

E-Commerce Behavior

**Data for two months from a
medium cosmetics online
store**

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OVERVIEW

01

Ads & Promotions

Which products to feature in the next advertising campaigns and promotions?

02

Brand Loyalty

Which brands are customers most loyal to?

03

Most Valuable Customers

Most valuable customers based on their purchase history

04

Price Trends

Are there any price trends for a particular product over time?

05

Loyalty KPIs

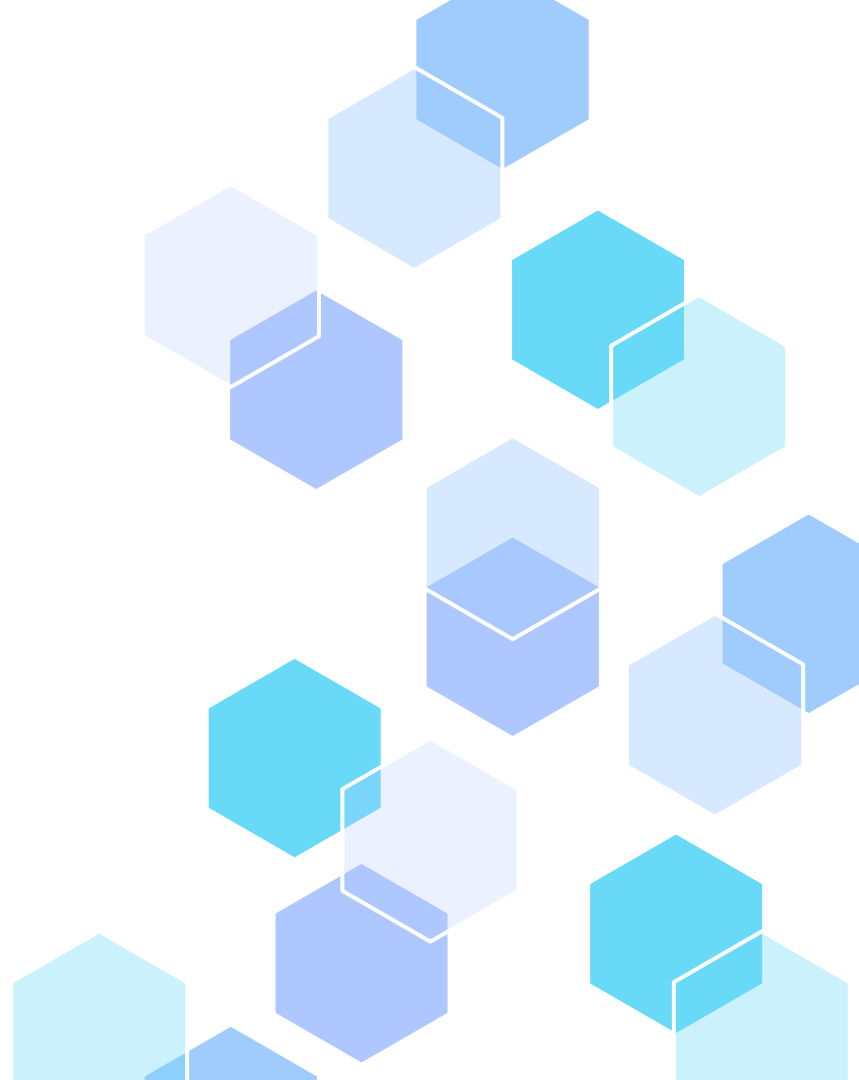
Define a KPI that measures customer loyalty from the data.

06

Association Analysis & Modelling

01

Ads & Promotions



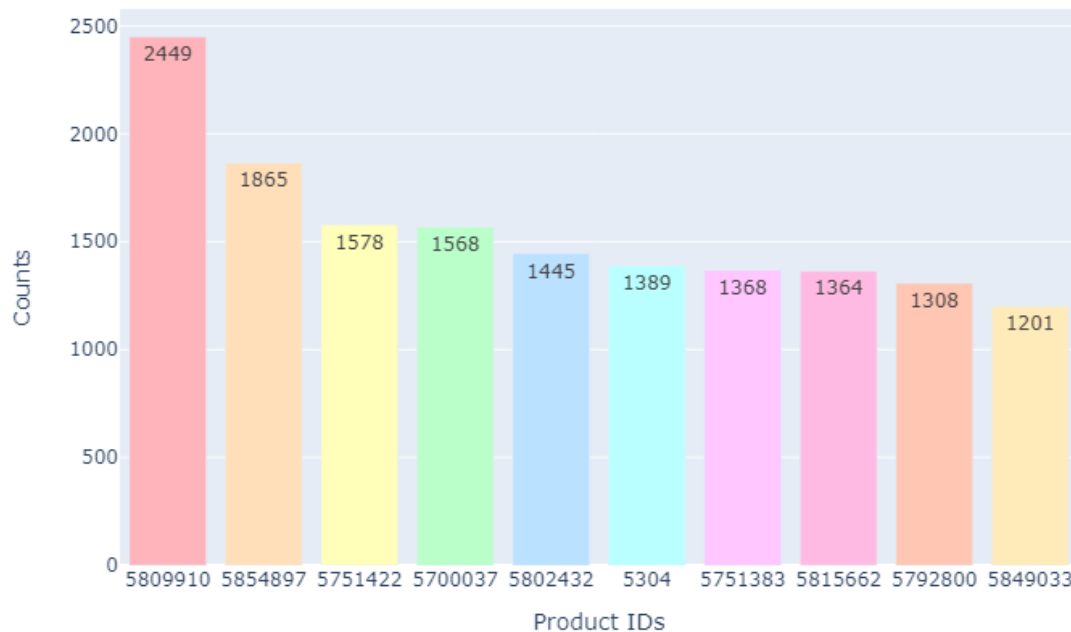
Advertising & Promoting Strategy

- **What are the Top 10 Most Sold Products**
- **What are the Top 10 Most Profitable Products**
- **What are the Top 10 Most Purchased Product Combinations**
- **What are the Top 10 Products that have been removed from Cart**

Top 10 Most Sold Products

Top 10 Most Sold Products

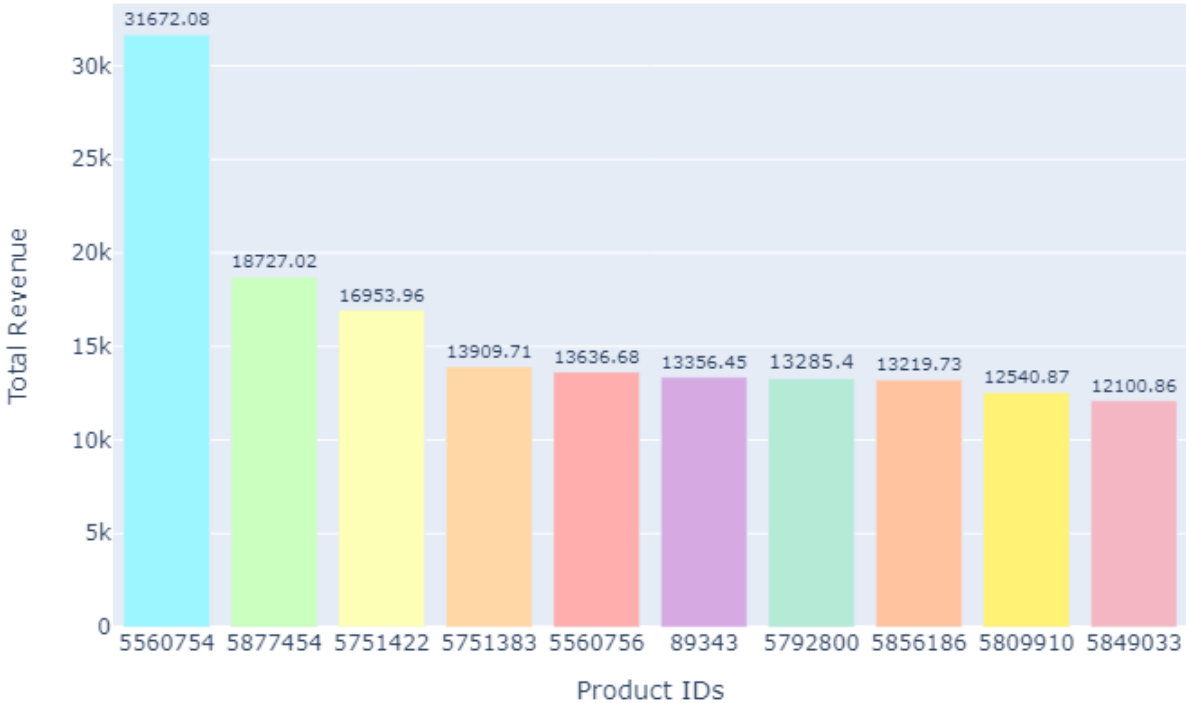
- Out of 45,960 products, 33,172 were purchased within those two months
- Product no 5809910 was the most sold product within this period



