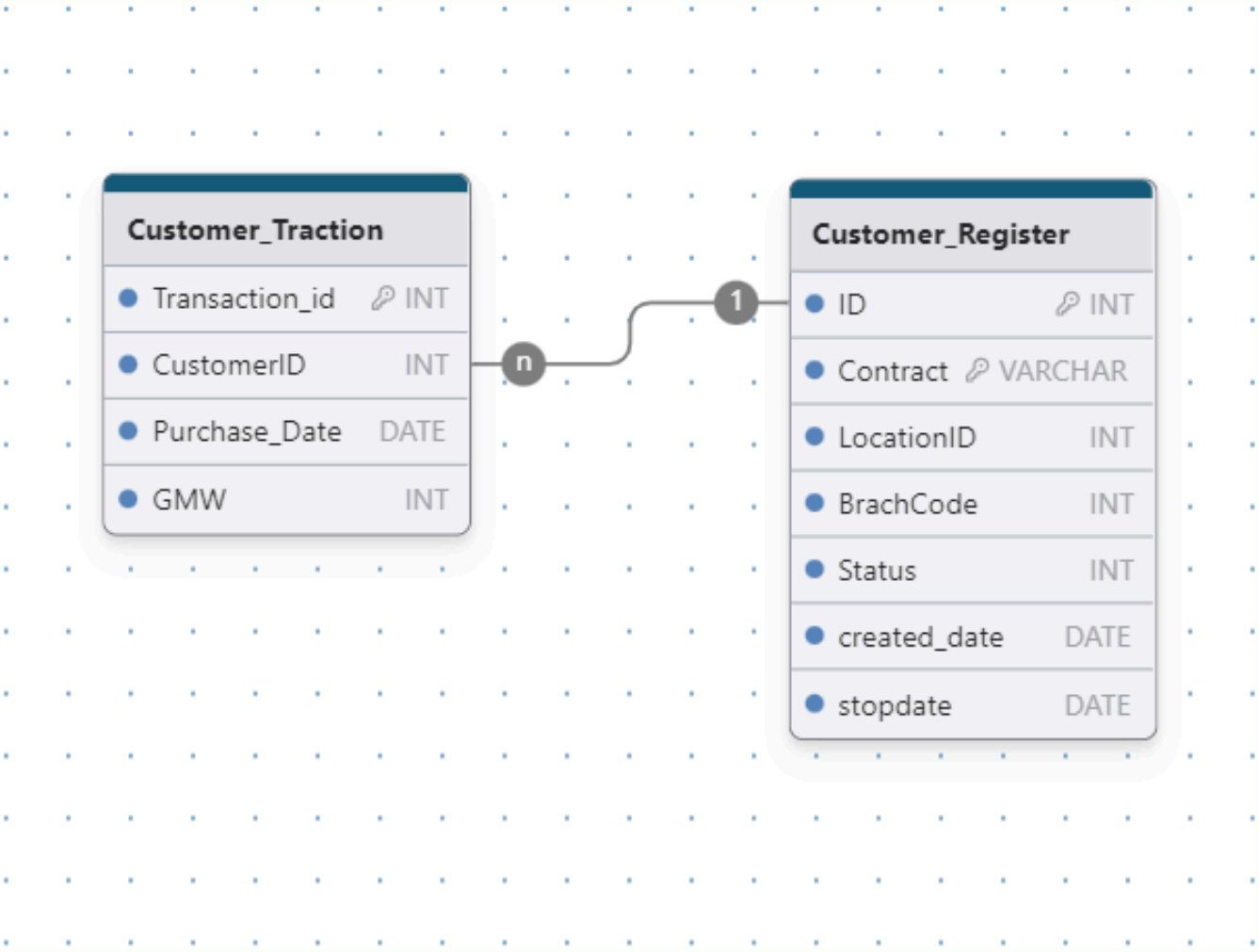

Figure 1. Data model

III. Analysis Model

1. Customer 360

A thorough method of comprehending clients, the customer 360 view gathers information from several channels and touchpoints to produce a single, full picture of each individual customer. The customer 360 generally consists of:

- **Demographic data**: fundamental details about clients, including location, income, age, and gender.
- **Transaction data**: Information about previous transactions, such as frequency of purchases, order value, and purchase history.
- **Interaction data**: correspondence, complaints, reviews, emails, and other customer contacts with the company's various departments, including sales, marketing, customer support, and so forth.

