Categorize FRM customers for small retailers, grocers or retail outlets

Introduction: FRM . classification method

How to increase profits?

Profit is the difference between income and costs incurred during the full manufacturing process by the firm. Profit is the final financial outcome of the firm, to put it another way.

The formula for determining a business's profit

Profit = Total revenue of the business – Total costs

Total revenue is the sum of all the money a company makes from selling goods and services.

Total cost is the sum of all expenses a company incurs when selling a good or service. For instance, the importation of commodities, employee rent, space rent, marketing costs, etc.

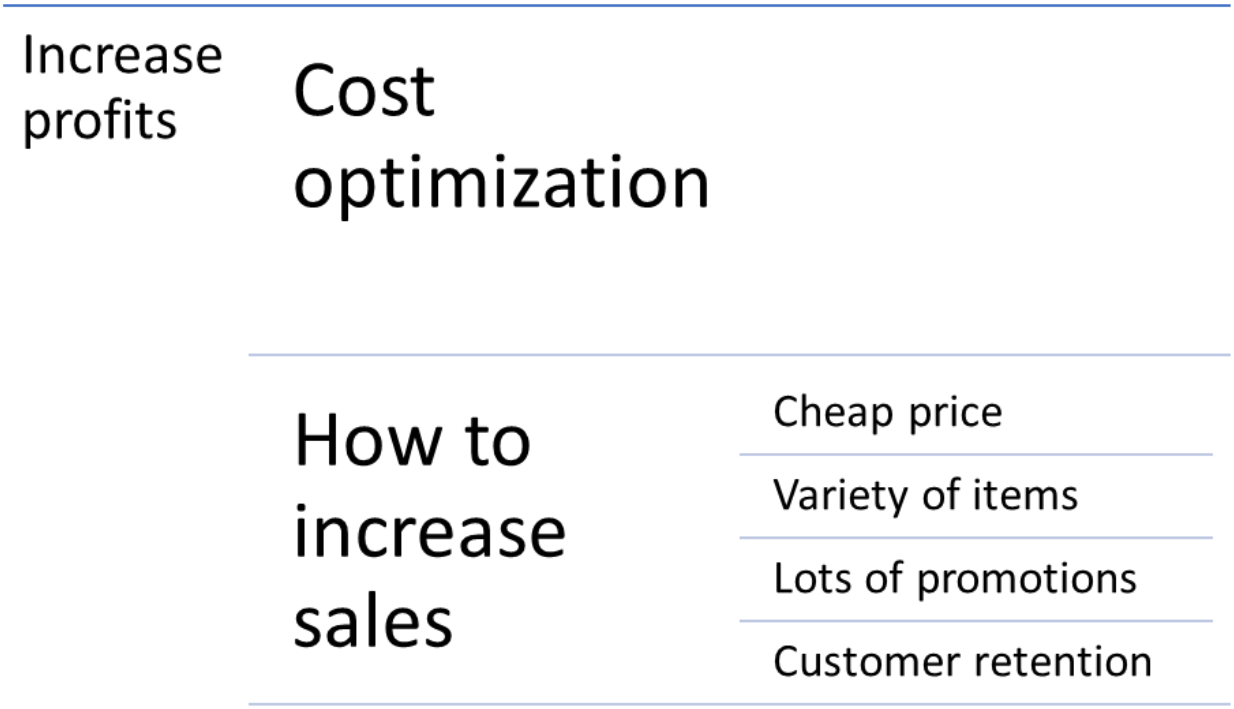
So, if we want a firm to expand, we have two issues to solve:

- Growth issue: how to sell pricey products in order to increase the company's revenue
- Optimization issue: the optimization here is the cost optimization of the enterprise.

Because enterprises and small firms typically don't have a lot of cash, cost optimization uses a lot of resources even while its efficiency is insufficient. For these types of organizations, the growth problem is the best solution. the amount.

How then can we expand, or more specifically, how can we sell more goods?

For analysis and solution finding for firms, use logic trees.



Customer retention plays an important role in grocers, they help shoppers return to buy again and again because most of the products here are bought with a very high frequency, which gives this type of business This business generates a lot of revenue.

Prioritizing the purchasing process and customer service is crucial for boosting the percentage of repeat consumers. Customer comfort and pleasure throughout the purchasing process are essential, despite the fact that it could appear like a difficult undertaking for retail establishments. During my visits to the countryside to buy supplies, I saw that the inhabitants' income is highly dependent on seasonal crops, which causes income instability. As a result, several retailers offer consumers the

convenience of postponed payments. Additionally, some shops include small-value goods like sweets or spices along with veggies, which increases the likelihood that consumers would return.

Grocery businesses will know how their clients are and be able to serve them properly if they categorise their customers in order to take care of them.

Customer Segmentation

Using the logical tree to find the dimensions for customer classification:

Customer classification	Demographic	Gender
		Age
		...
	Geographical location	
	Marital status	Single
		Married
		...
	Income	High
		Low
	Behavior	Recency
		Frequency
		Monetary

There are three factors to consider while assessing RFM, the technique for categorizing clients based on their behavior.

R is the recency, based on whether we can find out when their last purchase was, they still bought it recently (active).

R *(days) = now - last_purchase_date*

F is Frequency, this is an indicator that measures the frequency of customers in a certain period of time. This can know which customers come to your place often but which customers don't.

F = total number of orders

M is Monetary, based on the amount of money they have spent at the point of sale, it is possible to classify which customers spend more and which customers spend less.

M = total money spent

Context

We have the following table:

Recency	**F**requency	**M**onetary
Lvl 1 (leaving)	Lvl 1 (rare)	Lvl 1 (small amount)
Lvl 2	Lvl 2 (normal)	Lvl 2
Lvl 3 (active)	Lvl 3 (often)	Lvl 3 (big amount)

⇒At the simplest level we will divide into 3 groups below:

- Low value customer group: includes customers who have not come back to buy for a long time, the number of orders is small and the total order value is low. equivalent to R, F and M being at level 1.
- The group of customers with average value (Mid Value): is a group of customers with 3 average RFM indicators, neither high nor low R, F and M are at level 2 or may also have 1 of 3 criteria in level 3.
- High Value customer group: is a group of customers with recent purchases, large number of orders and high total value. all 3 RFM criteria are at level 3.

