

Business Case: Target SQL

The main objective of this analysis on given Target dataset was to identify trends, patterns, and potential areas for improvement in order to enhance the company's performance.

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- 1. Import the dataset and do the usual exploratory analysis steps like checking the structure & characteristics of the dataset

1.) Data type of all columns in the "customers" table

- customer_id ---> **STRING**
- customer_unique_id ---> **STRING**
- customer_zip_code_prefix ---> **INTEGER**
- customer_city ---> **STRING**
- customer_state ---> **STRING**

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS		EXECUTION GRAPH	
Row	customer_id	customer_unique_id	customer_zip_code_prefix	customer_city	customer_state		
1	0735e7e4298a2ebbb46649346...	fc003b1bdc0df64b4d065d9b...	59650	acu	RN		
2	903b3d86e3990db01619a4ebe...	46824822b15da44e983b021d...	59650	acu	RN		
3	38c97666e962d4fea7fd6a83e...	b6108acc674ae5c99e29adc10...	59650	acu	RN		
4	77c2f46cf580f4874c9a5751c2...	402cce5c0509000eed9e77fec...	63430	ico	CE		
5	4d3ef4cffffb8ad4767c199c36a...	6ba00666ab7ead5ceec279b2...	63430	ico	CE		
6	3000841b86e1f9e9493b52324...	796a0b1a21f597704057184a1...	63430	ico	CE		
7	3c325415ccc7e622c66dec4bc...	05d1d2d9f0161c5f397ce7fc77...	63430	ico	CE		
8	04f3a7b250e3be964f01bf22bc...	c34585a0276ecc5e4fb03de75...	63430	ico	CE		
9	894202b8ef01f4719a4691e79...	01a4fe5fc00bbdb0b0a4af5a53...	63430	ico	CE		
10	9d715b9fb75a9d081c14126c0...	8f399f3b7ace8e6245422c9e1f...	63430	ico	CE		
11	018184ac5f52a821bb00f3ef21...	54fc4ff419d5e05db5fe42906b...	63430	ico	CE		

2. Get the time range between which the orders were placed.

QUERY:-

```
select
min(order_purchase_timestamp)
as min_date,
max(order_purchase_timestamp)
as max_date,
date_diff(max(order_purchase_t
imestamp),min(order_purchase_t
imestamp),day) as no_of_day
from `orders.orders`;
```

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	min_date ▼	max_date ▼	no_of_day ▼		
1	2016-09-04 21:15:19 UTC	2018-10-17 17:30:18 UTC	772		

3. Count the Cities & States of customers who ordered during the given period

QUERY:-

```
SELECT count(distinct
c.customer_city) as
city_count, count(distinct
c.customer_state) as
state_count

from `customers.customers` as
c join `orders.orders` as o on
c.customer_id = o.
customer_id

where
o.order_purchase_timestamp
between "2016-09-04 21:15:19
UTC" and "2018-10-17 17:30:18
UTC"
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	city_count	state_count			
1	4119	27			

Insights and recommendations :

- **INSIGHTS:-**

- **Geographic Reach:** The target retail store has a significant geographic reach, with orders being placed from a total of **4,119 distinct cities** during the analyzed period. This indicates that the store has a wide customer base and is attracting customers from various locations.

- **Market Expansion Potential:** The extensive coverage across 4,119 cities highlights the potential for market expansion. By analyzing the distribution of orders across these cities, the retail store can identify areas where it has a strong presence and areas that may require more attention. This information can help in planning future expansions and targeting new customer segments.

- **Regional Preferences:** Analyzing the distribution of cities and correlating it with sales data can reveal regional preferences and demand patterns. Identifying which cities or regions contribute the most to sales can help the retail store prioritize marketing efforts, optimize inventory management, and tailor product offerings to meet the specific needs of those areas.

Insights and recommendations :

- **RECOMMENDATIONS:-**

- ➤ **Targeted Marketing Campaigns:** Leveraging the insights gained from the analysis of city and state data, the retail store should create targeted marketing campaigns that focus on specific regions or cities. By understanding the preferences and needs of customers in different areas, the store can develop personalized messaging and promotional offers to increase customer engagement and drive sales.
- ➤ **Expansion Opportunities:** The extensive reach across 4,119 cities indicates potential areas for future expansion. The retail store should conduct further research and analysis to identify cities or regions that show high growth potential and align with the store's target market. This can involve evaluating demographic data, market trends, and competition in those areas to make informed decisions about opening new stores or expanding distribution networks .
- ➤ **Localization Strategies:** Considering the diversity of cities and states, it is recommended that the retail store implement localization strategies. This involves understanding the unique characteristics, preferences, and cultural aspects of each region and tailoring marketing campaigns, product assortment, and customer experiences accordingly. This approach can help establish stronger connections with local customers and enhance brand loyalty.

2. In-depth Exploration:

1. Is there a growing trend in the no. of orders placed over the past years?

QUERY:-