Top 10 Most Profitable Products

Top 10 Most Profitable Products

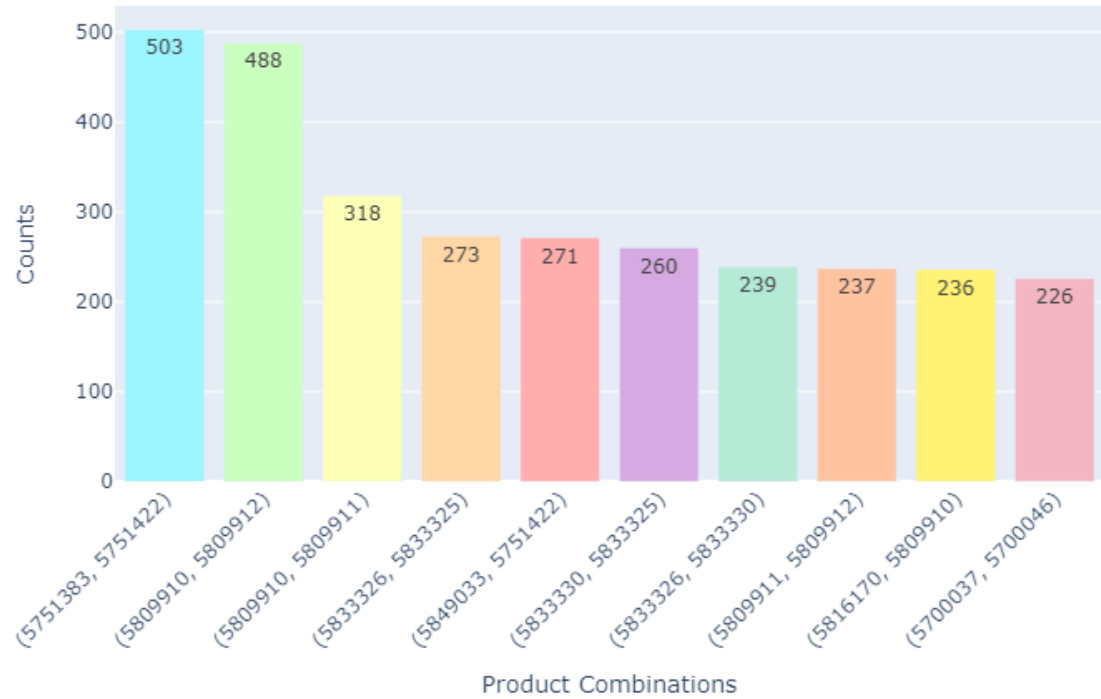
- **Product 5560754 Generated the Highest Revenue During This Period, Nearly Doubling the Revenues of the Second Most Profitable Product.**



Top 10 Most Purchased Product Combinations

Top 10 Most Purchased Product Combinations and Their Counts

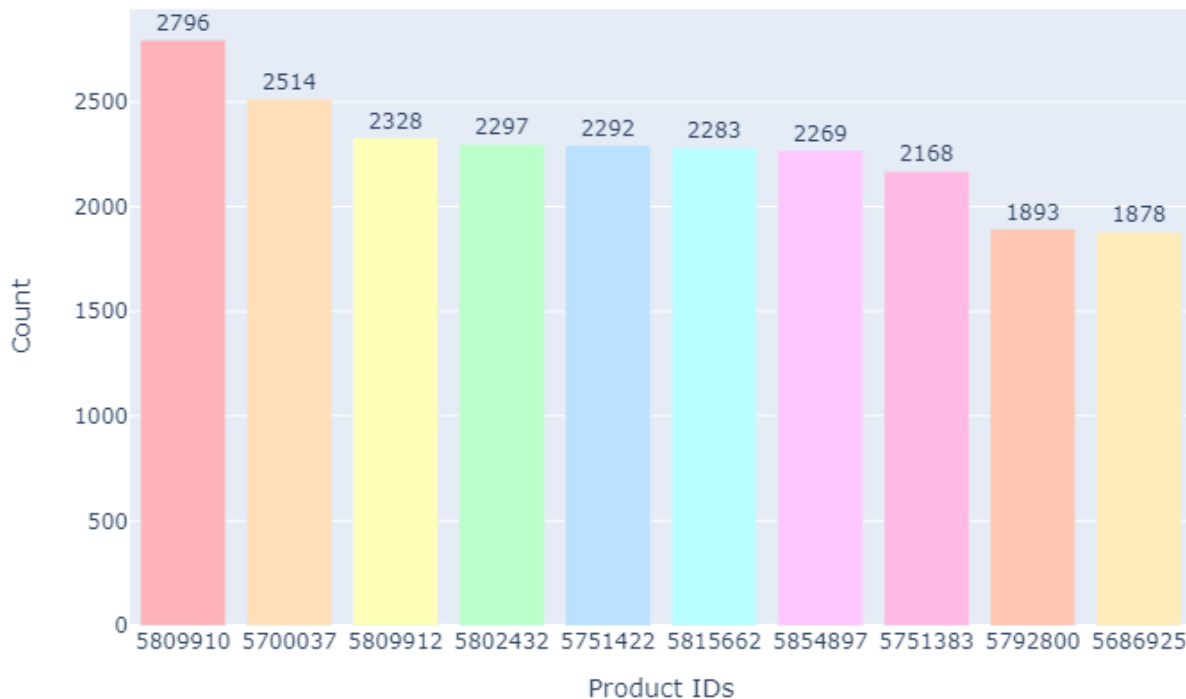
● Combinations (5751383, 5751422) & (5809910,5809912) Have a Remarkably Higher Purchase Counts Than Other Combinations



Top 10 Products that have been removed from Cart

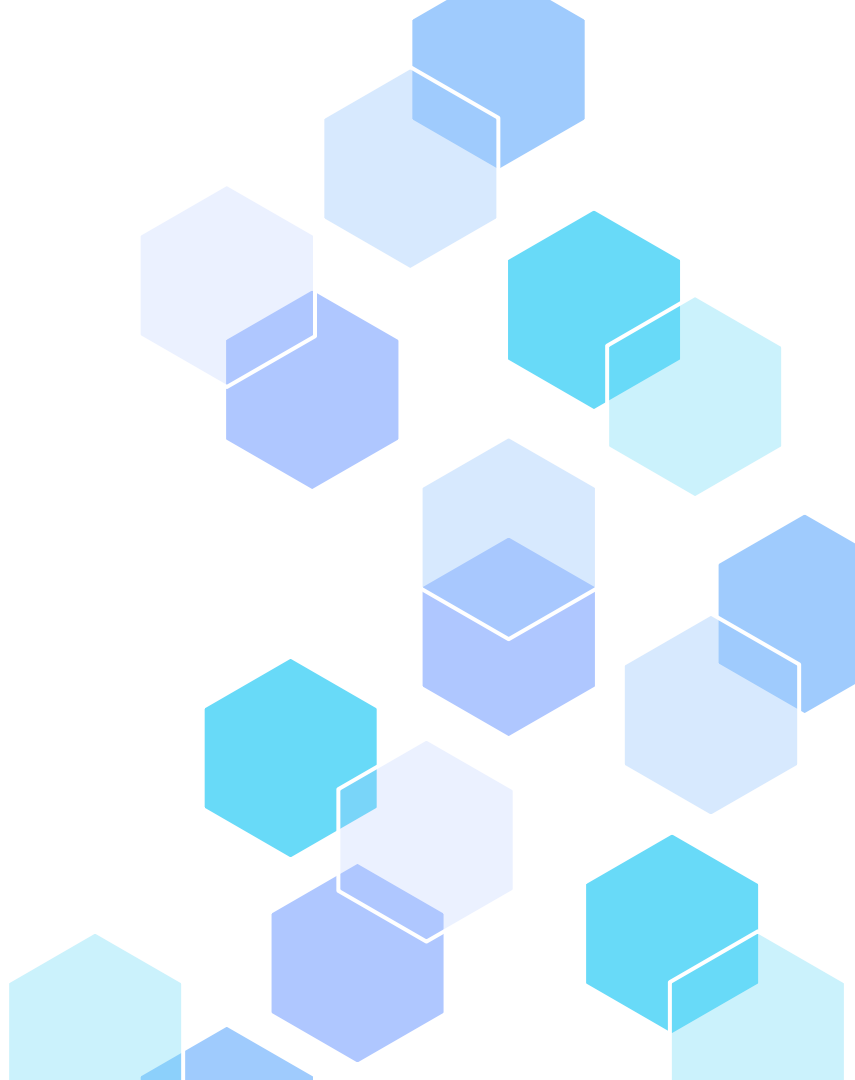
Top 10 Products that have been removed from Cart

- There is a Slight Increase in Product 5809910 Count of How Many Times it Has Been Removed From Cart. Maybe A Pricing Problem?



02

Brand Loyalty



Which brands are customers most loyal to?

- Brand loyalty measurement
- What are the Top 10 brands are customers most loyal to?