Figure 2. Customer 360

- **Behavioral data**: information regarding a customer's tastes, viewpoints, needs, wants, etc.

The RFM analysis method will be used to focus on consumer ***transaction data*** throughout a three-month period, from January 06, 2022, to January 09, 2022.

III. Analysis Model

2. RFM Metrics

RFM stands for Recency, Frequency, and Monetary value, each corresponding to some key customer trait. These RFM metrics are important indicators of a customer's behavior because frequency and monetary value affects a customer's lifetime value, and recency affects retention, a measure of engagement.

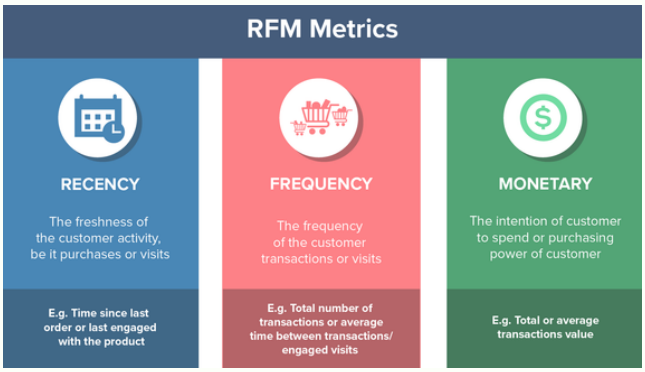

Figure 3. RFM Metrics

- **Recency**: How recently or the last time since a customer made a purchase.
- **Frequency**: How often a customer makes a purchase vs visit times
- **Monetary**: Total amount a customer has spent.

This report will also measure based on the three components above: Recency, Frequency, and Currency. However, unlike the usual 5-point scale, this report only takes the scale from 1 to 4 (4 is best) based on IQR method.

Score (IQR)	1	2	3	4
Recency	> 91 days	62 - 91 days	32 - 61 days	1 - 31 days
Frequency	1 times	2 times	3 times	4 times
Monetary	< 70k	70k - 75k	75k - 95k	> 95k

Table 3. Classification of IQR index

IV. Analytical Method

- Filter customers who are still using the service (Join 2 tables together, set the conditions Stopdate = NULL and customerID != 0)
- Calculate the number of years of the contract = (reporting date – contract creation date)/365.25. Contract years will help avoid bias among customers when calculating Frequency and Monetary. (For example, a customer who buys 10 times in 10 years will not have the same evaluation as a customer who buys 10 times in 1 year)
- **Recency** = Date of report – Date of most recent use
- **Frequency** = Count number of times using the service/Number of contract years
- **Monetary** = Sum(GMV)/ Number of years of contract
- Use the **IQR** (**Interquartile Range**) method to calculate the R - F - M score. Each aspect will be calculated on a 4-point scale. Each score will correspond to a range in the quartile.

