Business Case Study: Prominent Retailer Brand

Context:

This particular business case focuses on the operations of a globally renowned retailer brand in Brazil and provides insightful information and actionable business recommendations about 100,000 orders placed between 2016 and 2018. The solutions offer a comprehensive view of various dimensions including the order status, price, payment and freight performance, customer location, product attributes, and customer reviews. The information can shed light on various aspects of the business, such as order processing, pricing strategies, payment and shipping efficiency, customer demographics, product characteristics, and customer satisfaction levels.

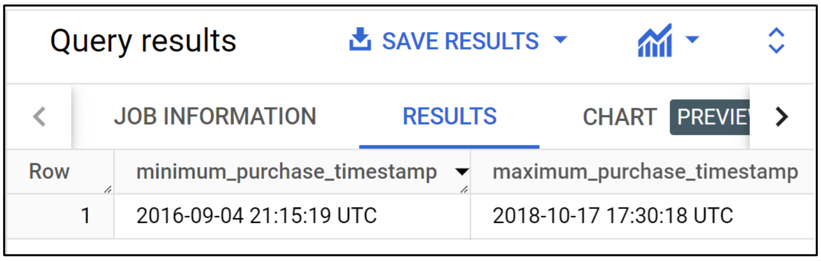
This case study report contains the solutions to the problem statements (as SQL queries), sample output of the queries, insights and recommendations. As part of the confidentiality agreement, the name of the retailer brand, the actual dataset and problem statements are not included in this report.

****

1. Query:

```
SELECT min(order_purchase_timestamp) as `minimum_purchase_timestamp`,

       max(order_purchase_timestamp) as `maximum_purchase_timestamp`
FROM `target.orders`;
```

Output Screenshot:



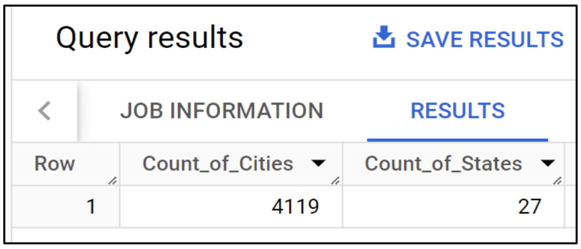
Row	minimum_purchase_timestamp	maximum_purchase_timestamp
1	2016-09-04 21:15:19 UTC	2018-10-17 17:30:18 UTC

Insights: All order placements occurred within the timeframe spanning September 24th, 2016, to October 17th, 2018, encompassing nearly 25 months.

2. Query:

```
SELECT COUNT(DISTINCT customer_city) as `Count_of_Cities`,

COUNT(DISTINCT customer_state) as `Count_of_States`
FROM `target.customers`c
INNER JOIN `target.orders` o
ON c.customer_id = o.customer_id;
```

Output Screenshot:



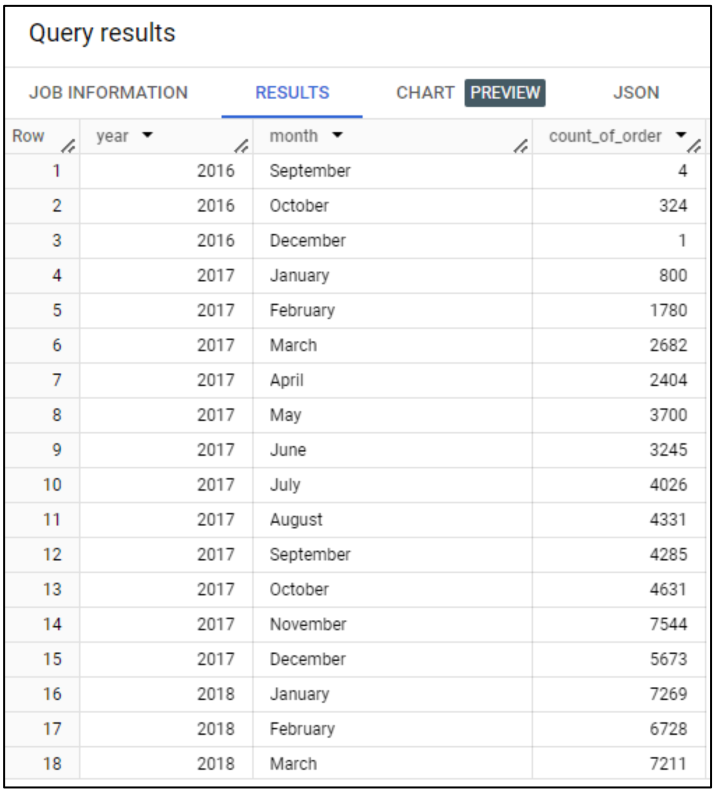
Row	Count_of_Cities	Count_of_States
1	4119	27