For more detail we can segment by the following table:

Customer Segment	R	F	M	Description
VIP customer	3	3	3	Purchasing regularly, most recently, and spend the most
Loyal customer	3	3	2	Customers a lot and frequently purchase.
	3	2	2	
	2	3	2	
	2	2	2	
	3	3	1	
	2	3	1	
Potential Prospective customer	3	2	3	Current purchasing, having a few times, and spending a lot
Risky customer	1	3	3	Spent big and often but haven't been back in a while
	1	2	3	
	1	3	2	
	1	3	1	
	2	2	3	
	2	3	3	
High-spending customers	1	1	3	Customers spend a lot but not frequently
	2	1	3	
	2	1	2	
	3	1	3	
New customer	3	2	1	customers buy recently but not often before
	3	1	2	
	3	1	1	
	2	1	1	
Low value customer	1	1	2	Low in three-dimension RFM
	1	2	2	
	1	2	1	
	2	2	1	
	1	1	1	

So how are the levels classified?

In a straightforward manner that is divided into three equal pieces, we may classify. Here, we categorize using **Pareto** in a more useful method.

> *With a to-do list implies using the **Pareto** principle. Select the two pieces of material that will add the most value. The majority of people, nevertheless, really opt to complete the simpler jobs first. Thus, the remaining 20% of the things that require attention are*

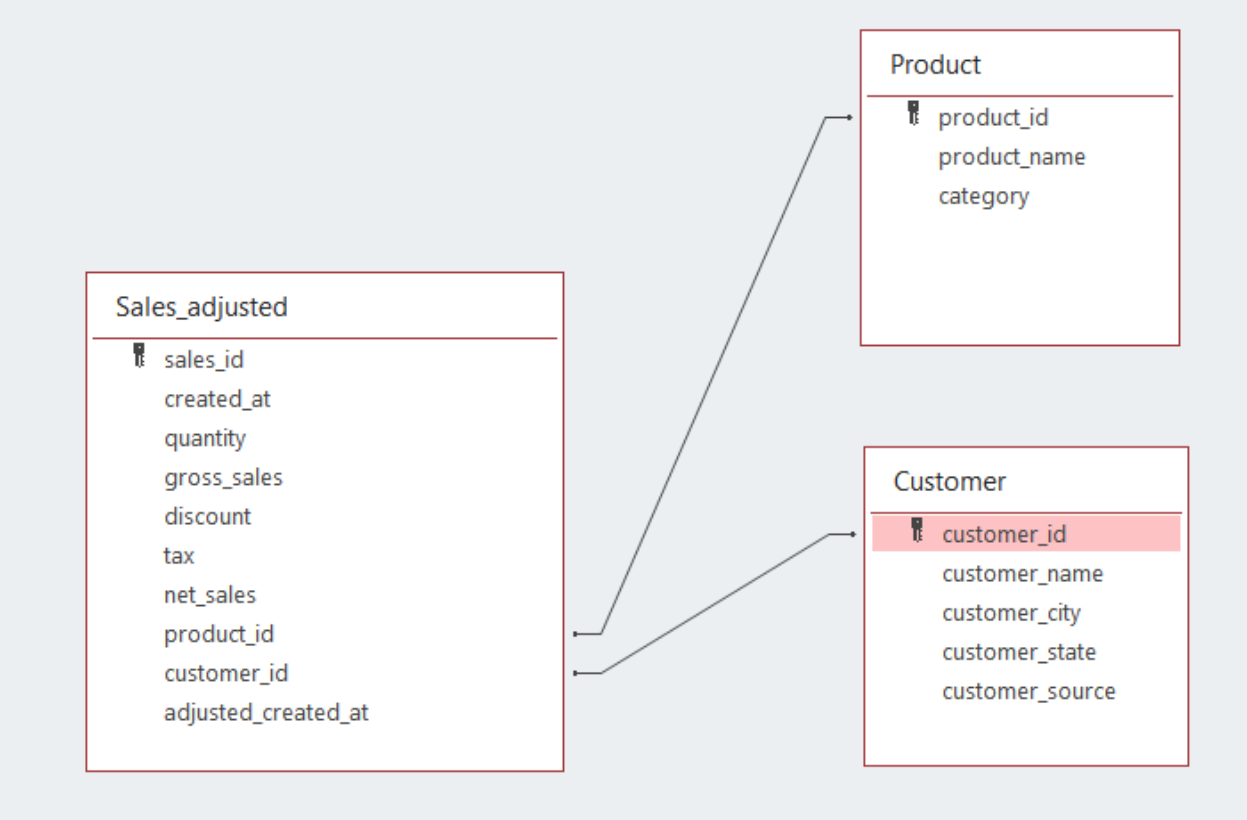
> *frequently postponed in around 80% of the less essential items. It requires extra time and effort because of this.*

Level 3 is the highest level in the dimensions; it will occupy the first 20% of space, while levels 2 and 3 make up the remaining 80%. The other will take up the remaining 50% to 100%, whereas the latter will range from 20% to 50%.

About the data source:

Utter data:

We have three data tables with the url and form below:



Source: Access file.

The final Output:

Column Name	Type
Customer_id	integer
last_active_date	date

recency	integer
frequency	integer
monetary	integer
category	nvarchar

SQL Coding

Calculate the value of 3 dimensions RFM

R - Recency:

According to the definition of R, we need to calculate the last active date of each customer and calculate the number of days from the last active customer to the current time.

Using the `MAX()` function on adjusted_created_at to get the last date the customer purchased. and use the calculation `CURRENT_DATE - MAX(adjusted_created_at)` to calculate the number of days the customer has been most active until now.

```
SELECT customer_id
        , MAX(adjusted_created_at) recent_active
        , CURRENT_DATE - MAX(adjusted_created_at)::DATE recency
FROM sales_adjusted
WHERE adjusted_created_at >= CURRENT_DATE - INTERVAL '1 year'
GROUP BY customer_id
ORDER BY recent_day
```

F - Frequency

Using the `COUNT()` function to count the number of incoming customers. Here, each time a customer comes can buy many items, so we use `DISTINCT` to count the number of sale_id instead of counting the number of lines.

```
COUNT(distinct sales_id) AS frequency
```

M - Monetary

Using the SUM() function with the net_sale field of each customer, we will get the total spending of the customer in the past 1 year.

```
SUM(net_sales) AS moneary
```

⇒

```
SELECT customer_id
        , MAX(adjusted_created_at) recent_active
        , current_date - MAX(adjusted_created_at)::date recent_day
        , COUNT(distinct sales_id) frequency
        , SUM(net_sales) moneary
FROM sales_adjusted
where adjusted_created_at >= current_date - interval '1 year'
group by customer_id
order by recent_day
```