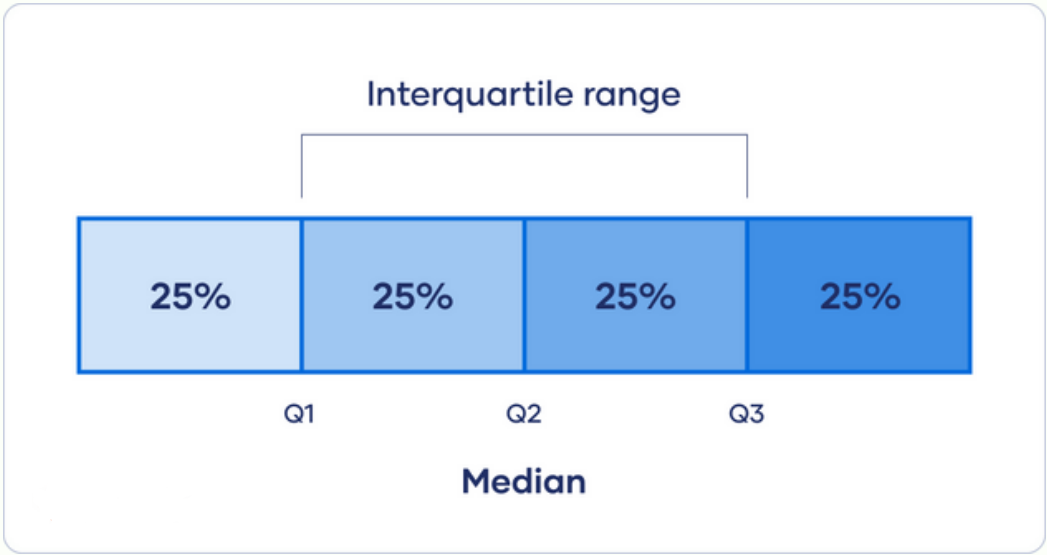

Figure 4. Interquartile Range

IV. Analytical Method

The BCG (Boston Consulting Group) matrix is built based on two factors: relative market share and market growth rate. Based on those two factors, BCG Matrix breaks down the business portfolio of the enterprise into 4 groups including stars, question marks, cash cows and dogs.

Based on the BCG matrix theory of evaluating product portfolio development potential to classify customers into 4 groups:

Stars segment - VIP customer group: High market share, large growth.

- Question Marks segment - Potential customer group: Low market share, large growth.
- Cash Cows segment – Loyal customer group: Large market share, low growth.
- Dogs segment - Current customer group (No need to care): Low market share, low growth.
- There is also a group of lost customers, dividing this customer group depends on whether the business wants to continue attracting this group of customers or not.

Figure 5. BCG Matrix

V. Build RFM Score

Process OLTP data to OLAP from Customer_Transaction table
Use join to join two tables Customer_Registered and Customer_Transaction to get information

1. Calculate RFM indices
2. Calculate IQR quartiles and create R F M columns with indexes from 1 to 4 then create a Segmentation column to combine the R F M
3. Classify customers by Segmentation

Customer ID	R	F	M	Segmentation	Customer_type
1028296	92	0.33	14439.476657	441	Loyal
267349	31	0.33	34955.456780	189	Potential
411239	10	0.4	19947.740113	54	No need to care
551078	62	0.25	27524.491334	327	Loyal
...	...	...	...	...	...