Insights: All customers who placed orders within the specified timeframe hail from 4119 different cities and 27 different states of Brazil.

3. Query:

```
SELECT year,month,count_of_order FROM(

SELECT EXTRACT(year from `order_purchase_timestamp`) as `year`,
format_date("%B",`order_purchase_timestamp`)as `month`,
EXTRACT(month from `order_purchase_timestamp`)as `month_num`,
COUNT(order_id) as `count_of_order`
FROM `target.orders`
GROUP BY year, month, month_num
ORDER BY count_of_order DESC)as t;
```

Output Screenshot:



Row	year	month	count_of_order
1	2016	September	4
2	2016	October	324
3	2016	December	1
4	2017	January	800
5	2017	February	1780
6	2017	March	2682
7	2017	April	2404
8	2017	May	3700
9	2017	June	3245
10	2017	July	4026
11	2017	August	4331
12	2017	September	4285
13	2017	October	4631
14	2017	November	7544
15	2017	December	5673
16	2018	January	7269
17	2018	February	6728
18	2018	March	7211

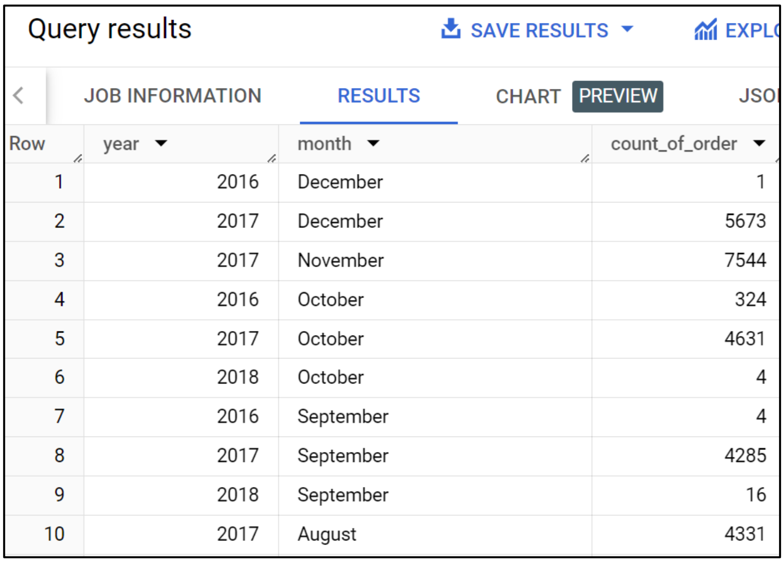
Insights: The output indicates that the order placements were relatively low in the last quarter of 2016, followed by a sudden surge and consistent growth in the number of orders from January 2017 to March 2018. The months of January 2017 to November 2017 experienced steep increase, which could be associated with any fresh bulk-purchase offers/discounts/new product launch/reduced shipping costs that attracted more customers. The period between November 2017 and August 2018 witnessed the *highest* number of monthly orders placed above 5000 orders each month. Hence, the year 2018 had the *highest* average number of monthly orders placed. However, the period post March 2018 didn't witness a steady increase in orders and the last quarter of 2018 witnessed a dip in sales as low as 16 orders. This downturn may be attributed to factors such as market conditions, changing customer preferences, entry of new competitors etc. Overall, the observed patterns suggest a business with dynamic order fluctuations.