RFM . taxonomy

We can use `NTILE()` with base 100 to line up the dimensions. Since recency returns the number of days of customer inactivity so far, we need to sort in descending order with `DESC`.

```
with rfm as (SELECT customer_id
            , MAX(adjusted_created_at) recent_active
            , current_date - MAX(adjusted_created_at)::date recency
            , COUNT(distinct sales_id) frequency
            , SUM(net_sales) monetary
    FROM sales_adjusted
    where adjusted_created_at >= current_date - interval '1 year'
    group by customer_id)

SELECT customer_id
        , recency
        , ntile(100) over(order by recency) recency_rank
        , frequency
        , ntile(100) over(order by frequency) frequency_rank
        , monetary
        , ntile(100) over(order by monetary) monetary_rank
FROM rfm
```

As defined above, level 1 is the lowest level that will occupy the `recency_rank`, `frequency_rank` and `monetary_rank` fields from 1 to 50; level 2 will be from 51 to 80 and level will be from 81 to 100. We use `CASE` to assign them a value when the condition with `WHEN` is satisfied.

```
with rfm as (SELECT customer_id
            , MAX(adjusted_created_at) recent_active
            , current_date - MAX(adjusted_created_at)::date recency
            , COUNT(distinct sales_id) frequency
            , SUM(net_sales) monetary
    FROM sales_adjusted
    where adjusted_created_at >= current_date - interval '1 year'
    group by customer_id),

    rfm_rank AS (SELECT customer_id, recent_active
                , recency
                , ntile(100) over(order by recency desc) recency_rank
                , frequency
                , ntile(100) over(order by frequency) frequency_rank
                , monetary
                , ntile(100) over(order by monetary) monetary_rank
        FROM rfm)
SELECT customer_id, recent_active
        , case when recency_rank <= 50 then '1'
            when recency_rank <= 80 then '2'
            when recency_rank <= 100 then '3'
            end as r
        ,case when frequency_rank <= 50 then '1'
            when frequency_rank <= 80 then '2'
            when frequency_rank <= 100 then '3'
            end as f
        ,case when monetary_rank <= 50 then '1'
            when monetary_rank <= 80 then '2'
            when monetary_rank <= 100 then '3'
            end as m
FROM rfm_rank
```

Next, based on the RFM value just found, we apply it to the table above to classify customers.

For faster sorting, we need to combine 3 RFM values into one column. with `CONCAT()` or `||`

```
with rfm as (SELECT customer_id
            , MAX(adjusted_created_at) recent_active
            , current_date - MAX(adjusted_created_at)::date recency
            , COUNT(distinct sales_id) frequency
```

```
            , SUM(net_sales) monetary
    FROM sales_adjusted
    where adjusted_created_at >= current_date - interval '1 year'
    group by customer_id),

    rfm_rank AS (SELECT customer_id, recent_active
                , recency
                , ntile(100) over(order by recency desc) recency_rank
                , frequency
                , ntile(100) over(order by frequency) frequency_rank
                , monetary
                , ntile(100) over(order by monetary) monetary_rank
        FROM rfm),
    rfm_lvl as (SELECT customer_id, recent_active
            , case when recency_rank <= 50 then '1'
                when recency_rank <= 80 then '2'
                when recency_rank <= 100 then '3'
                end as r
            ,case when frequency_rank <= 50 then '1'
                when frequency_rank <= 80 then '2'
                when frequency_rank <= 100 then '3'
                end as f
            ,case when monetary_rank <= 50 then '1'
                when monetary_rank <= 80 then '2'
                when monetary_rank <= 100 then '3'
                end as m
    FROM rfm_rank),

    rfm_tbl as (SELECT *
                , r||f||m rfm
        FROM rfm_lvl)

SELECT *
        , case when rfm = '333' then 'VIP customer'
            when rfm in ('332','322','232','222') then 'Loyal customer'
            when rfm in ('323') then 'Potential prospective customers'
            when rfm in ('133','123','223','233','132','131') then 'Risky customer'
            when rfm in ('113','213','212','313') then 'Customer spend a lot'
            when rfm in ('321','312','311','211') then 'New customer'
            when rfm in ('111','112','121','122','221') then 'Low value customer'
        end customer_segmentation
FROM rfm_tbl
order by customer_segmentation
```

We have the output:

https://docs.google.com/spreadsheets/d/1vS6TVPwEHUYVFYwxwO06heFQ8YhYk9sp/edit?usp=sharing&ouid=110079549781980440772&rtpof=true&sd=true

ANALYST

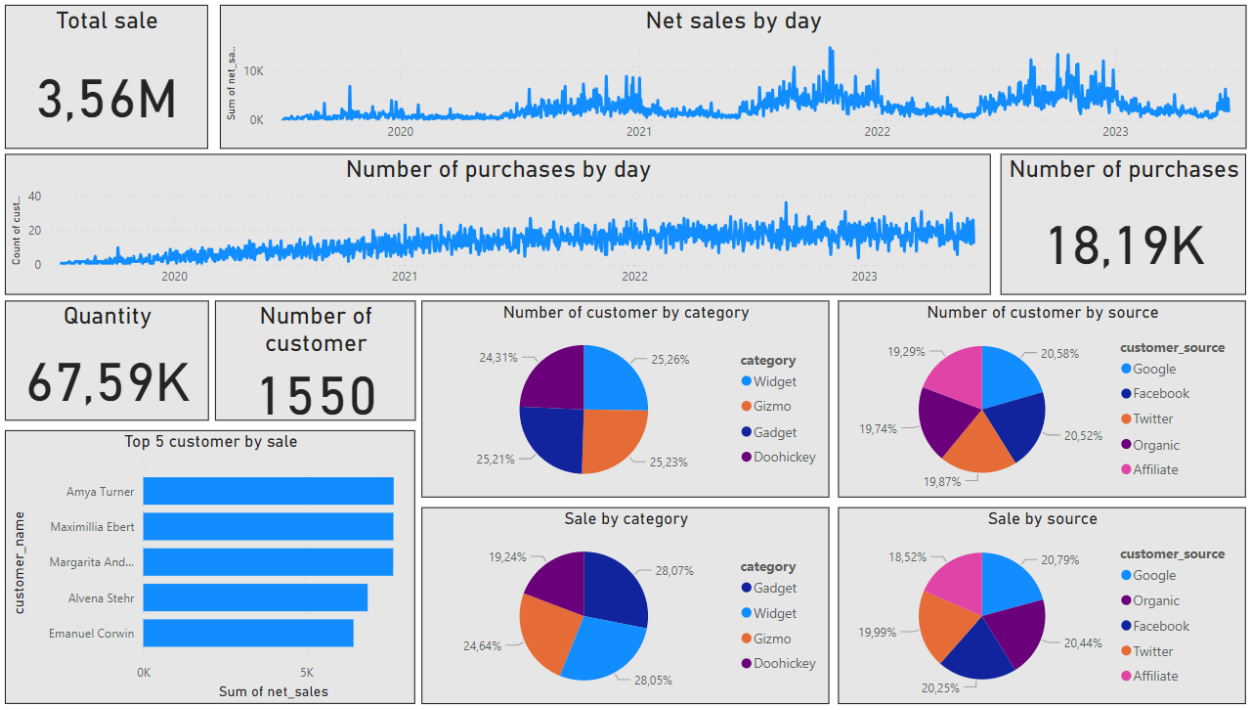
Next we get all the information we need to use in the next step of analysis by `JOIN` multiple data tables together.

```
with --previous code--
    rfm_inf as (SELECT rfm_segm.*
            , quantity, discount, tax, net_sales
            , product_id
            ,customer_name, customer_city, customer_state, customer_source
    FROM rfm_segm
    join sales_adjusted
    on rfm_segm.customer_id = sales_adjusted.customer_id
        and rfm_segm.recent_active = sales_adjusted.adjusted_created_at
    join customer
    on rfm_segm.customer_id = customer.customer_id)

SELECT * FROM rfm_inf
join product
on rfm_inf.product_id = product.product_id
```