Table 4. RFM results

VI. Visualization

Tool: Power BI

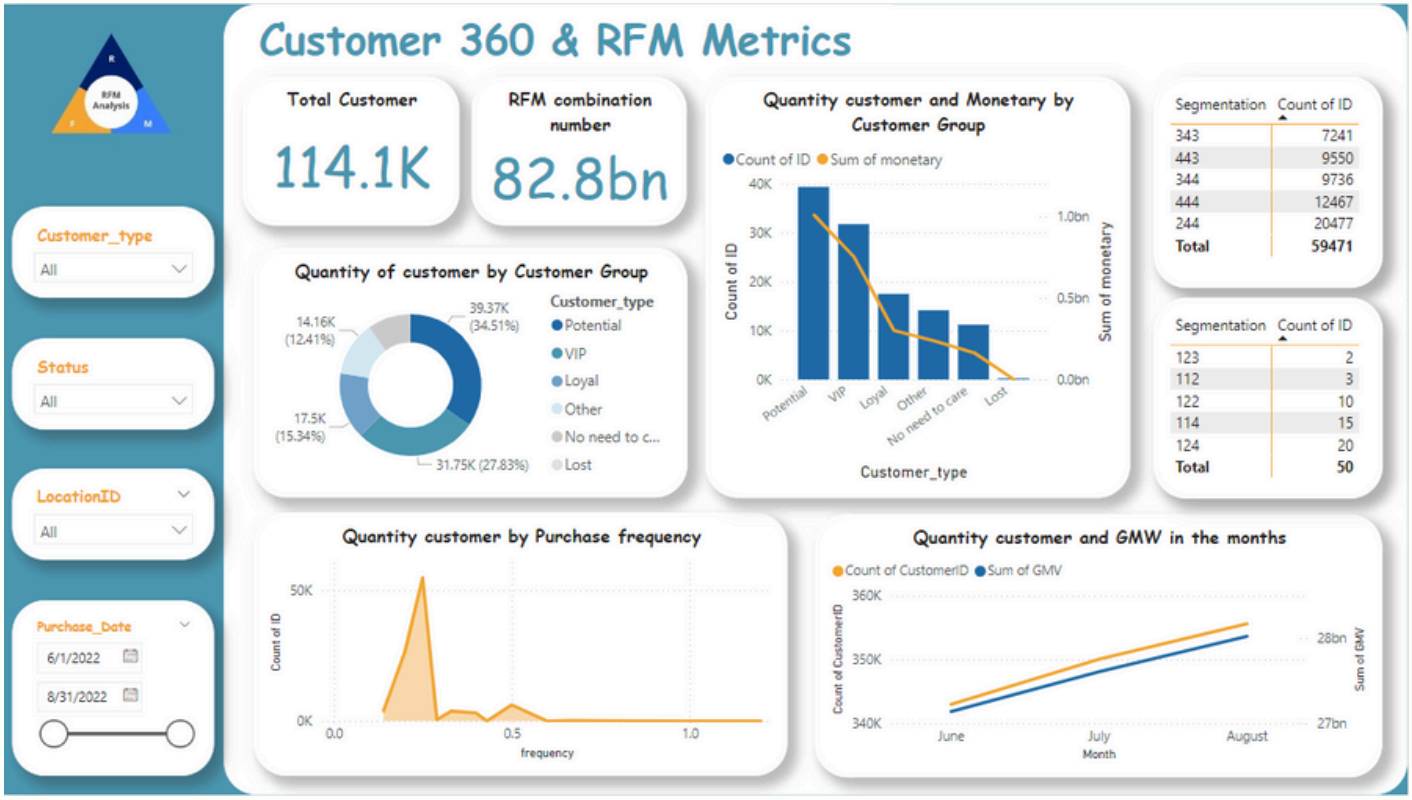

Figure 6. Customer 360 $ RFM Metrics Dashboard

Customer 360 & RFM Metrics Dashboard offers a powerful window into the hearts and minds of customers. By combining the concept of Customer 360 with RFM analysis, this dashboard provides a comprehensive overview of customer data and insights, empowering businesses to make data-driven decisions across marketing, customer service, and product development. Customer 360 & RFM Metrics Dashboard is a valuable tool for any business looking to gain a deeper understanding of their customers. By harnessing the power of Customer 360 data and RFM analysis, businesses can personalize the customer experience, optimize marketing efforts, and ultimately drive growth and profitability.

VI. Visualization

Tool: Power BI

Detailed analysis (1)

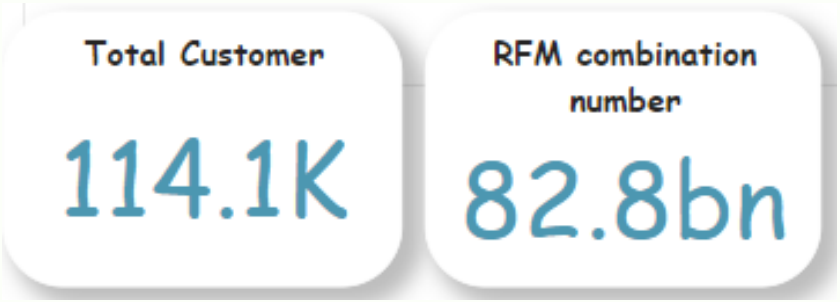

Figure 7. Overview about data

These two metrics provide a high-level overview of the business's customer base and sales performance, highlighting both the scale of customer engagement and the overall revenue generated.

Segmentation	Count of ID
343	7241
443	9550
344	9736
444	12467
244	20477
Total	**59471**

Figure 8. Top 5 groups with the most customers

Table Top 5 groups with the most customers: Displays the five customer groups with the largest number of customers, showing that these segments account for the majority of the business's customer base.