```
select
*,
from
(select
extract(year from
order_purchase_timestamp) as
year,
count(*) as orders_placed
from `orders.orders`
group by extract(year from
order_purchase_timestamp)) tab
order by 1;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	year ▼	orders_placed ▼			
1	2016	329			
2	2017	45101			
3	2018	54011			

Insights and recommendations:

- **Insights**

The number of orders placed at the Target retail store has shown a remarkable growth trend over the past few years. Starting with 329 orders in 2016, the store witnessed a substantial increase to 45,101 orders in 2017 and grew to 54,011 orders in 2018. This upward trend indicates a strong demand for the store's products or services. The growing number of orders reflects an increasing market penetration for the retail store. As more customers choose to place orders, it indicates a larger customer base and improved brand recognition. This growth can be attributed to factors such as effective advertising, positive word-of-mouth, customer satisfaction, and competitive pricing.

Recommendations

To accommodate the growing number of orders, it is recommended for the retail store invest in a scalable infrastructure. This includes upgrading and expanding facilities, optimizing inventory management systems, and streamlining order fulfilment processes. Regular communication with customers through email newsletters or loyalty program updates can help maintain strong relationships and encourage repeat purchases

2. Can we see some kind of monthly seasonality in terms of the no. of orders being placed?

```
select
*,
from
(select
extract(month from
order_purchase_timestamp) as
month,
count(*) as order_placed
from `orders.orders`
group by extract(month from
order_purchase_timestamp)) tap
order by 1;
```

Query results

JOB INFORMATION		RESULTS		JSON
Row	month		order_placed	
1		1	8069	
2		2	8508	
3		3	9893	
4		4	9343	
5		5	10573	
6		6	9412	
7		7	10318	
8		8	10843	
9		9	4305	
10		10	4959	
11		11	7544	
12		12	5674	

Insights and recommendations:

- **INSIGHTS:-**

- The data provided shows variations in the number of orders placed on a monthly basis. This suggests the presence of monthly seasonality, where the demand for the retail store's products or services fluctuates throughout the year. Months 8,5,7,3 and 6 indicate higher order volumes compared to other months. These months may correspond to peak seasons or periods of increased customer activity. It is likely that certain factors, such as holidays, promotional events, or seasonal trends, contribute to the higher number of orders during these months. Understanding the patterns and trends in demand can help the store optimize inventory management, staffing levels, and marketing efforts to meet customer needs effectively.

- **Recommendations:**

- The store can introduce seasonal products or limited-time offerings that align with customer preferences during peak seasons. For example, launching special holiday-themed products or exclusive collections can create a sense of urgency and increase customer engagement. These seasonal product offerings can drive sales and attract new customers during specific months. The retail store can leverage the insights gained from the monthly seasonality to develop targeted marketing campaigns. By identifying peak seasons, the store can create promotional offers, discounts, or exclusive products that align with customers' increased demand. Similarly, during low seasons, the store can design campaigns to incentivize customers and drive sales.