Brand loyalty measurement

- Repeat Purchase Rate (RPR)

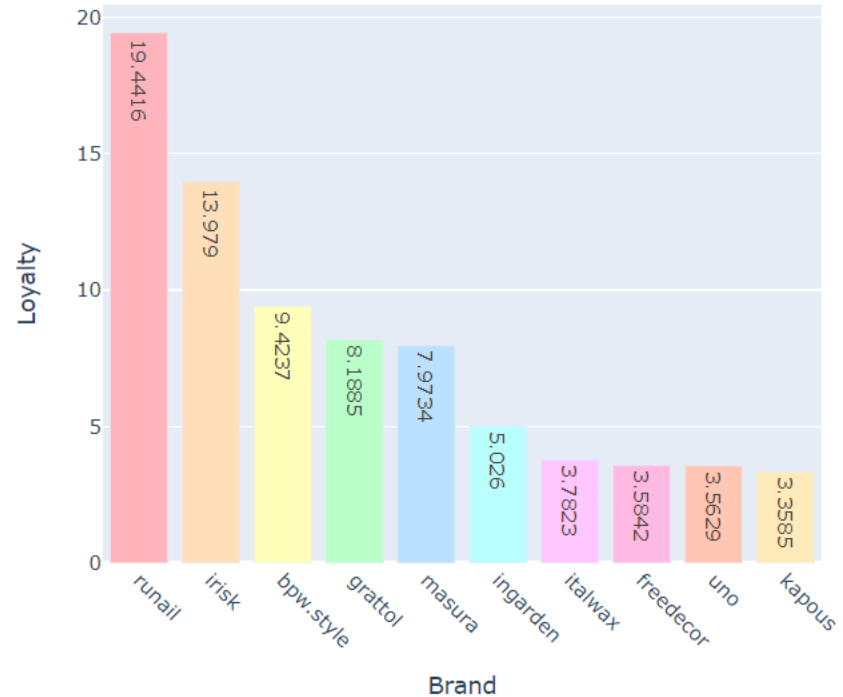

$$\text{Repeat purchase rate} = \frac{\text{Number of customers who made repeat purchases (365 days)}}{\text{Total number of customers (365 days)}}$$

Repeat purchase rate

What Are the Top 10 brands are customers Most Loyal To?

the top 10 brands are customers most loyal to

- Out of 244 brand 218 were purchased within those two months.
- Brand runail is the most brand are customers loyal to.
- Some of brand's name is missing (recommended)



Shopping Cart Abandonment Rate

- Shopping cart abandonment rate: 16 %

CART ABANDONMENT RATE

$$CAR = \frac{\text{\# of abandoned shopping carts}}{\text{\# of initiated checkouts}} \times 100$$

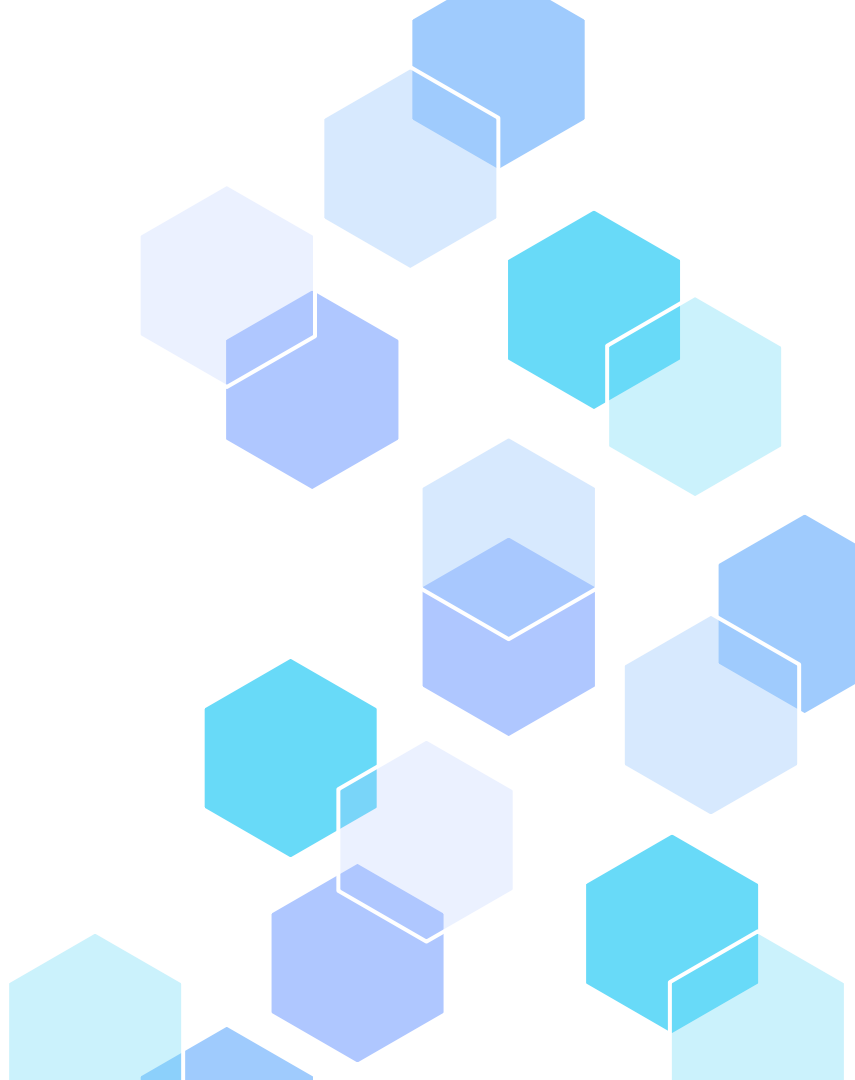
Website Traffic Analysis

Reaches	693009
Pageviews	8276943
Unique Visitors	713025
Sessions	1814075
Bounce Rate	69.03
Average Session Duration:	30 minutes



03

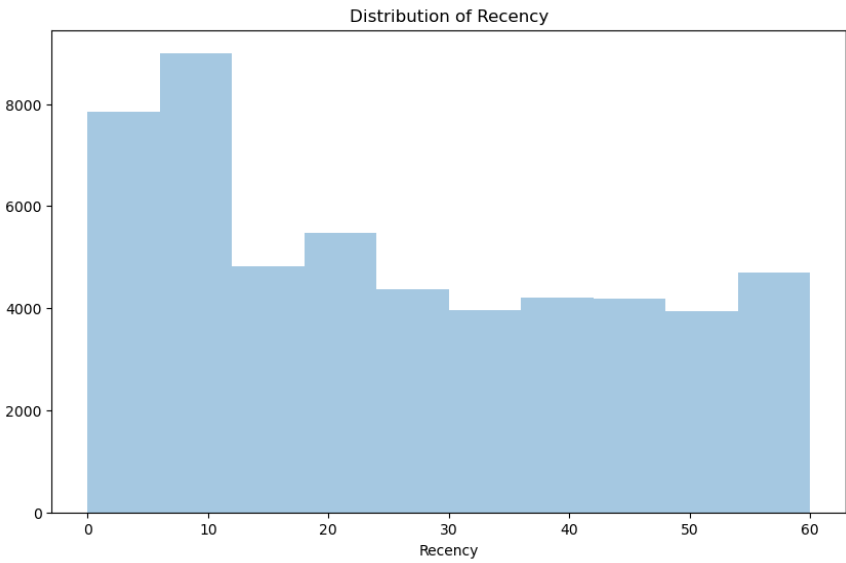
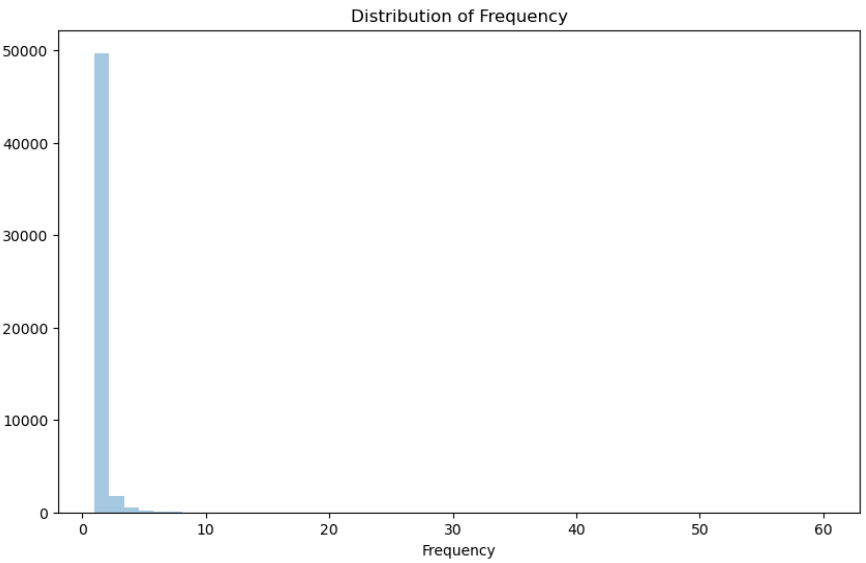
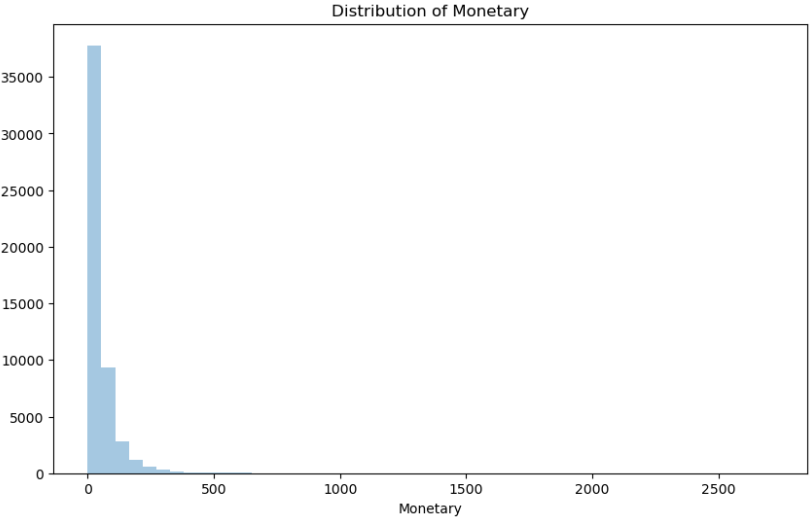
Most Valuable Customers