Recommendations: Capitalize on the observed peak order months by strategically planning offers, along with introducing new product lines, and exclusive discounts to keep offerings fresh and appealing to customers. Identify the products that have had poor sales and create combo or bundle deals with best-selling products to make the former one more appealing to customers. At the same time, maintain a larger inventory to prepare to accept higher number of orders for faster dispatch. Analyze the Post-March 2018 Downturn to understand the root cause of why a huge dip in sales happened and implement robust customer retention programs, loyalty rewards, or personalized offers to retain existing customers even during the time of recession.

4. Query:

```
SELECT year,month,count_of_order FROM(

SELECT EXTRACT(year from `order_purchase_timestamp`) as `year`,
format_date("%B",`order_purchase_timestamp`)as `month`,
EXTRACT(month from `order_purchase_timestamp`)as `month_num`,
COUNT(order_id) as `count_of_order`
FROM `target.orders`
GROUP BY year, month, month_num
ORDER BY month_num DESC, year)as t;
```

Output Screenshot:



Row	year	month	count_of_order
1	2016	December	1
2	2017	December	5673
3	2017	November	7544
4	2016	October	324
5	2017	October	4631
6	2018	October	4
7	2016	September	4
8	2017	September	4285
9	2018	September	16
10	2017	August	4331

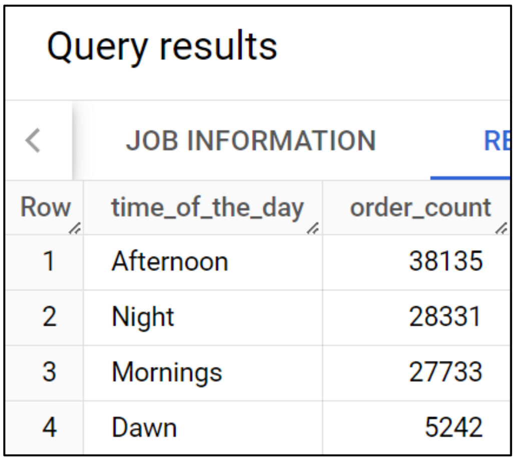
Insights: The months of September and October in 2016 and 2018 have had a huge dip in sales. This could be a natural slowdown in spending due to high summer shopping and back to school season that preceded these months. This retailer brand seems to have anticipated this seasonal dip and proactively implemented measures (flash sales/spring deals etc) in 2017 to boost the sales. Hence, we can see an increase in sales in September and October 2017. The lower sales in September and October across years may also be influenced by consumer's decision to save more during these months for the upcoming holiday season sales in November and December. Hence, we see huge sales happening in November and December, which is evident from 2017 sales. However, December 2016 has had the *lowest* sales of all months. Online reports reveal that, Brazil was hit by a bad economic recession in 2016. This indicates why sales were poor across all months of 2016. The output also shows increased sales from January to August in 2017 and 2018.

Recommendations: Adjust inventory levels based on historical data and expected fluctuations, ensuring optimal stock availability during peak months and preventing overstock during slower periods. Adopt flexible staffing models to accommodate increased demand during peak seasons and optimize workforce efficiency during slower months.

5. Query:

```
SELECT

IF(extract(hour from `order_purchase_timestamp`)<= 6,"Dawn",
IF(extract(hour from `order_purchase_timestamp`)<=12, "Mornings",
IF(extract(hour from `order_purchase_timestamp`) <= 18, "Afternoon",
"Night" )))as `time_of_the_day`,
COUNT(order_id) as `order_count`
FROM `target.orders` o
INNER JOIN `target.customers` c
ON c.customer_id = o.customer_id
GROUP BY time_of_the_day
ORDER BY order_count DESC;
```

Output Screenshot:



Row	time_of_the_day	order_count
1	Afternoon	38135
2	Night	28331
3	Mornings	27733
4	Dawn	5242