3. During what time of the day, do the Brazilian customers mostly place their orders? (Dawn, Morning, Afternoon or Night) 0-6 hrs: Dawn 7-12 hrs: Mornings 13-18 hrs: Afternoon 19-23 hrs: Night

```
SELECT
    CASE
        WHEN EXTRACT(HOUR FROM order_purchase_timestamp) >=
0 AND EXTRACT(HOUR FROM order_purchase_timestamp) < 7 THEN
'Dawn'
        WHEN EXTRACT(HOUR FROM order_purchase_timestamp) >=
7 AND EXTRACT(HOUR FROM order_purchase_timestamp) < 13 THEN
'Morning'
        WHEN EXTRACT(HOUR FROM order_purchase_timestamp) >=
13 AND EXTRACT(HOUR FROM order_purchase_timestamp ) < 19
THEN 'Afternoon'
        ELSE 'Night'
    END AS time_of_day,
    COUNT(*) AS order_count
FROM
    `orders.orders`
GROUP BY
    time_of_day
ORDER BY
    order_count DESC;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS
Row	time_of_day ▼	order_count ▼		
1	Afternoon	38135		
2	Night	28331		
3	Morning	27733		
4	Dawn	5242		

Insights and recommendations

- **INSIGHTS:-**

- ➤ **Peak Order Time:** The data provided indicates that the majority of Brazilian customers place their orders during the afternoon, with a count of 38,135 orders. This suggests that the afternoon is the peak time for order placement among Brazilian customers.
- ➤ **Secondary Order Time:** The morning period also shows a significant number of orders, with 27,733 orders being placed. This indicates that the morning is the second most popular time for Brazilian customers to place their orders.
- ➤ **Moderate Order Time:** The night period follows closely behind the morning, with 28,331 orders. Although it falls behind the afternoon and morning, it still represents a substantial portion of customer order activity.
- ➤ **Least Popular Order Time:** The dawn period has the lowest number of orders, with 5,242 orders. This suggests that Brazilian customers are less likely to place orders during the early hours of the day.

Insights and recommendations

- **RECOMMENDATIONS:-**

- The retail store can strategically design promotional campaigns targeted at specific order times to incentivize customers. For example, offering time-limited discounts or promotions during the morning or night periods can encourage more orders during these times. This approach can help distribute customer orders more evenly throughout the day and optimize operational efficiency. The store can proactively communicate with customers to remind them of the most popular order times and highlight the benefits of placing orders during less crowded periods. By promoting order placement during off-peak times, the store can help balance the order volume and reduce potential bottlenecks during peak periods.
- Conducting regional analysis and targeting specific areas with tailored marketing campaigns can help capture local customer preferences and optimize order placement strategies accordingly

3. Evolution of E-commerce orders in the Brazil region:

1. Get the month-on-month no. of orders placed in each state.

```
select
t.month, t.customer_state, count(
t.order_purchase_timestamp) as
order_count

from(select *, extract(month
from 0.
order_purchase_timestamp) as
month

from `orders.orders` as O join
`customers.customers` as C on
O.customer_id = C.customer_id)
as t

group by
t.customer_state, t.month

order by t.month;
```

Query results			
JOB INFORMATION		RESULTS	JSON
EXECUTION DETAILS			
Row	month	customer_state	order_count
1	1	RJ	990
2	1	SP	3351
3	1	DF	151
4	1	RS	427
5	1	CE	99
6	1	PE	113
7	1	PR	443
8	1	BA	264
9	1	MG	971
10	1	RN	51

Insights and recommendations

- **Insights:-**

- The data provide insights into the month-on-month variation in the number of orders placed in different states. By analyzing this data, we can identify trends and patterns in customer behaviour and order volumes across states. These states may represent key markets for the target retail stores, indicating strong customer demand and market penetration. These states may require further analysis to understand the reasons behind the lower demand. It could be due to factors such as competition, economic conditions, or customer preferences.

- **Recommendations:-**

- Develop region-specific marketing strategies to address the unique characteristics and preferences of customers in different states. Customize promotions, advertising, and product assortments to resonate with local customer bases. This approach can help target retail stores establish a strong presence and connect with customers on a more personal level. Collaborate with influencers or local celebrities from specific states to promote the target retail stores. Partnering with influential individuals who have a strong presence in certain regions can help increase brand visibility and credibility among local customers.

2.) How are the customers distributed across all the states?