Defining The Most Valuable Customers

- Who has the most recent transaction
- Who is the most frequent buyer
- Who is the most profitable customer
- Who has the higher RFM score
- Customer segmentations

Metrics Distribution



Top Most Frequent, Recent and Profitable Customers

Number of Last Day Buyers :
1419

- These are not necessarily the most most valuable customers

Number of most frequent buyers: Frequency

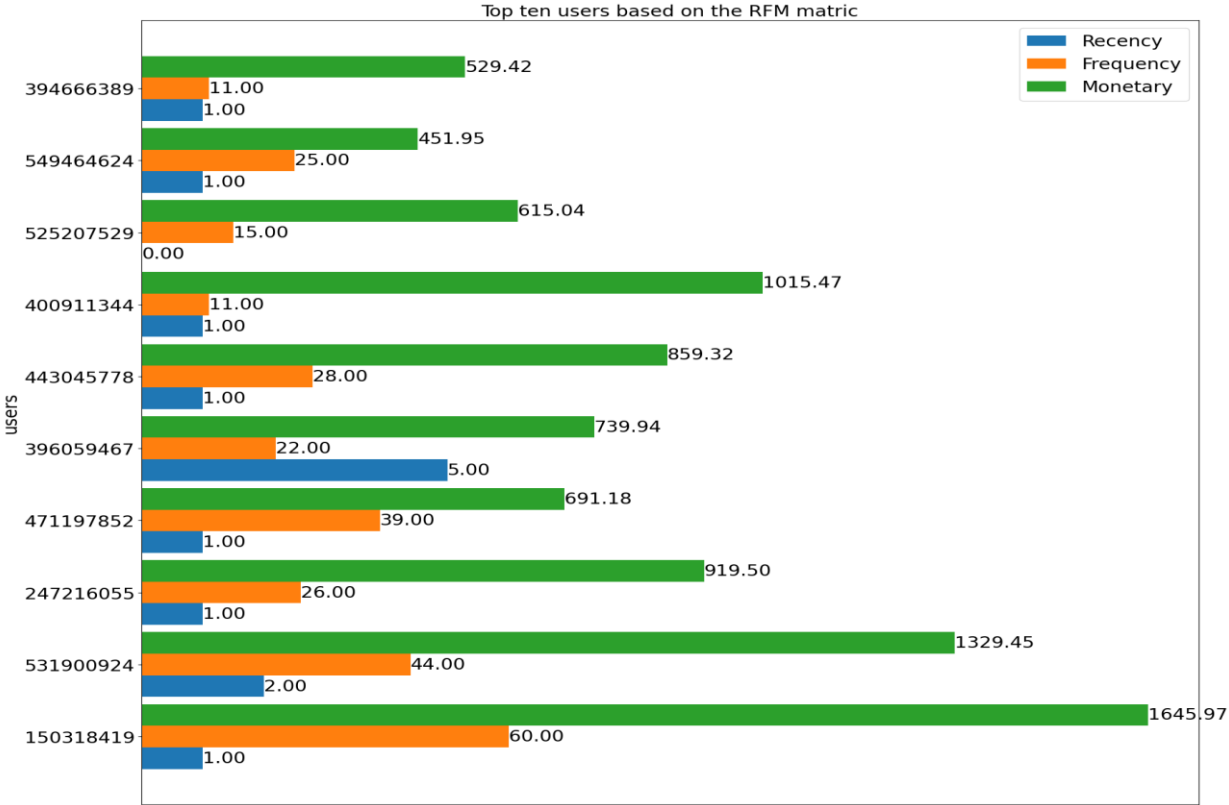
26	3
60	1
44	1
39	1
28	1
25	1
22	1
20	1

Number of most profitable buyers: Monetary

1645.97	1
1329.45	1
691.18	1
859.32	1
919.50	1
927.01	1
500.00	1
451.95	1
739.94	1
613.69	1

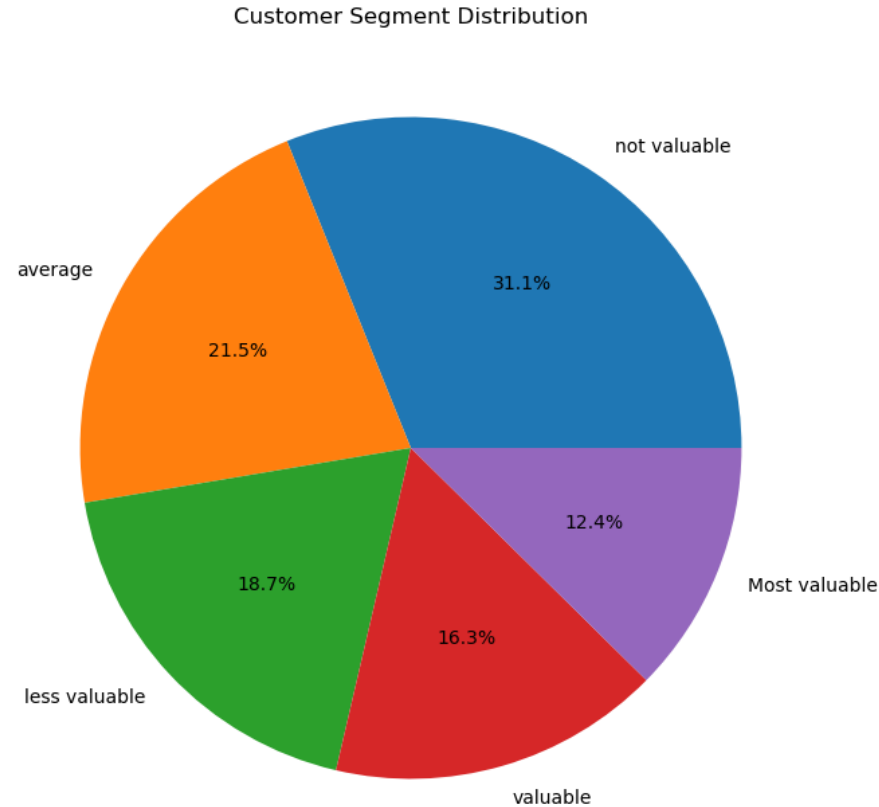
Top 10 Most Valuable Customers With Highest RFM Score