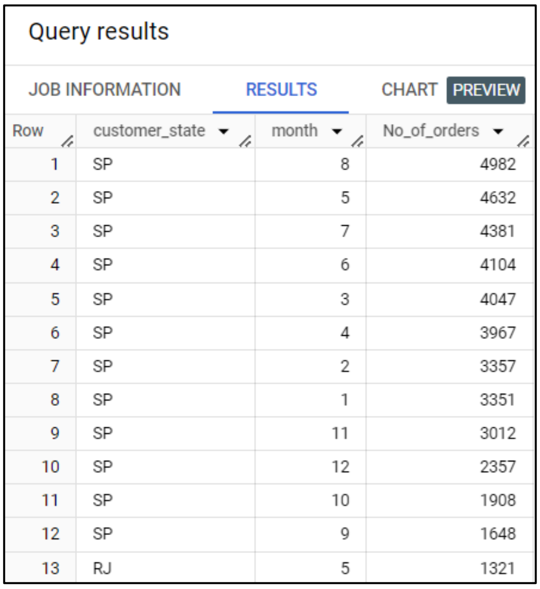
Insights: Most orders peak during Afternoons and Nights. Lunch breaks during office/college hours make afternoons convenient for consumers to browse and shop online with less web traffic. Individuals at workplace may also feel a natural dip in energy and may engage in online shopping to relax. Additionally, this retailer brand may tend to time their promotional ads during this time prompting consumers to place orders. By late evening, consumers are back home and they wind up their day's work to engage in leisure activities again and are often drawn by happy-hour offers from 7 pm to 12 am. Hence, Night orders come second. Dawn sees the fewest orders, as people prioritize rest or sleep over other activities. In the mornings, people get busy with household chores and getting ready for work. Hence, less orders are placed.

Recommendations: The brand can consider early-bird offers, especially on weekend morning to incentivise (working) customers to shop in the mornings. To boost dawn sales, the brand can conduct customer survey or perform in-App customer behaviour analysis to identify or locate customers working night shifts. The brand can further offer them with personalized deals. Extend happy hour offers to align with the timing of night shifts. Having a support team available to assist with queries or issues during the night can enhance the overall shopping experience.

6. Query:

```
WITH A as

(SELECT customer_state, extract(month from

order_purchase_timestamp) as `month`, count (*) as
`No_of_orders`       from `target.orders` o

INNER JOIN `target.customers` c
ON c.customer_id = o.customer_id
GROUP BY customer_state, `month`
ORDER BY customer_state, `month`)

SELECT customer_state, month, No_of_orders

FROM A
ORDER BY No_of_orders DESC, customer_state, month;
```

Output Screenshot:



Row	customer_state	month	No_of_orders
1	SP	8	4982
2	SP	5	4632
3	SP	7	4381
4	SP	6	4104
5	SP	3	4047
6	SP	4	3967
7	SP	2	3357
8	SP	1	3351
9	SP	11	3012
10	SP	12	2357
11	SP	10	1908
12	SP	9	1648
13	RJ	5	1321

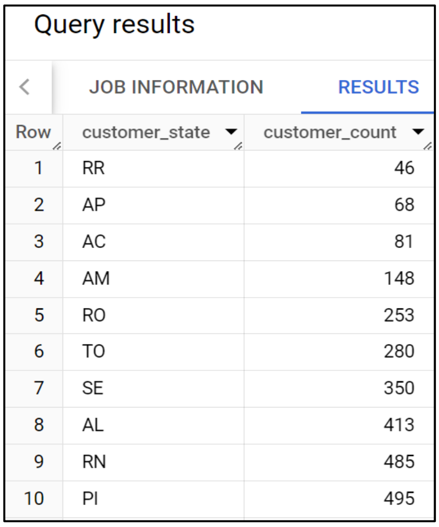
Insights: The state of SP consistently recorded the *highest* number of orders every month in Brazil, followed by RJ, and MG. Conversely, the states with the fewest monthly orders are AP, RR, AM, AC, RO, TO, AL, and SE. This discrepancy is primarily influenced by factors such as the economic strength and population size of SP (São Paulo), RJ (Rio de Janeiro) and MG (Minas Gerais) which are the wealthiest and most populous states in Brazil. On the other hand, RR (Roraima), AP (Amapá), AC (Acre) are the least populated and relatively less economically well states in Brazil, contributing to lower level of customer base and lower order volumes. Recognizing these regional differences and challenges allows for targeted marketing and logistical improvements to boost sales in specific areas.