Then import the data into **Power BI** to analyze and visualize the data:

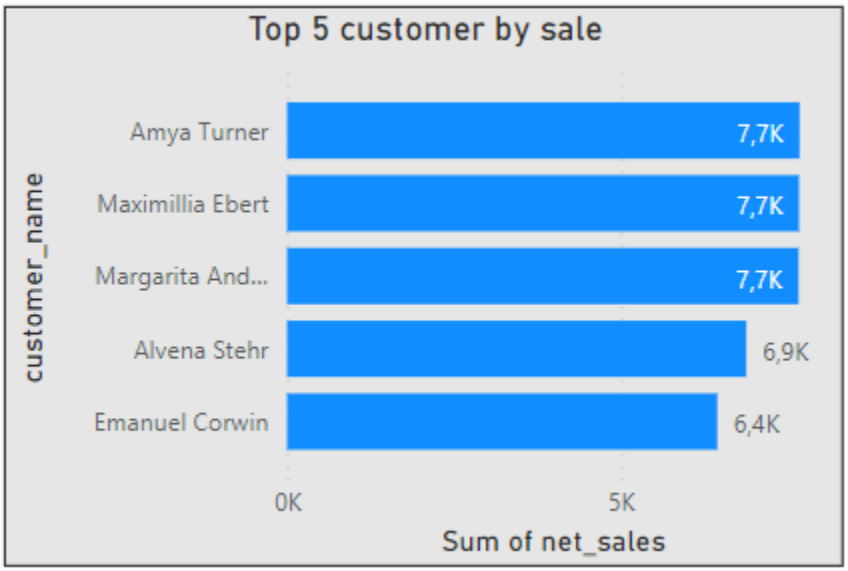
Overview:



We can see, the total number of net sales so far is 3.56 million dollars and the total number of products sold is more than 67 thousand units. The purchase is more than 18 thousand purchases, but the number of customers is 1550 guests.

For product types, they are bought at a fairly equal rate, with no big difference between the most and the least purchased types (about 5%). The same goes for customers coming from different sources. However, the amount of money spent on each product is slightly different.

For Net Sale with each year, we can see that 2022 reached the highest level of revenue and the peaks were concentrated in this year. Looking through the peaks focuses on the last quarter of the year, from October to December. Looking at the number of customers year over year, the number of customers coming to the store is increasing.



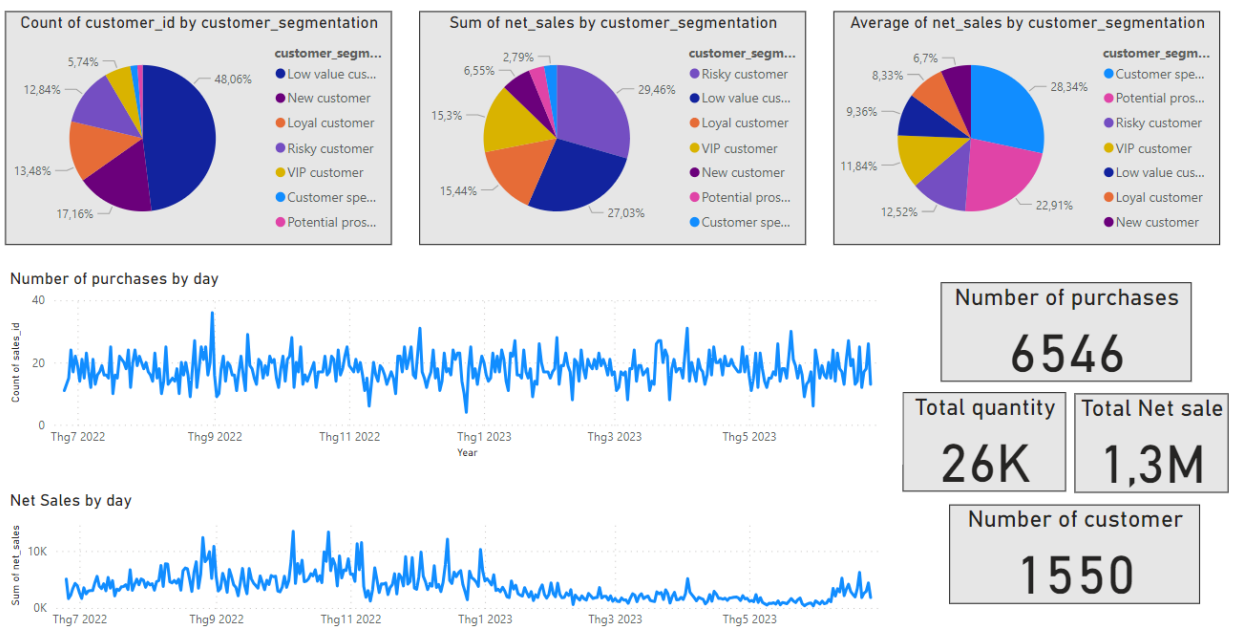
We have 3 customers with the highest consumption and all are approximately 7.7 thousand dollars.

⇒ In general, the store is in a growth period. However, we can see that the number of potential customers who are likely to leave the store is very large, accounting for nearly 25% of the total number of customers.

About each segmentation:

Overal:

In the previous section, we have classified customers into many different segments according to consumption behavior. However, this classification is only based on data for the last 1 year, so we will analyze based on data within the last 1 year.