- Consider providing special offers or coupons as a special treatment



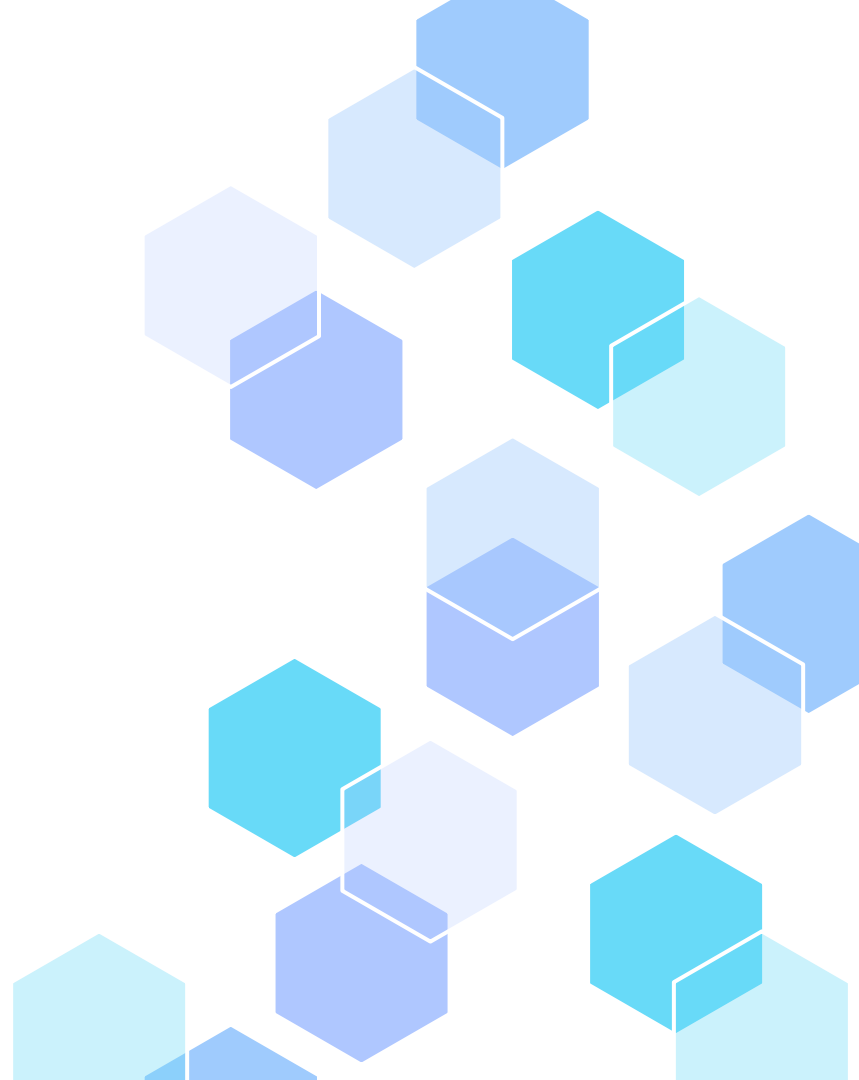
Customer Segmentation

- These segments are for the business based on the spending history

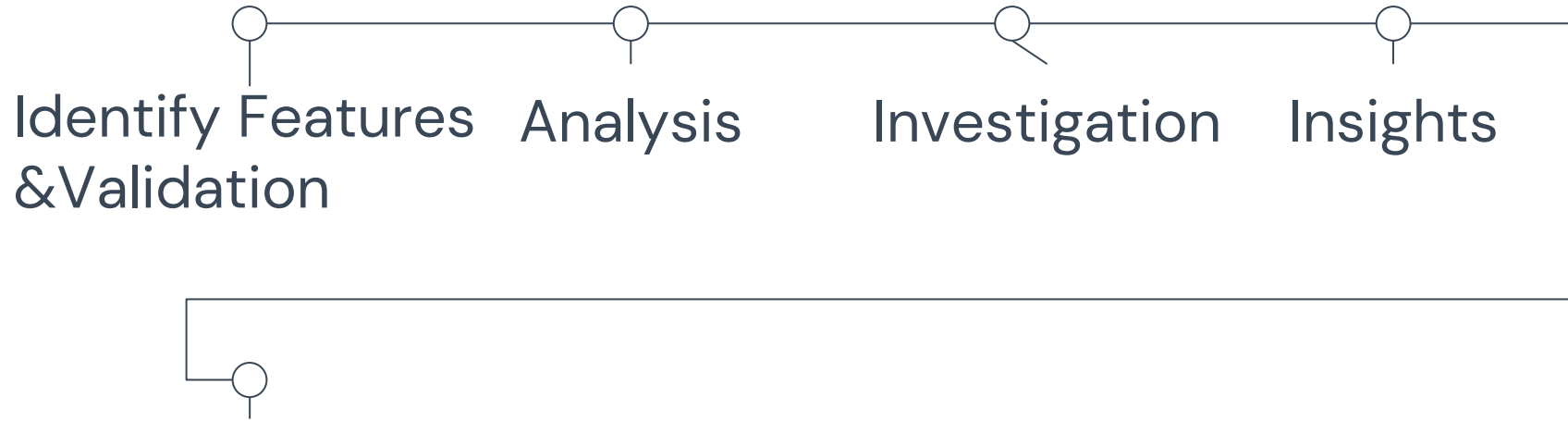


04

Price Trends

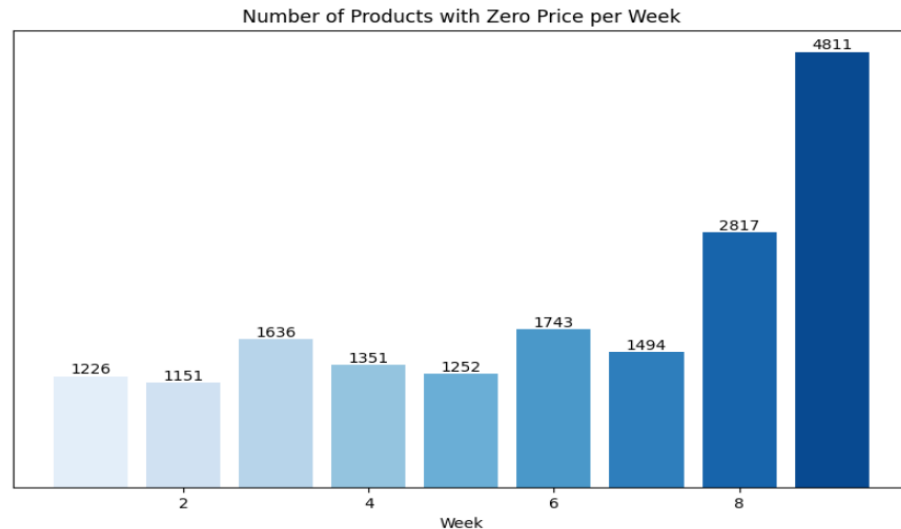
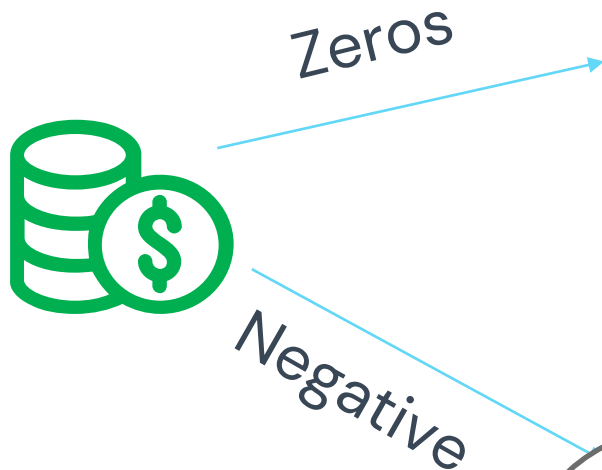


Are there any price trends for a particular product over time?



Recommendations

Identify Features & Validation

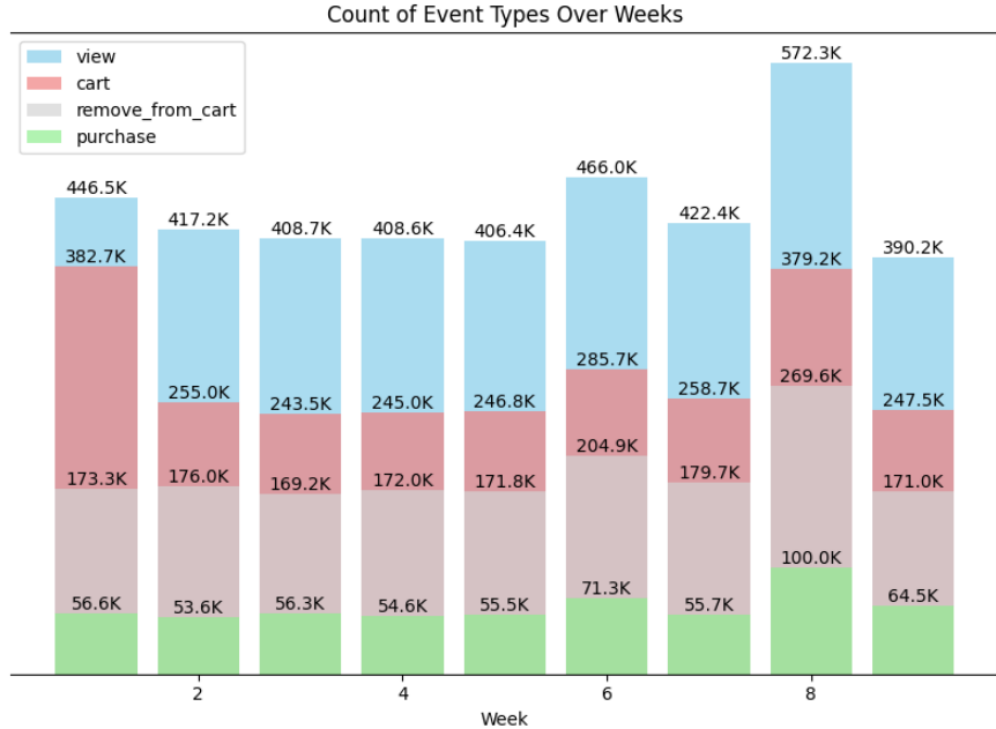


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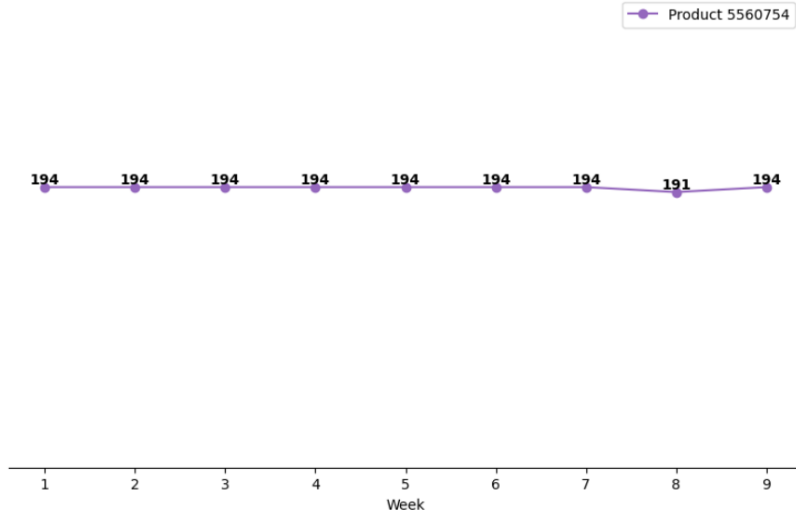
Analysis

- Week 8 saw a significant surge in purchase events, with over 99,000 purchases recorded. Additionally, Week 6 experienced a spike in activity.