```
select distinct customer_state  
, count(distinct customer_id)  
as no_of_customers  
from `customers.customers`  
group by customer_state  
order by no_of_customers desc;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS
Row	customer_state	no_of_customers		
1	SP	41746		
2	RJ	12852		
3	MG	11635		
4	RS	5466		
5	PR	5045		
6	SC	3637		
7	BA	3380		
8	DF	2140		

Insights and recommendations

- **Recommendations:**

- Given the significant customer base in São Paulo, consider focusing on expanding operations and increasing market penetration in this state. This can include opening new stores, enhancing marketing efforts, and strengthening the brand presence to cater to the high demand in this market. Customize advertising, promotions, and product offerings to resonate with the preferences and needs of customers in these states, effectively capturing market share and driving customer engagement. Conduct in-depth regional analysis for states with smaller customer bases, like Rio Grande do Sul and Paraná. Identify the reasons for the comparatively lower customer numbers and evaluate opportunities to increase market reach, such as refining marketing strategies or exploring partnerships with local businesses.

4. Impact on Economy: Analyze the money movement by e-commerce by looking at order prices, freight and others.

1.) Get the % increase in the cost of orders from the year 2017 to 2018 (include months between Jan to Aug only).

```
WITH abcd AS (SELECT Year,
ROUND(SUM(payment_value),2) AS
Cost FROM
(SELECT
o.order_purchase_timestamp,
p.*, EXTRACT(YEAR FROM
o.order_purchase_timestamp) AS
Year FROM `orders.orders` o
LEFT JOIN `payments.payments`
p ON o.order_id = p.order_id
WHERE EXTRACT(YEAR FROM
o.order_purchase_timestamp) <>
2016 AND EXTRACT(MONTH FROM
o.order_purchase_timestamp)
BETWEEN 01 AND 08 ORDER BY
Year, o.order_id ) X GROUP BY
Year ORDER BY Year) SELECT
Year, ROUND(Cost,2) AS Cost,
(ROUND(Cost,2)-LAG(Cost,1)
OVER (ORDER BY
Year)) / (LAG(Cost,1) OVER
(ORDER BY Year))*100 as
Percentage_cost_increase FROM
abcd ORDER BY abcd.YEAR;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS
Row	Year ▼	Cost ▼	Percentage_cost_inc	
1	2017	3669022.12	null	
2	2018	8694733.84	136.9768716466...	

Insights and recommendations

- **Insights:-**

- The cost of orders experienced a substantial increase of approximately 136.56% from the year 2017 to 2018 during the months between January and August. This indicates a significant growth in customer spending during this period.

- **RECOMMENDATIONS:-**

- The target retail store should leverage the observed increase in customer spending to drive further growth. Develop marketing strategies that highlight new products, exclusive offers, or loyalty programs to encourage customers to continue spending and attract new customers.
- Develop or enhance loyalty programs to reward frequent customers and incentivize repeat purchases. Offer exclusive discounts, early access to new products, or personalized recommendations to encourage customers to continue shopping at the Target retail store.

2.) Calculate the Total & Average value of the order price for each state

```
select customer_state,  
Round(sum(payment_value),2) as  
Total_Cost,  
Round(avg(payment_value),2) as  
Average_Cost from (select  
o.order_id, c.customer_id,  
order_purchase_timestamp,  
payment_value, customer_state  
from `orders.orders` o inner  
join `payments.payments` p on  
o.order_id = p.order_id inner  
join `customers.customers` c  
on o.customer_id =  
c.customer_id order by  
customer_state) X group by  
customer_state order by  
Total_Cost desc;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	
Row	customer_state ▼	Total_Cost ▼	Average_Cost ▼		
1	SP	5998226.96	137.5		
2	RJ	2144379.69	158.53		
3	MG	1872257.26	154.71		
4	RS	890898.54	157.18		
5	PR	811156.38	154.15		
6	SC	623086.43	165.98		
7	PA	616645.82	170.82		

Insights and recommendations

- **Insights:-**

- The average order price varies across different states. States such as RN (Rio Grande do Norte) and CE (Ceará) have relatively higher average order prices compared to other states, indicating potentially higher-value purchases by customers in these regions. The total order price represents the cumulative value of all orders placed in each state. States such as RS (Rio Grande do Sul), SC (Santa Catarina), and SP (São Paulo) have higher total order prices, indicating a larger volume of sales and potentially stronger market presence.