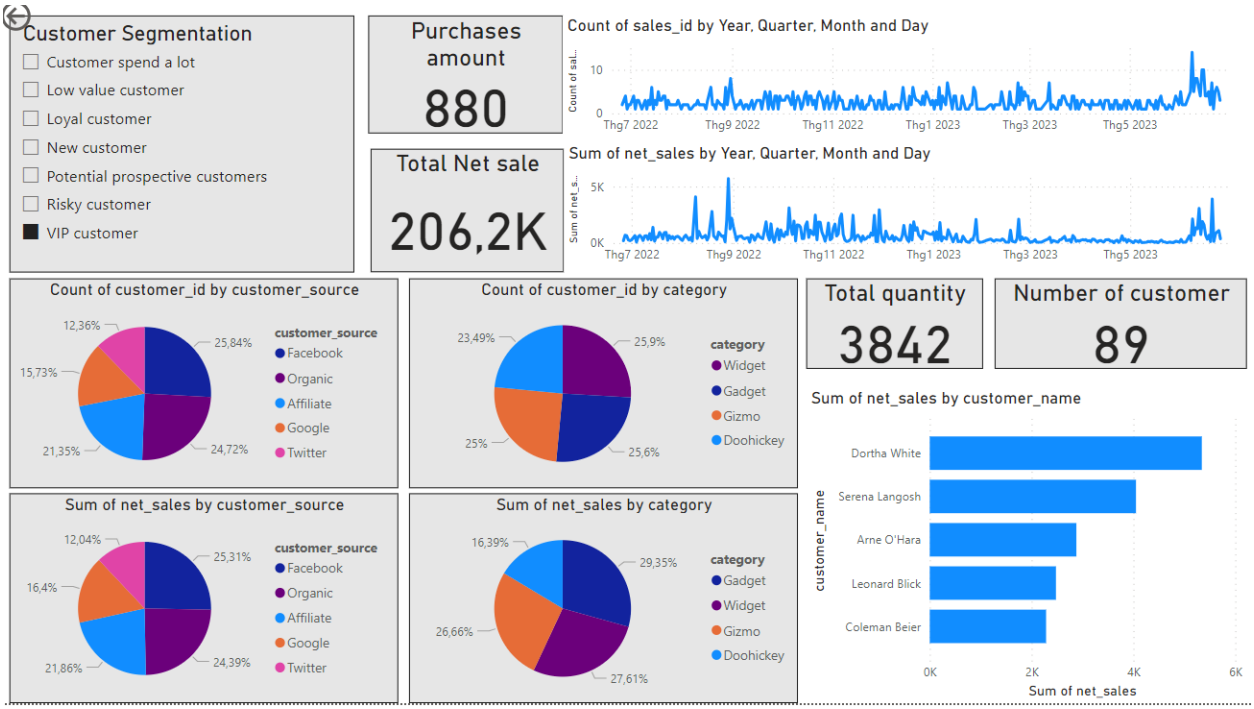


In the past year, the number of customers is still 1550, the total sale is less than the previous period of 1 year. In terms of customer segmentation, in terms of number of customers, we see that 'low value' customers still account for a large percentage of the total number of customers, followed by new customers this year quite a lot. The least number is Leads. For revenue from each customer segment, we see that customers who are likely to leave the store bring a very high amount of revenue, accounting for nearly 30%.

However, in terms of average spending, customers who spend the most still account for the most.

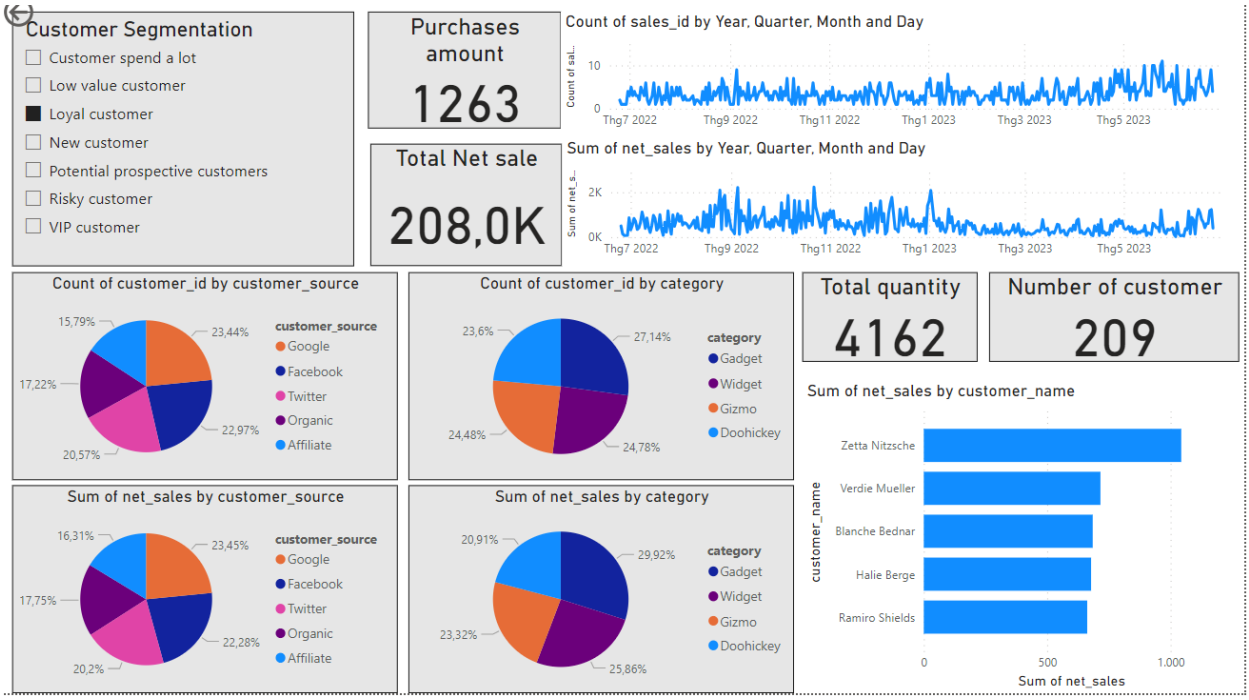
The number of customers coming in over time is basically stable, no time period is too much and no time period is too small. In terms of revenue, it still follows a cycle that is high and concentrated at the end of year 9 from October to December.

VIP customer:



The store's 89 VIP customers account for nearly 6% of total arrivals. These customers bring the store 206.2 K dolar . The volume and quantity of products they buy has been very consistent over the past year especially in recent times. They come from different sources and the difference between the channels they come from is not too much (from facebook at most). The difference between the types of products they buy is also not much, but the number of customers who buy Widget the most but the most revenue comes from Gadget. maybe because Gadget's price or quantity in 1 purchase is higher.