Segmentation	Count of ID
123	2
112	3
122	10
114	15
124	20
Total	**50**

Figure 9. Top 5 groups with the fewest customers

Top 5 groups with the fewest customers table: Shows the five customer groups with the smallest number of customers, indicating that these segments make up a small portion of the business's customer base.

VI. Visualization

Tool: Power BI

Detailed analysis (2)

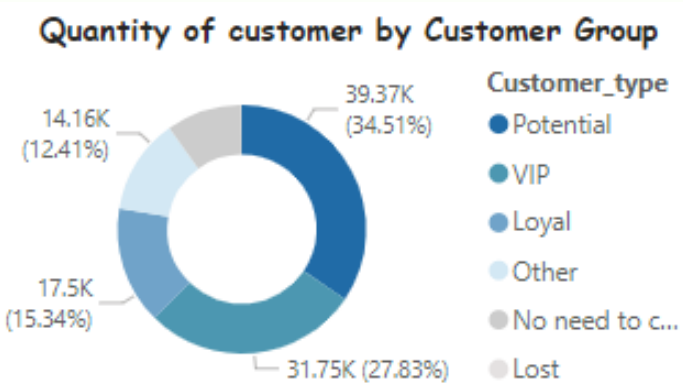

Figure 10. Quantity of customer by Customer Group

The majority of customers (39.37%) are potential customers. This suggests that there is a significant opportunity to grow the customer base.

The most valuable customers are in the VIP and Loyal groups. These customers should be targeted with special marketing campaigns and promotions.

The graph shows a sharp peak at a low frequency value (0.25) suggesting that a large number of customers have made purchases infrequently.

After this peak, the line drops significantly and remains low across the rest of the frequency range, indicating fewer customers with higher purchase frequencies.

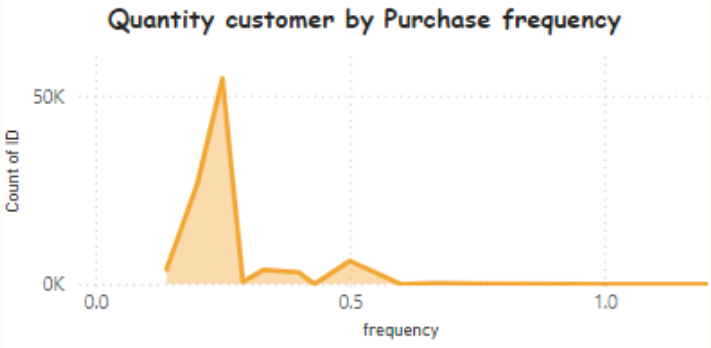

Figure 11. Quantity customer by Purchase frequency

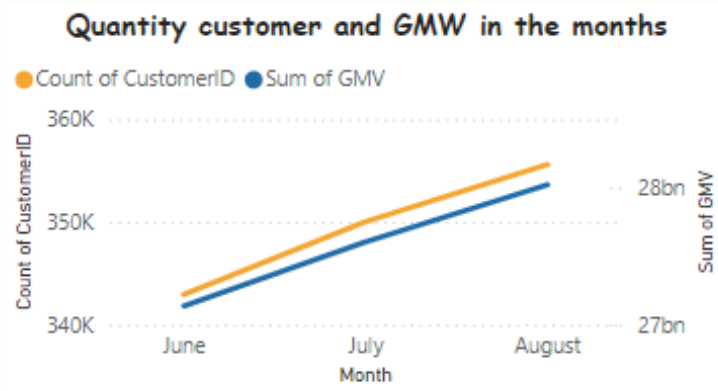

Figure 12. Quantity customer and GMW in the months

Both lines show an upward trend over the three months, indicating an increase in both the number of customers and the GMV.

The blue line (customer count) starts slightly above 340K in June and rises steadily, approaching 360K by August.

The orange line (GMV) also shows a consistent increase, starting below 27 billion in June and reaching close to 28 billion by August.