- **RECOMMENDATIONS:-**

- Implement customer retention strategies to encourage repeat purchases and increase the total order price. Offer loyalty programs, personalized recommendations, or exclusive discounts to reward and incentivize loyal customers in states with higher total order prices. Leverage the higher average order prices in certain states to implement upselling and cross-selling techniques. Identify complementary products or higher-value alternatives to suggest to customers during their purchase journey, increasing the average order value.

3.) Calculate the Total & Average value of order freight for each state

```
select sum(freight_value)
Total, avg(freight_value)
Average, s.seller_state
from
`order_items.order_items` o
left join `sellers.sellers` s
on o.seller_id = s.seller_id
group by s.seller_state;
```

Query results			
JOB INFORMATION		RESULTS	JSON
EXECUTION DETAILS			
Row	Total	Average	seller_state
1	1482487.669999...	18.45221266585...	SP
2	212595.0600000...	24.08463351081...	MG
3	197013.5200000...	22.72096874639...	PR
4	106547.0600000...	26.14651779141...	SC
5	57243.08999999...	26.03141882673...	RS
6	18494.06000000...	20.57181312569...	DF
7	12171.13000000...	32.71809139784...	ES
8	93829.89999999...	19.47486508924...	RJ
9	12565.49999999...	24.16442307692...	GO
10	155.1099999999...	19.38874999999...	PA

Insights and recommendations

Insights:-

The average value of order freight varies across different states. States such as RN (Rio Grande do Norte) and CE (Ceará) have relatively lower average freight values, indicating potentially lower shipping costs for customers in these regions. On the other hand, states like RS (Rio Grande do Sul) and SC (Santa Catarina) have higher average freight values, suggesting potentially higher shipping costs for customers in those areas.

The total freight value represents the cumulative shipping costs for all orders placed in each state. States such as RS and SC have higher total freight values, indicating a larger volume of shipments and potentially greater logistical challenges due to the larger size or distance involved in delivering orders to these regions.

Recommendations:-

Consider implementing shipping incentives, such as free or discounted shipping thresholds, to encourage customers to place larger orders. This can help offset higher shipping costs and increase the average order value while also providing an incentive for customers to continue shopping at the Target retail store.

5. Analysis based on sales, freight and delivery time.

1. Find the no. of days taken to deliver each order from the order's purchase date as delivery time. Also, calculate the difference (in days) between the estimated & actual delivery date of an order

```
select
date_diff(order_delivered_customer_date,order_purchase_timestamp,day) time_to_deliver,
date_diff(order_estimated_delivery_date,order_delivered_customer_date,day) diff_estimated_delivery
from `orders.orders`;
```

Query results

JOB INFORMATION		RESULTS	JSON
Row	time_to_deliver	diff_estimated_delivery	
1	30	-12	
2	30	28	
3	35	16	
4	30	1	
5	32	0	
6	29	1	
7	43	-4	
8	40	-4	
9	37	-1	
10	33	-5	

Insights and recommendations

- **Insights:-**

- By analyzing the delivery time and the difference between the estimated and actual delivery dates for each order, we can gain insights into the efficiency of the target retail store's delivery process and identify any potential delays or issues.

- **Recommendations:-**

- Evaluate the current logistics processes and identify areas where improvements can be made to reduce delivery time. Streamline warehouse operations, optimize inventory management, and enhance coordination with shipping partners to ensure faster order fulfilment and delivery. Establish effective communication channels with customers to provide timely updates regarding the status of their orders. Proactively inform customers about any potential delays or changes in estimated delivery dates. This level of transparency and communication can help manage customer expectations and build trust.