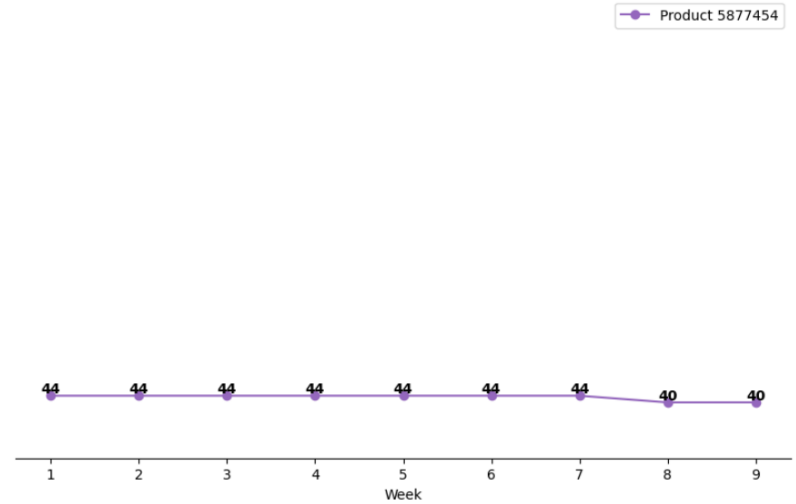


Investigation

Average Price of Product 5560754 Over 9 Weeks

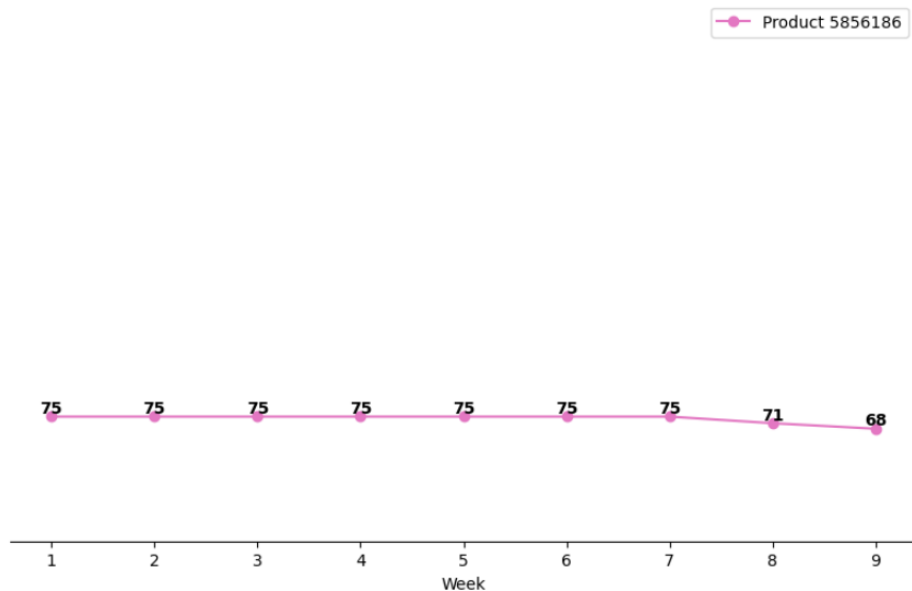


Average Price of Product 5877454 Over 9 Weeks

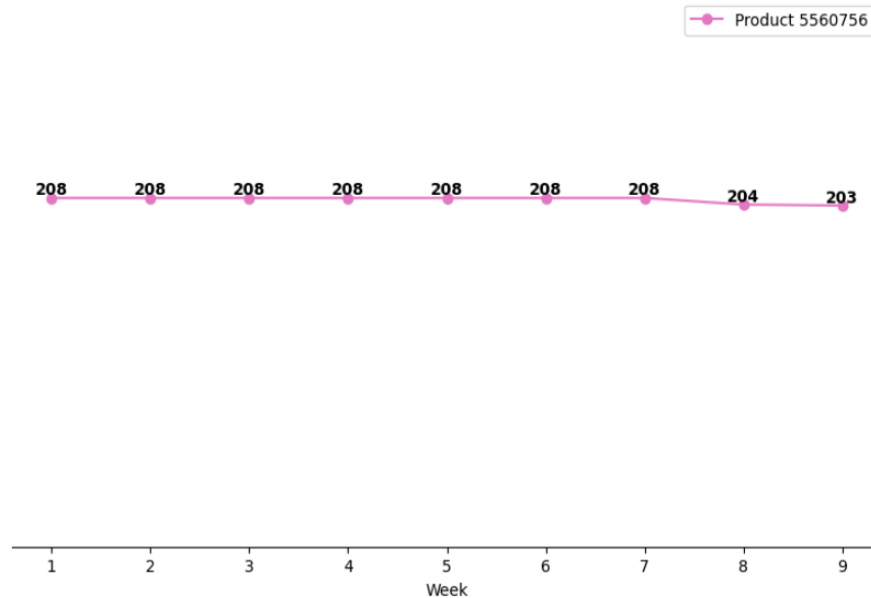


Investigation

Average Price of Product 5856186 Over 9 Weeks



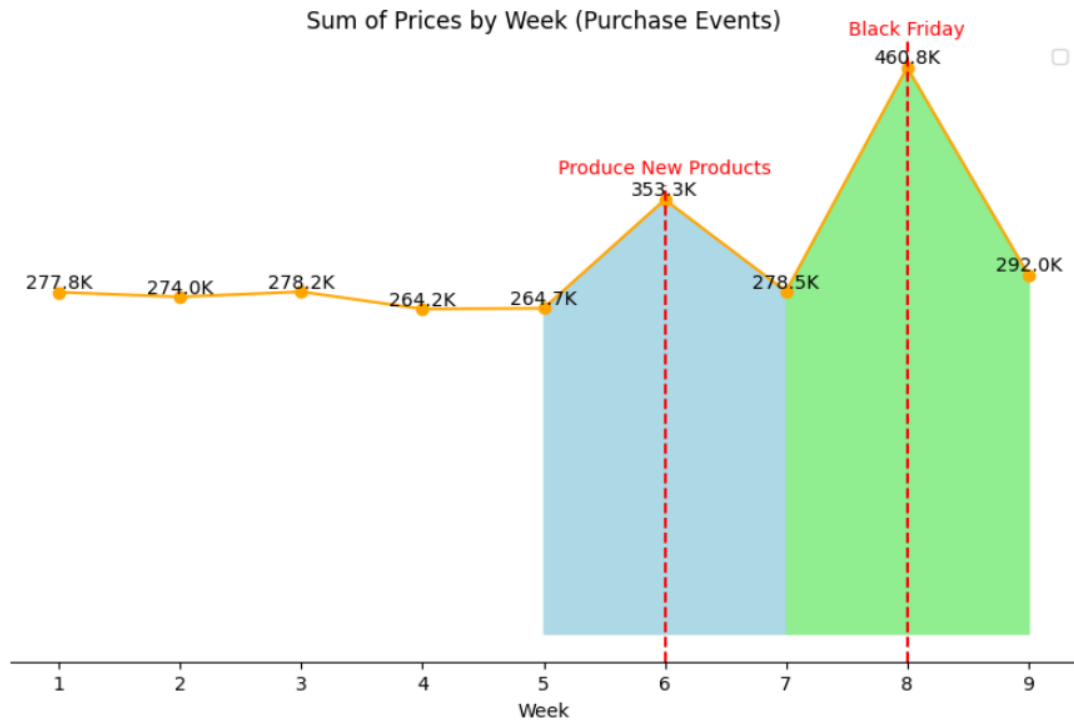
Average Price of Product 5560756 Over 9 Weeks