Recommendations: Understand local preferences and economic status of the states with lower order volumes. Increase brand visibility by highlighting products that address the specific needs of customers in these regions at an affordable pricing. Increased brand awareness is essential to convert more individuals into this retailer brand's customers. Sponsor local or social media events to build a positive brand image and connect with potential customers. The brand can also initiate collaboration with local influencers from these states to introduce the brand to their audience, providing a more relatable endorsement.

7. Query:

```
SELECT c.customer_state,

COUNT(DISTINCT o.customer_id) as customer_count

FROM `target.customers` c
LEFT JOIN `target.orders` o
ON c.customer_id = o.customer_id
GROUP BY customer_state
 ORDER BY customer_count;
```

Output Screenshot:



Query results

Row	customer_state	customer_count
1	RR	46
2	AP	68
3	AC	81
4	AM	148
5	RO	253
6	TO	280
7	SE	350
8	AL	413
9	RN	485
10	PI	495

Insights: States such as RR, AP, AC, AM, RO, TO, SE, AL, RN, and PI have the *lowest* number of customers, averaging around 261. This aligns with the earlier observation that these states, which also have the least number of orders, are characterized by a smaller customer base. In contrast, the top 10 states with the *highest* number of customers boast an average of nearly 9000 customers.

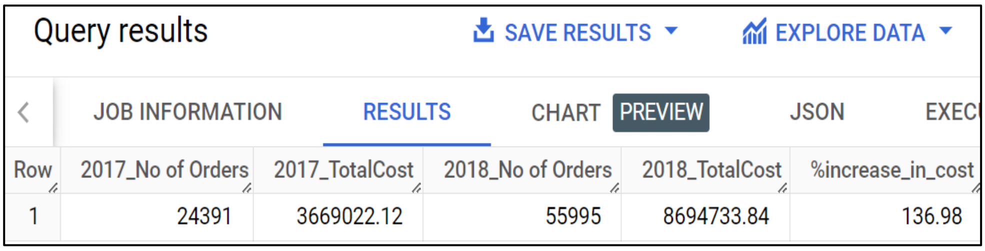
Recommendations: The initial key to boosting orders in states with low customer numbers is to attract and acquire a larger base of new customers. Implement customer referral programs that incentivize existing customers to refer friends and family from the targeted states. Provide discounts or exclusive offers for both the referring customer and the new customer. Enable localized promotions by highlighting products that are popular or trending in those regions. This enables data-driven decision making.

8. Query:

```
WITH A as

(SELECT sum(if(date(order_purchase_timestamp) Between '2017-01-01'and
'2017-08-31', 1, 0)) as `2017_No of Orders`,

round(sum(if(date(order_purchase_timestamp) between '2017-01-01'and
'2017-08-31', payment_value,0)),2) as `2017_TotalCost`,
sum(if(date(order_purchase_timestamp) between '2018-01-01'and '2018-
08-31', 1,0)) as `2018_No of Orders`,
round(sum(if(date(order_purchase_timestamp) between'2018-01-01'and
'2018-08-31', payment_value,0)),2) as `2018_TotalCost`
from `target.payments` p
inner join `target.orders` o  on o.order_id = p.order_id)
```

```
SELECT *,
round(((2018_TotalCost-2017_TotalCost)/ 2017_TotalCost) *   100,2) as
`%increase_in_cost`
FROM A
```

Output Screenshot:



Row	2017_No of Orders	2017_TotalCost	2018_No of Orders	2018_TotalCost	%increase_in_cost
1	24391	3669022.12	55995	8694733.84	136.98

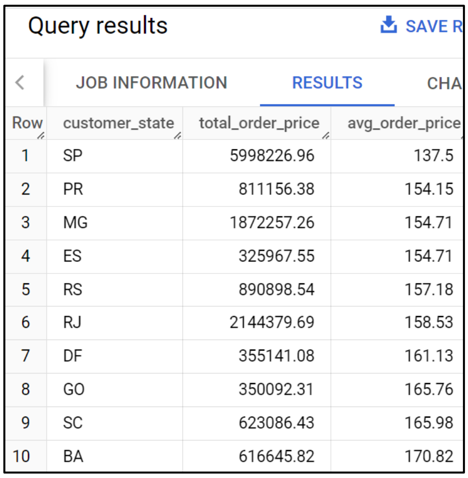
Insights: There has been a 136.98% of increase in cost of orders. The surge in order cost from 2017 to 2018 suggests a substantial growth in business activities for this retailer brand. This increase in order cost could be attributed to increased demand, expanded product lines, high procurement costs as we see a clear increase in number of orders placed in 2018 (55,995 orders) as compared to 2017 (24,391 orders) by 129%.