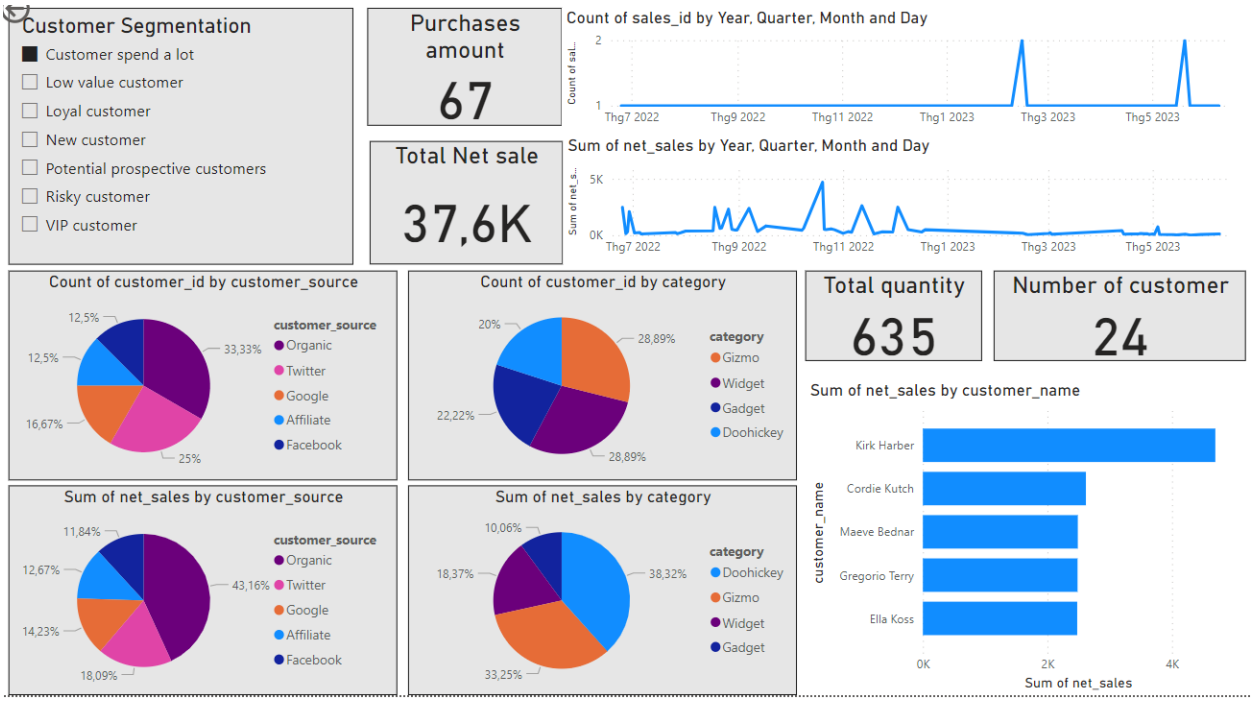
Loyal customer:



There are 209 loyal customers of the store, accounting for more than 13%, these customers have a large amount of spending in the past year with 208 thousand dollars. Most of these customers come from google but not too different from other sources. The product they buy the most is Gadget.

The purchases and spending of these customers are quite even over time.

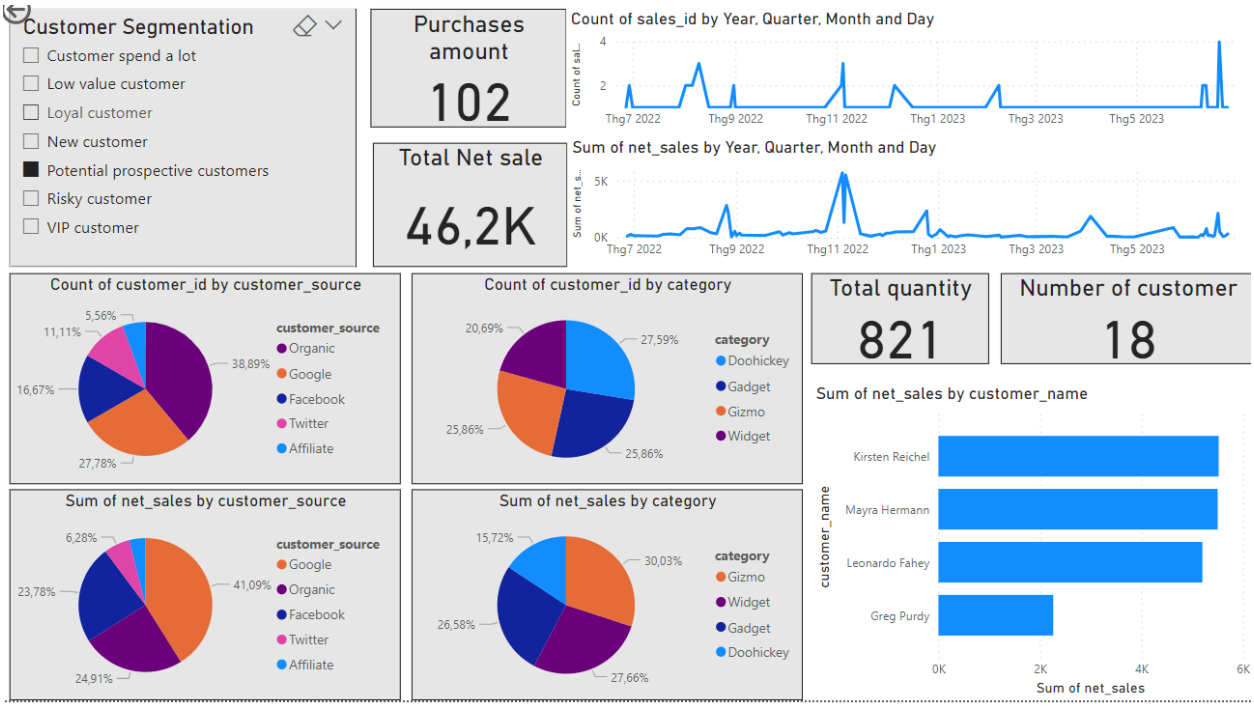
High-spending customers



As the name implies, customers in this segment spend a lot, have the highest spend per capita in the segment and they also come from natural sources without any advertising channels. The main product they use is Gizmo. There is a customer Kirk Harber has the most spending and slightly outperforms him compared to other customers.