Insights

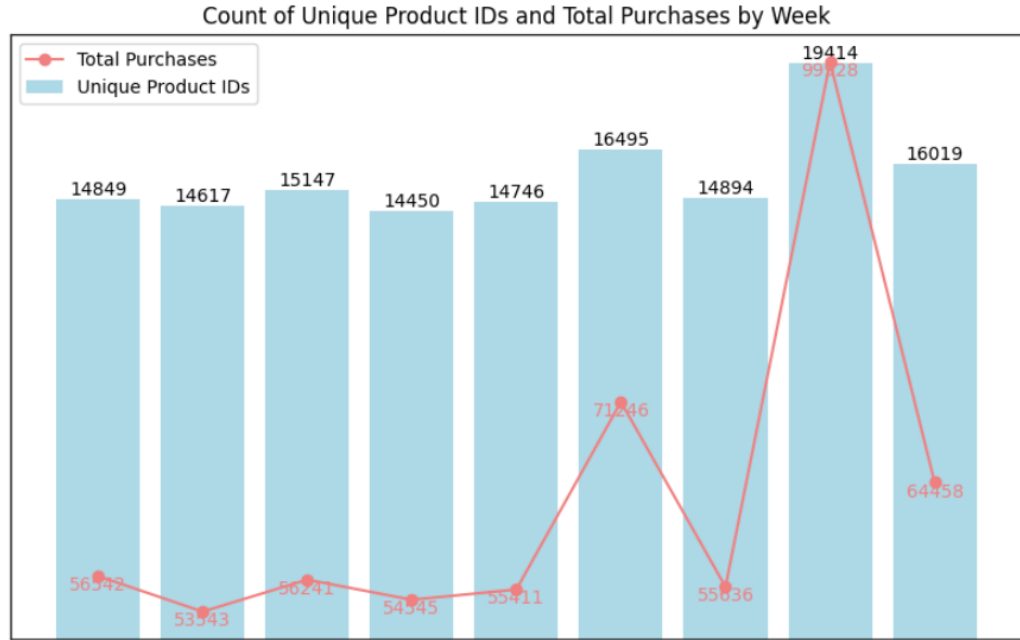
- Black Friday

- New Products !



Insights

- Number of products existing only in week 6 and not before week 6: 6339

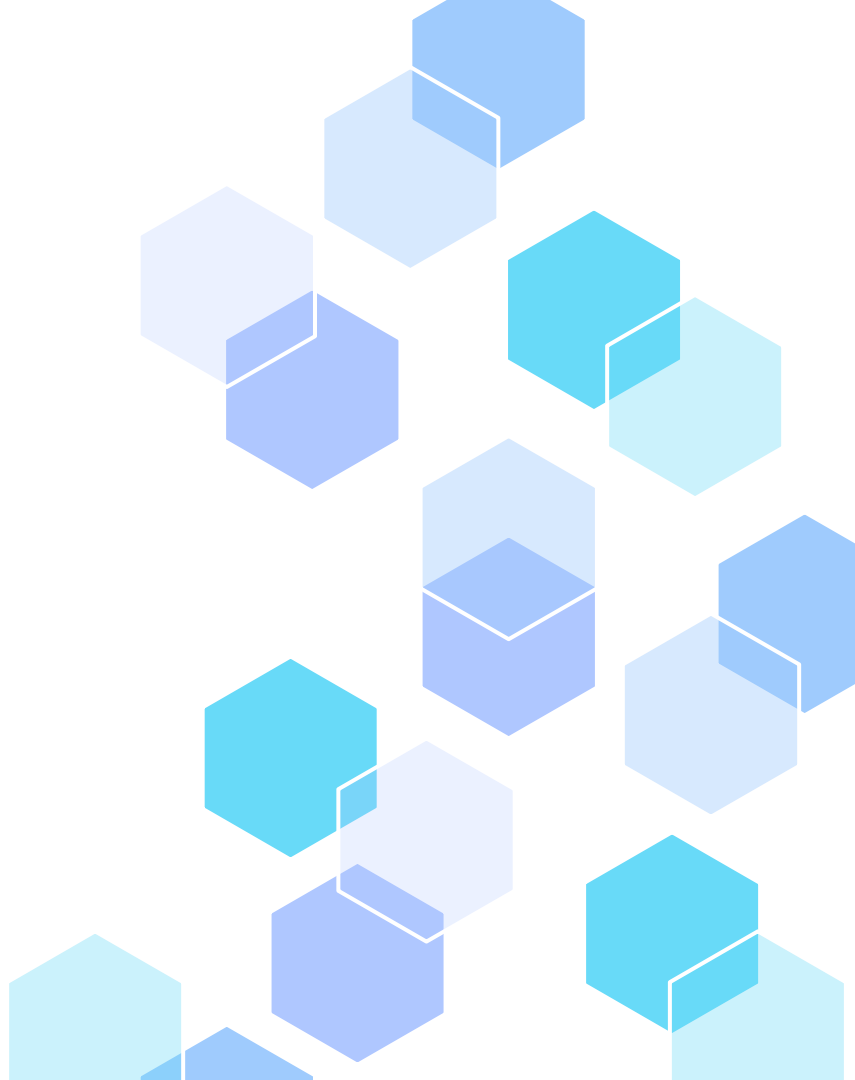


Recommendations



05

Loyalty KPIs



Define a KPI that measures customer loyalty from the data.

Customer loyalty is the likelihood of a customer repeatedly making purchases from our e-commerce website.



Customer Lifetime Value (CLTV)



**Customer
Lifetime
Value**

=



**Average
Order
Value**

×



**Purchase
Frequency
Rate**

×



**Average
Customer
Lifetime**

October
10.16 \$

November
11.38 \$



Customer Retention Rate (CRR)

25,762

Number of Customers in October

31,524

Number of Customers in November

4763

Number of Retained Customers from
October to November

Customer Retention Rate (CRR)

$$\text{Customer Retention Rate} = \frac{\text{End} - \text{Acquired}}{\text{Start}} \times 100$$

The diagram illustrates the formula for Customer Retention Rate (CRR). On the left, a speedometer icon is positioned above the text "Customer Retention Rate". This is followed by an equals sign. The numerator of the fraction consists of an hourglass icon labeled "End" minus a shopping cart icon labeled "Acquired". The denominator is an hourglass icon labeled "Start". The entire fraction is multiplied by 100.

CRR = 18.4 %

Average Order Value (AOV)

$$\text{Average Order Value (AOV)} = \frac{\text{Total Revenue}}{\text{Number of Orders Placed}}$$

Average number of items sold per transaction:
5.00 items

\$4.83

Returning Customer Rate (RCR)

$$\text{CRR} = \frac{\text{\# of repeat customers}}{\text{total \# of customers}} \times 100$$

Returning Customer Rate (RCR) for purchases:
90.79%

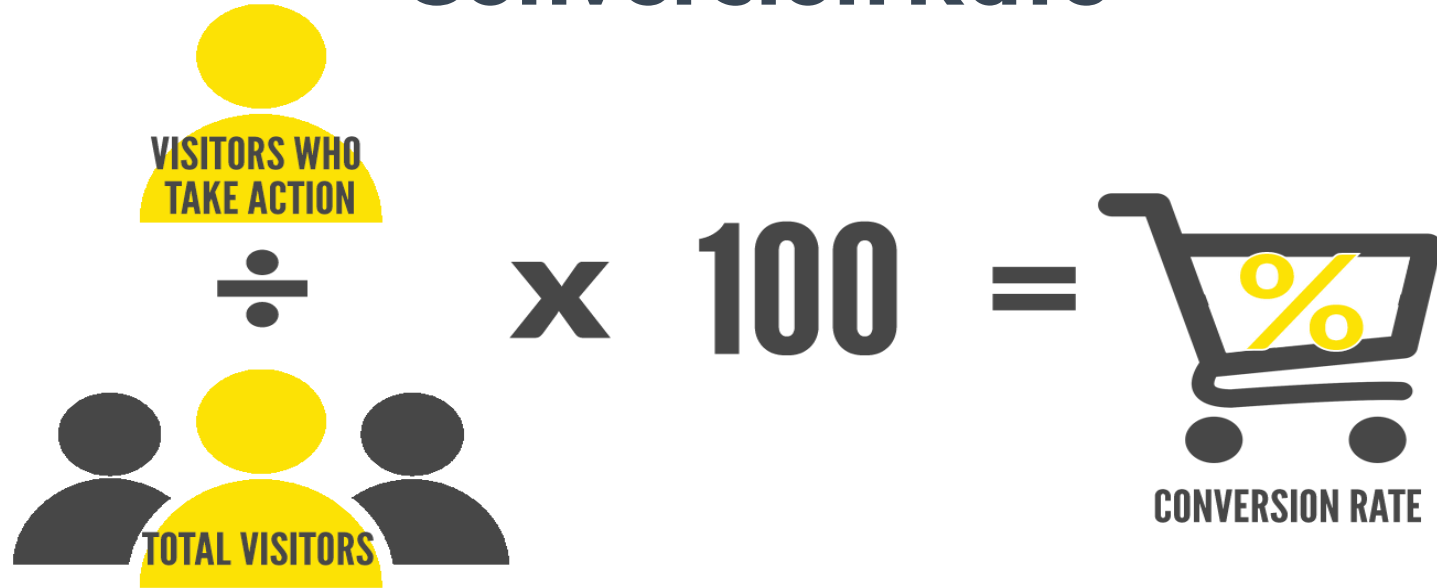
Bounce Rate

$$\text{Bounce Rate} = \frac{\text{\# of One-Page Visits}}{\text{\# of Total Entrance Visits}}$$

Bounce Rate: 69.0%

WHAT IS CONVERSION RATE?