2. Find out the top 5 states with the highest & lowest average freight value.

```
select 'top 5' as top_lowest, state, Average
from
(
select s.seller_state state
, avg(freight_value) Average
from `order_items.order_items` o
left join `sellers.sellers` s
on o.seller_id = s.seller_id
group by s.seller_state
order by Average desc
limit 5) t1
union distinct
select 'bottom_5' as
top_lowest, state, Average from
(
select s.seller_state state
, avg(freight_value) Average
from `order_items.order_items` o
left join `sellers.sellers` s
on o.seller_id = s.seller_id
group by s.seller_state
order by Average
limit 5) t2;
```

Query results

DB INFORMATION	RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRA
	top_lowest ▼	state ▼	Average ▼	
1	top 5	RO	50.91285714285...	
2	top 5	CE	46.38117021276...	
3	top 5	PB	39.18815789473...	
4	top 5	PI	36.943333333333...	
5	top 5	AC	32.84	
6	bottom_5	SP	18.45221266585...	
7	bottom_5	PA	19.38874999999...	
8	bottom_5	RJ	19.47486508924...	
9	bottom_5	DF	20.57181312569...	
10	bottom_5	PR	22.72096874639...	

Insights and recommendations

- **Insights:-**

- Analyzing the average freight value for different states in Brazil provides insights into the shipping costs and logistics efficiency in each region. Identifying the top 5 states with the highest and lowest average freight values allows us to understand the variations in shipping expenses across the country.

- **RECOMMENDATIONS:-**

- Investigate the reasons behind the higher average freight values in these states. Evaluate the shipping processes, carrier options, and logistical challenges specific to each region. Identify potential areas for improvement to optimize shipping costs and reduce the average freight values.
- Review packaging practices to ensure efficient use of space and minimize the weight and dimensions of shipments. Proper packaging can help reduce freight costs, particularly for regions with higher average freight values

3.) Find out the top 5 states with the highest & lowest average delivery time.

```
select 'top 5' as top_lowest, state, Average_delivery from
(select state, avg(time_to_deliver) Average_delivery from
(select c.customer_state as
state, date_diff(o.order_delivered_customer_date, o.order_purc
hase_timestamp, day) time_to_deliver
from `customers.customers` c
left join `orders.orders` o
on c.customer_id = o.customer_id) t1
group by t1.state
order by Average_delivery desc
limit 5) t2
union distinct
select 'bottom_5' as top_lowest, state, Average_delivery from
(select state, avg(time_to_deliver) Average_delivery from
(select c.customer_state as
state, date_diff(o.order_delivered_customer_date, o.order_purc
hase_timestamp, day) time_to_deliver
from `customers.customers` c
left join `orders.orders` o
on c.customer_id = o.customer_id) t1
group by t1.state
order by Average_delivery
limit 5) t3;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	top_lowest ▼	state ▼	Average_delivery ▼		
1	top 5	RR	28.97560975609...		
2	top 5	AP	26.73134328358...		
3	top 5	AM	25.98620689655...		
4	top 5	AL	24.04030226700...		
5	top 5	PA	23.31606765327...		
6	bottom_5	SP	8.298061489072...		
7	bottom_5	PR	11.52671135486...		
8	bottom_5	MG	11.54381329810...		
9	bottom_5	DF	12.50913461538...		
10	bottom_5	SC	14.47956019171...		

Insights and recommendations

- **INSIGHTS:-**

- Analyzing the average delivery time for different states in Brazil provides insights into the efficiency of the delivery process in each region. Identifying the top 5 states with the highest and lowest average delivery times allows us to understand variations in delivery speed and potential challenges.

- **RECOMMENDATIONS:-**

- Enhance communication with customers regarding their orders. Provide regular updates on the status of shipments, estimated delivery dates, and any potential delays. Proactively notify customers of any changes or issues that may affect delivery times to manage expectations effectively.
- Evaluate the performance of shipping carriers in these states. Assess their delivery capabilities, reliability, and transit times. Consider partnering with carriers that offer faster delivery services or have a strong presence in these regions to expedite the shipping process.

4.) Find out the top 5 states where the order delivery is really fast as compared to the estimated date of delivery.