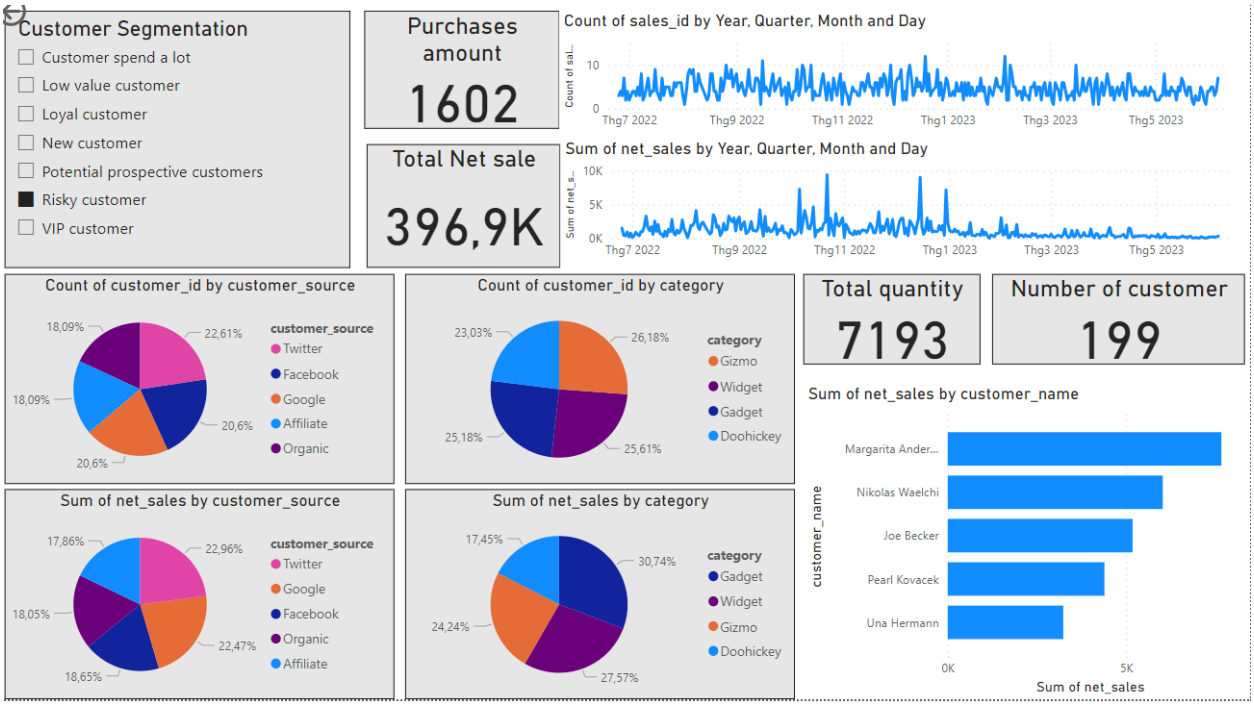
It can be seen that their activity is decreasing recently, from their purchases to their spending, they have all decreased in the last 3 months.

Potential Prospective customer:



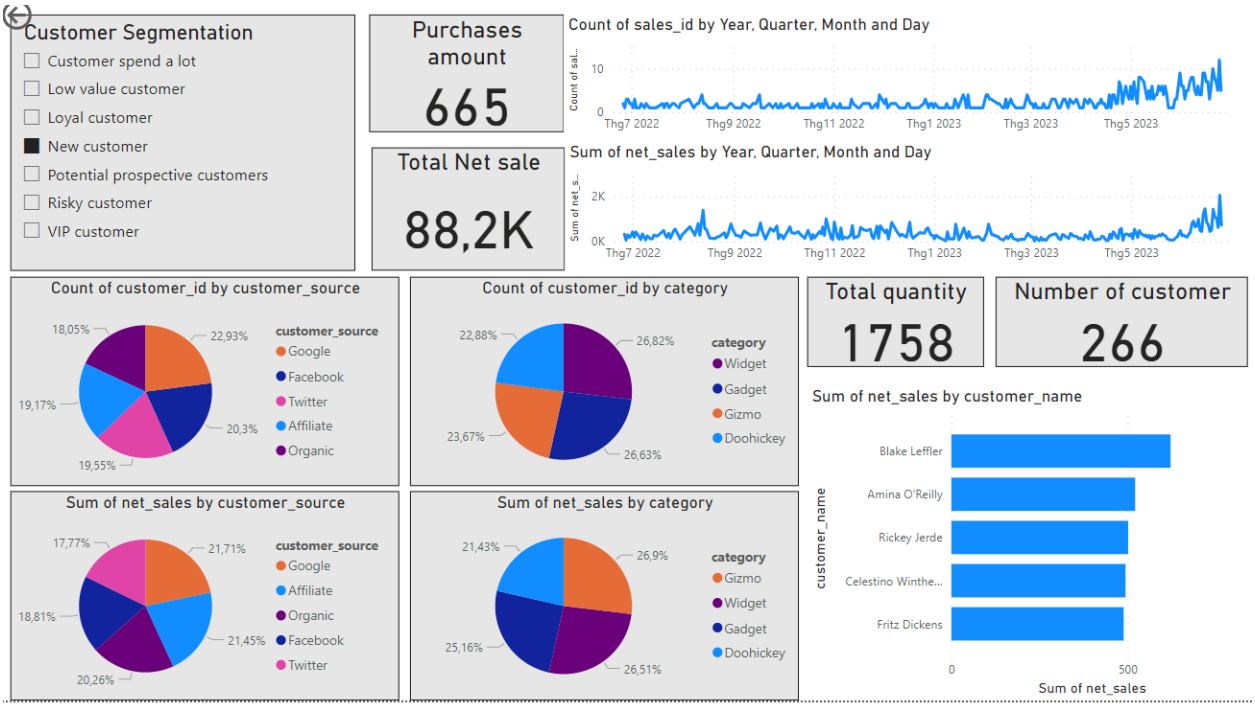
These customers have been performing quite well recently, the amount of per capita spending is quite high. Most of them come by themselves without any advertising channels, but the revenue comes mainly from customers from the facebook channel. The main product they use is Gizmo, but the amount of customer products is not significantly different.