Conversion Rate



The diagram illustrates the formula for calculating the conversion rate. It features a yellow circle icon labeled "VISITORS WHO TAKE ACTION" above a division symbol (\div). Below the division symbol is a group of three person icons, with the central one highlighted in yellow and labeled "TOTAL VISITORS". To the right of the division symbol is a multiplication symbol (\times) followed by the number "100". This is followed by an equals sign (=) and a shopping cart icon containing a yellow percentage symbol (%). Below the shopping cart icon is the text "CONVERSION RATE".

$$\frac{\text{VISITORS WHO TAKE ACTION}}{\text{TOTAL VISITORS}} \times 100 = \text{CONVERSION RATE}$$

Conversion Rate: 22.3%

RECOMMENDATIONS

1 - Offer interesting discounts and promocodes to customers who purchase products once (to increase Customer Retention Rate and Returning Customer Rate)

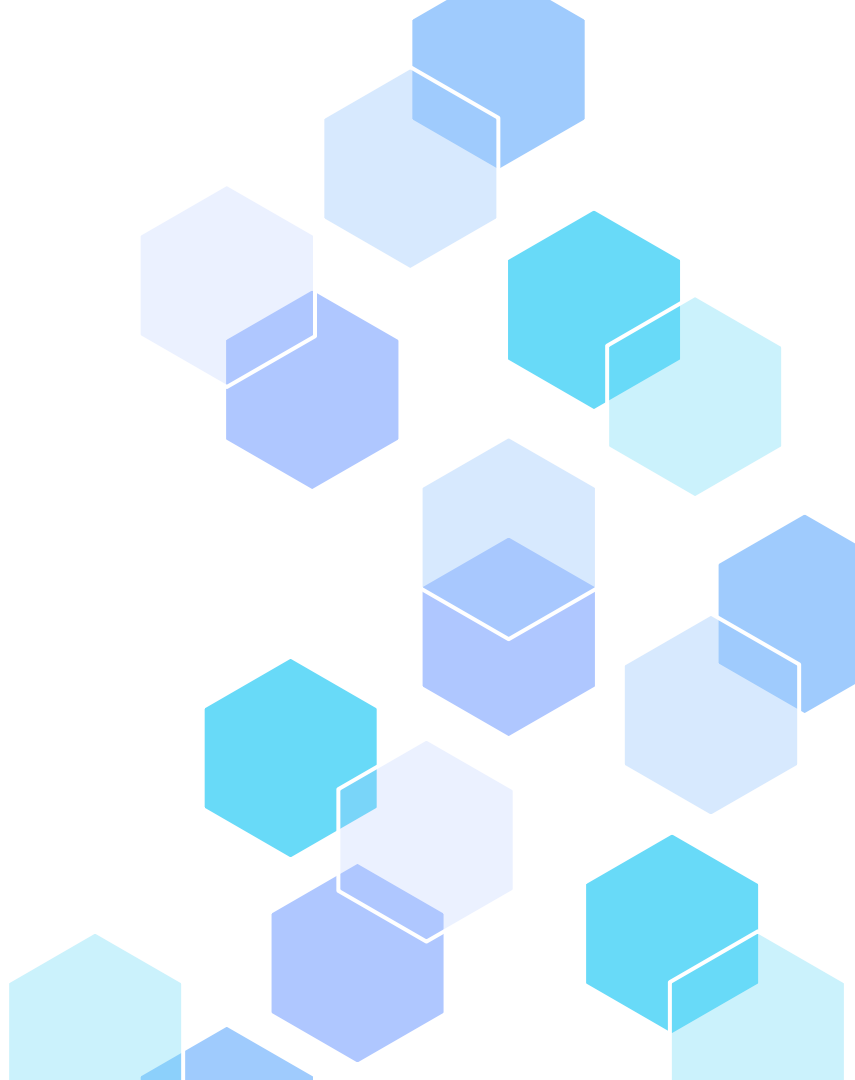
2 - Enhance the quality of the design of the website to enhance the user experience (to decrease Bounce Rate)

3 - Offer a first-time discount for the new users to encourage the first purchase (also to decrease the Bounce Rate)

3 - Simplify the design of the checkout page (to increase Conversion Rate)

06

Association Analysis & Modelling



Association Analysis Methodology

- What are the most frequent purchased set of products
- Modeling using apriori algorithm
- Evaluation metrics : Support, Confidence, Lift and Conviction

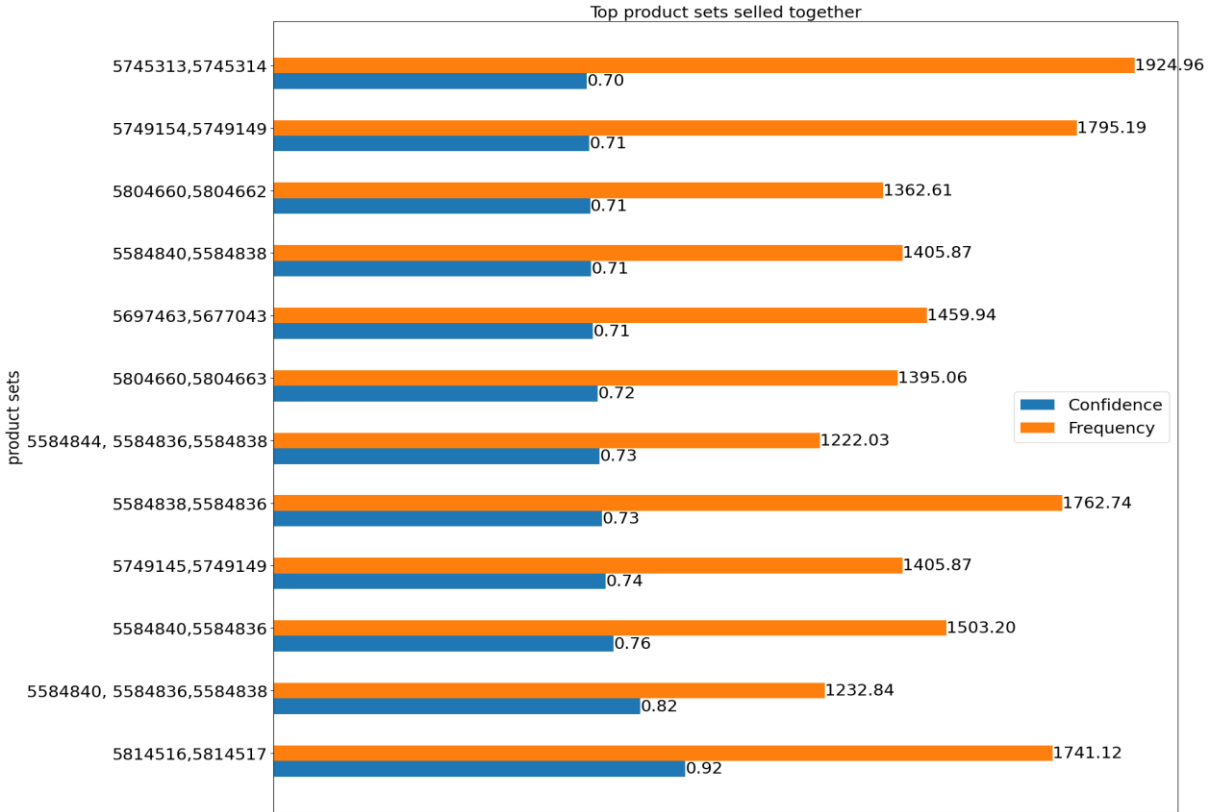
Top Most Frequent Purchased Set Of Products

- These are based on a minimum confidence of 70% and minimum support of 0.2% (1136 repetition)

	Antecedent	Consequent	Support	Confidence	Lift	Conviction
9	5814516	5814517	0.003065	0.920000	274.552045	12.461683
10	5584840, 5584836	5584838	0.002170	0.820144	194.037916	5.547932
1	5584840	5584836	0.002646	0.759563	159.578077	4.148084
5	5749145	5749149	0.002475	0.742857	63.649406	3.879263
0	5584838	5584836	0.003103	0.734234	154.256739	3.751035
11	5584844, 5584836	5584838	0.002151	0.729032	172.481808	3.682536
8	5804660	5804663	0.002456	0.724719	147.536517	3.623731
3	5697463	5677043	0.002570	0.714286	102.224601	3.491004
2	5584840	5584838	0.002475	0.710383	168.069463	3.444284
7	5804660	5804662	0.002399	0.707865	203.165040	3.414865
6	5749154	5749149	0.003161	0.706383	60.524230	3.395033
4	5745313	5745314	0.003389	0.700787	111.200776	3.330779

Top Most Frequent Purchased Set Of Products

- Consider making bundles of these pairs of items





Thank you