```
select
customer_state, avg(time_to_deliv
ery-diff_estimated_delivery)
diff_time from (select
customer_state, date_diff(o.order
_delivered_customer_date, o.order
_purchase_timestamp, day)
time_to_delivery,
date_diff(o.order_estimated_deliv
ery_date, o.order_delivered_cust
omer_date, day)
diff_estimated_delivery
from `customers.customers` c
left join `orders.orders` o
on c.customer_id =
o.customer_id) t1
group by customer_state
order by diff_time desc
limit 5;
```

Query results				
JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS
EXECUTION GRAPH				
Row	customer_state ▼	diff_time ▼		
1	AL	16.09319899244...		
2	RR	12.56097560975...		
3	MA	12.34867503486...		
4	SE	11.85671641791...		
5	CE	10.86004691164...		

Insights and recommendation

- **Insights:-**

- Analyzing the top 5 states where the order delivery is faster than the estimated date of delivery provides insights into the efficiency of the delivery process in these regions. It highlights the states where the target retail store excels in meeting or surpassing customer expectations in terms of delivery speed.

- **Recommendation:-**

- Analyze the factors contributing to the fast delivery in these states. Identify the best practices, operational strategies, and partnerships that enable quicker order fulfilment and delivery. Understand the reasons behind their success and consider implementing similar approaches in other regions. Strengthen partnerships with carriers known for their efficient delivery services in these states. Regularly assess carrier performance and service quality to ensure consistent and reliable delivery experiences for customers. Consider expanding partnerships with these carriers to other regions to improve delivery efficiency.

6.) Analysis based on the payments

1.) Find the month-on-month no. of orders placed using different payment types.

```
select count(order_id)
cnt_orders,extract(month from
order_purchase_timestamp) as
month
from `orders.orders`
group by month;
```

Query results

JOB INFORMATION		RESULTS	JSON
Row	cnt_orders	month	
1	7544	11	
2	5674	12	
3	8508	2	
4	9343	4	
5	10318	7	
6	10573	5	
7	4959	10	
8	8069	1	
9	9412	6	
10	4305	9	

Insights and recommendations

- **Insights:-**

- Analyzing the month-on-month number of orders placed using different payment types provides insights into customer preferences and payment trends. It helps understand how customers choose to pay for their orders and if any specific payment methods are more popular during certain months.

- **Recommendations:-**

- Identify the payment methods that are most popular among customers and proactively promote them. Offer incentives or discounts for using these preferred payment methods to encourage their adoption. This can help streamline the payment process and enhance the overall customer experience. Consider expanding the range of payment options available to customers. Offer a variety of payment methods such as credit cards, debit cards, digital wallets, and bank transfers to cater to different customer preferences. Stay updated with emerging payment technologies and provide secure and convenient options to attract a wider customer base.

2.) Find the no. of orders placed on the basis of the payment instalments that have been paid

```
select
p.payment_type, count(o.order_id) cnt_order
from `orders.orders` o
left join `payments.payments` p
on o.order_id = p.order_id
group by payment_type;
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS
Row	payment_type ▼	cnt_order ▼		
1	UPI	19784		
2	credit_card	76795		
3	voucher	5775		
4	debit_card	1529		
5	not_defined	3		
6	null	1		

Insights and recommendations

- **Insights:-**

The provided data allows us to understand the number of orders placed based on the payment instalments that have been paid. By analyzing this information, we can gain insights into customer behaviors regarding payment methods and instalment plans.

- **Recommendations:-**

- Educate customers about the benefits and flexibility of instalment payment options. Highlight the convenience and affordability of paying in instalments, especially for higher-priced products or larger orders.
- Continuously monitor customer preferences regarding payment instalments and keep track of any shifts or changes in behaviors. Regularly assess the effectiveness of marketing strategies and payment options to identify areas for improvement and adapt to evolving customer needs.