Risky customer



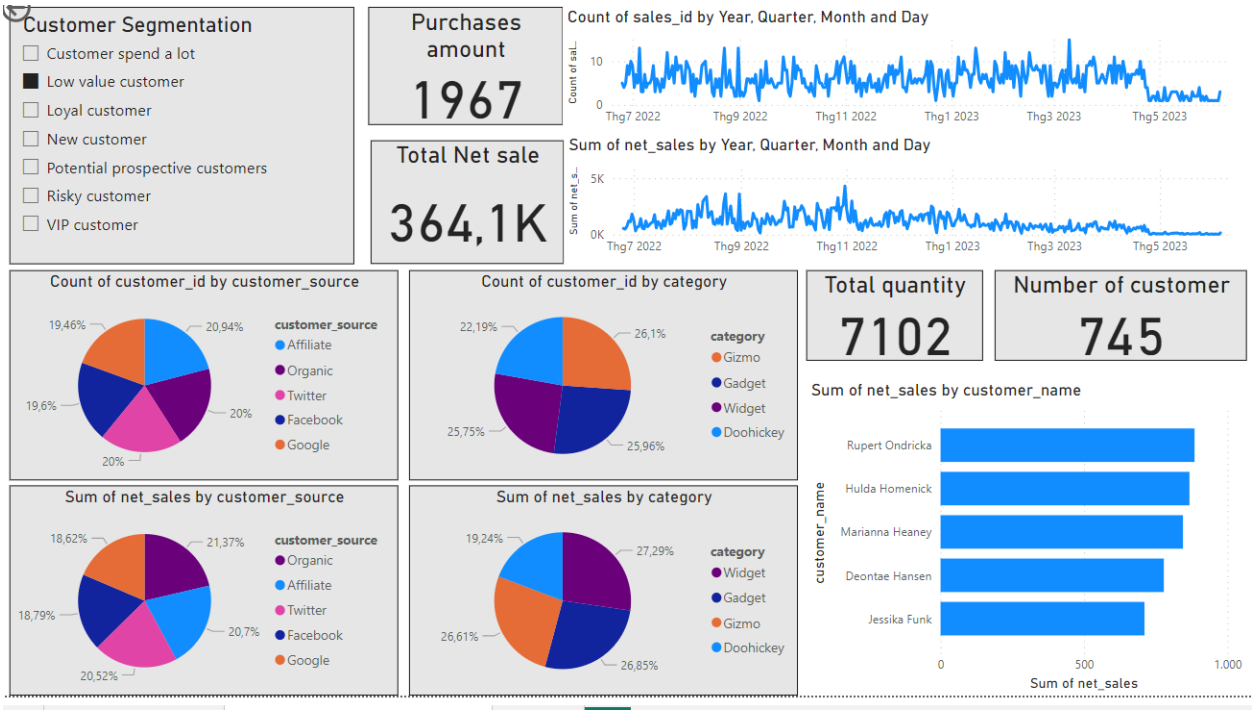
This is a relatively small customer segment of the store but brought the store a lot of revenue in the past year with 396.9 thousand dollars. Looking at the graph of the number of payments over time, it can be seen that it is quite regular. However, their performance is decreasing, especially the amount of spending on the store is decreasing very sharply, in the last 4 months their spending has been very little under 1000 dollars over the past few years.

New customer



Recently, the store received a lot of new customers, most of them coming from Google's advertising channel. Their spending amount in a period of time is not much, less than 2 thousand dollars.

Low value customer



It is not surprising to know the number of customers and the revenue from this large number of customers. However, they mainly come from Affiliate and organic, so the number of customers coming is not stable.

Looking at their revenue chart over time, it's not very stable, especially in recent times

Application

Ways to take care of customers for each customer segment.

For VIP customers, loyal customers, high-spending customers and customers with long-term potential

However, just because they are listed as a fairly stable customer does not mean that they will never leave the store. Most businesses focus on reaching new customers but forget that retaining old customers is also essential. Here are some solutions to retain customers.

Loyalty program, accumulate points, discount

Businesses frequently give discounts to encourage buying and draw customers. However, you should exercise caution when using this tactic since it may unintentionally enter you in a long-distance race. Customers will always anticipate discounts, which might negatively impact your sales. Discounting is riskier when profit margins are thin.

Instead, it is believed that using the tactic of providing loyal consumers with loyalty cards and discounts is the most successful. For instance, you may calculate the number of points clients would receive back for their subsequent purchases when they make a purchase. Alternatively, if they spend over $3 million on items, they will be upgraded to membership status and given a 3% discount off future purchases.

Customers in this market like to shop frequently and spend a lot of money, so they will be thrilled to have a loyalty card.

Improve customer care system

The customer care system creates an opportunity for effective communication between the store and the customer. Therefore, improving this system is extremely important. You can improve your customer care system in many ways. For example, send a small gift or discount code to loyal customers to remind them to come back to you, or deal with customer complaints effectively to turn them into loyal customers.

In addition to the above ways to retain loyal customers, using ODS's Cloudfone Virtual Call Center service is also an effective solution. Cloudfone has built-in CRM/ERP/Website tools, Voice Brandname, Microsoft Teams… to help you take better care of your customers. Use Cloudfone virtual switchboard from today to increase the ability to retain loyal customers for your business.

Support, answer questions promptly

Timely support and answers to questions are very important. Because when customers have a problem when using your product/service, they will contact you to ask questions and complain. At this point, you need to know how to listen and understand them. Regardless of whether the incident was your fault, proactively apologizing and helping to resolve the issue in a timely manner will increase customer trust and satisfaction in your business. If done well, you can even turn the most demanding consumers into loyal customers.

Continuous interaction with customers

Keep interacting with your customers if you don't want to be forgotten. This can help customers choose your products/services when the need arises. Using tools such as

Email Marketing, SMS Marketing will help connect you with customers quickly and effectively. However, you should choose the right content to reach customers because improper interaction can make customers feel uncomfortable and troublesome.

For new customers, customers have little value

Like the above customer groups, we need to take care of and create the best shopping experience for them, moreover they are new customers, helping them to be more branded about themselves is essential. However, it is the best way for them to find out for themselves.

For customers who are about to leave the store

Set and meet customer expectations

There is nothing worse for a customer when you do not meet their wishes. Therefore, to retain customers, you need to understand their expectations and find the best way to meet them.

Therefore, you should ensure that your sales and service teams are aligned with what is expected and what promises can be delivered to your customers.

Or maybe you should diversify your store's product categories

Improve competitive advantage

To retain customers, you need to enhance your competitive advantage, which is the difference that helps you stand out from your competitors. That will make customers choose you over another product/service provider.

Jim Riley defines it as an advantage over competitors gained by providing consumers with greater value, either by means of lower prices or by providing more benefits and services. which justifies the higher price.

Build customer loyalty

Customer satisfaction is an invaluable asset to every business. With loyal customers, they are less likely to leave you. Therefore, you need to find ways to build the credibility and trust of your customers, keep them in a long-term relationship by providing optimal benefits, and always keep your promises under all circumstances.

Here are 3 strategies to help you build customer loyalty:

Let your customers know what you're doing for them. Those are the values and benefits that they can't find anywhere but your business.

- Write a personal email to thank the customer's interest and trust in your product/service.
- Build trust from leaders. Typically, your clients will prefer to work with a manager rather than an employee. Therefore, as a business owner, you should attract customers, build loyalty from them with your own attitude and care, not anyone else's.

Source:

Databse: VIT LAM DATA youtuber