Recommendations: To enhance efficiency and cost savings while managing a higher order volume, this retailer brand can streamline certain operational processes. Accurate demand forecasting using historical trends of order placements helps in aligning inventory levels with actual customer demand, minimizing excess inventory and associated holding costs. The brand can also optimize the number of suppliers and consolidate purchasing volumes with key suppliers. This allows for bulk discounts, and reduced procurement costs.

9. Query:

```
SELECT customer_state, round(sum(payment_value),2)

`total_order_price`, round(avg(payment_value),2) as
`avg_order_price`

FROM `target.customers` c
LEFT JOIN `target.orders` o
ON o.customer_id = c.customer_id
LEFT JOIN `target.payments` p
ON p.order_id = o.order_id
GROUP BY customer_state
ORDER BY avg_order_price;
```

Output Screenshot:



Row	customer_state	total_order_price	avg_order_price
1	SP	5998226.96	137.5
2	PR	811156.38	154.15
3	MG	1872257.26	154.71
4	ES	325967.55	154.71
5	RS	890898.54	157.18
6	RJ	2144379.69	158.53
7	DF	355141.08	161.13
8	GO	350092.31	165.76
9	SC	623086.43	165.98
10	BA	616645.82	170.82

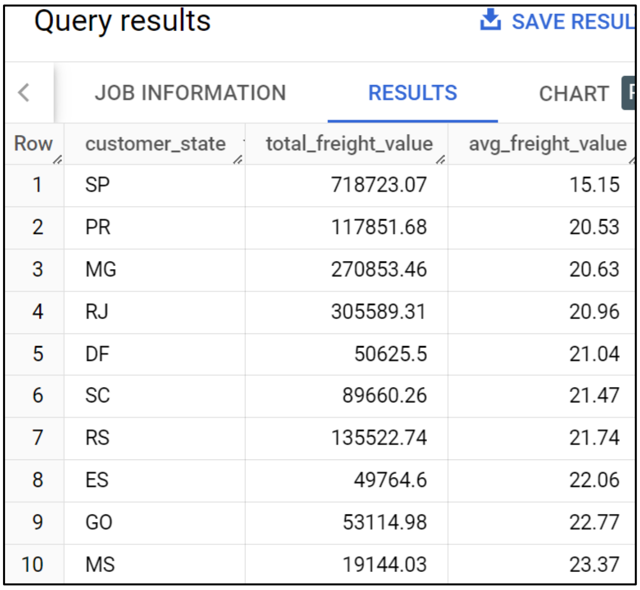
Insights: States of SP, PR, MG, RS, RJ, and ES have the *highest* total value of orders prices as well as the *lowest* average value of order price. In an earlier observation, the states of SP, RJ, and MG have already recorded the *highest* number of monthly orders. Hence, one of the primary reasons for why certain states exhibit both the *highest* total value of order prices and the *lowest* average value of order prices could be Volume Discounts. These states might be hubs for bulk purchases leading to a high volume of orders and order price. The retailer may negotiate volume discounts in these states, leading to a lower average order price despite having a high total value. Additionally, states with high total order values may have a diverse range of products, including both high-value items and lower-cost items. This mix can result in a higher total value but a lower average price. At the same time, states with *lowest* total order price may have low volume of orders and hence, they may not benefit from volume discounts. They may end up paying close to the original product prices. Hence, average order prices remain higher.

Recommendations: In states with higher average value of order price, the retailer can introduce tiered pricing model by which customers receive discounts based on the quantity or total value of their purchase. This can incentivize customers to buy more, lowering the average price per unit.