VI. Visualization

Tool: Power BI

Detailed analysis (3)

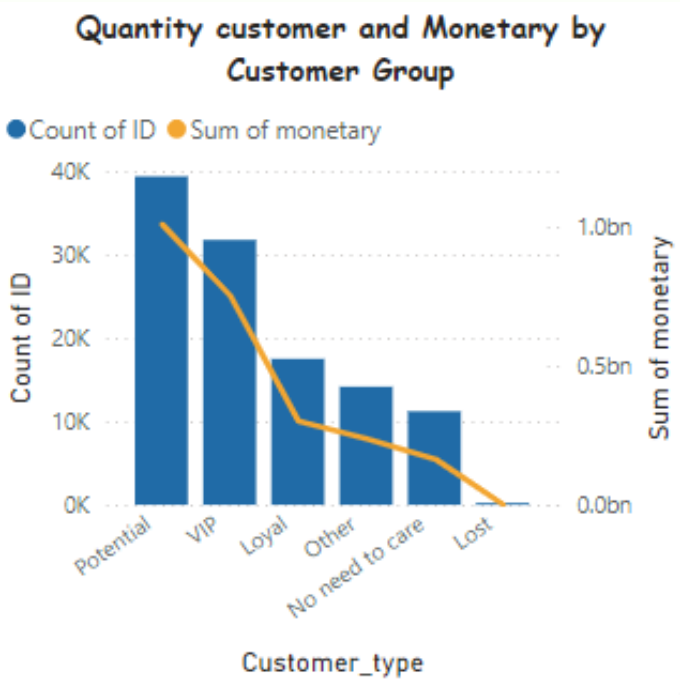

Figure 13. Quantity customer and Monetary by Customer Group

The Potential group has the largest number of customers but does not generate the highest GMV.
The VIP group, despite having fewer customers than the Potential group, contributes the highest GMV, indicating high value per customer.
The Loyal group has a moderate number of customers and GMV.
The Other, No need to care, and Lost groups have the fewest customers and contribute the least to the GMV.
This chart helps in identifying which customer groups are the most valuable in terms of both quantity and monetary contribution, allowing for targeted marketing and customer relationship strategies.

Customer_type Slicer: Filters data by customer type, allowing analysis based on different customer segments like Potential, VIP, Loyal, etc.
Status Slicer: Filters data by customer status, such as new, current, or lost customers.
BrachCode Slicer: Filters data by branch code, facilitating store-specific analysis.
Purchase_date Slicer: Filters data by the purchase date range, enabling trend analysis over specific periods.

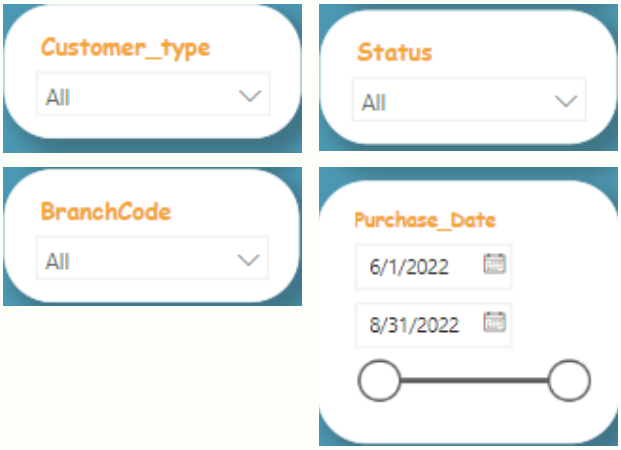

Figure 14. Filters

Conclusion

The dashboard analysis reveals that the business has a substantial customer base of 114.1K, with significant revenue generation totaling 82.8 billion in GMV. The customer segmentation highlights a large number of Potential customers, but the VIP segment, although smaller, contributes the highest monetary value. The positive trend in customer count and GMV from June to August indicates increasing engagement and sales. To capitalize on these insights, the business should focus on enhancing customer retention programs, optimizing geographic strategies, personalizing customer engagement, increasing purchase frequency, and continuously monitoring market trends. Implementing these strategies will drive growth, improve customer satisfaction, and enhance profitability, ensuring long-term success.