10. Query:

```
SELECT customer_state, round(sum(freight_value),2) as

`total_freight_value`,

round(avg(freight_value),2) as  `avg_freight_value`

FROM `target.customers` c
left join `target.orders` o
ON c.customer_id = o.customer_id
left join `target.order_items` oi
ON oi.order_id = o.order_id
GROUP BY customer_state
ORDER BY avg_freight_value;
```

Output Screenshot:



Row	customer_state	total_freight_value	avg_freight_value
1	SP	718723.07	15.15
2	PR	117851.68	20.53
3	MG	270853.46	20.63
4	RJ	305589.31	20.96
5	DF	50625.5	21.04
6	SC	89660.26	21.47
7	RS	135522.74	21.74
8	ES	49764.6	22.06
9	GO	53114.98	22.77
10	MS	19144.03	23.37

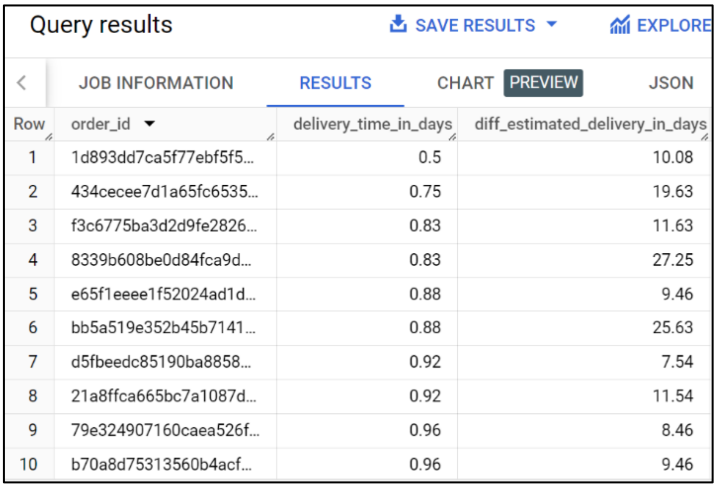
Insights: States of SP, PR, MG, and RJ have the *highest* total freight value as well as the *lowest* average freight value. In an earlier observation, the states of SP, RJ, and MG have already recorded the *highest* number of monthly orders. These states also have the *highest* total value of orders prices as well as the *lowest* average value of order price. Some of the primary reasons for this observation could be Volume Discounts with Carriers and Geographical Proximity to warehouses. Regions with high total freight value may negotiate volume discounts with carriers due to the substantial volume of shipments. These states could also have an increased number of warehouses located nearby for faster dispatch. This can result in lower average freight costs per unit due to shorter distances and discounts.

Recommendations: In states with *highest* average freight value, the retailer brand can introduce smart saver deals for customers along with consolidation of Shipments. Smart saver deals offer customers with discounts in exchange for their willingness to accept a slightly delayed delivery date. The brand can then combine smaller shipments into larger, more consolidated loads. This strategy allows the retailer to negotiate better rates with carriers, reducing the average freight cost per unit.

11. Query:

```
SELECT order_id,

Round(timestamp_diff(order_delivered_customer_date,
order_purchase_timestamp, hour)/24,2) as `delivery_time_in_days`,
round(timestamp_diff (order_estimated_delivery_date,
order_delivered_customer_date, hour)/24,2) as
`diff_estimated_delivery_in_days`

FROM `target.orders`
WHERE order_delivered_customer_date is not null
ORDER BY delivery_time_in_days;
```

Output Screenshot:



Query results

Row	order_id	delivery_time_in_days	diff_estimated_delivery_in_days
1	1d893dd7ca5f77ebf5f5...	0.5	10.08
2	434cecee7d1a65fc6535...	0.75	19.63
3	f3c6775ba3d2d9fe2826...	0.83	11.63
4	8339b608be0d84fca9d...	0.83	27.25
5	e65f1eeee1f52024ad1d...	0.88	9.46
6	bb5a519e352b45b7141...	0.88	25.63
7	d5fbeedc85190ba8858...	0.92	7.54
8	21a8ffca665bc7a1087d...	0.92	11.54
9	79e324907160caea526f...	0.96	8.46
10	b70a8d75313560b4acf...	0.96	9.46

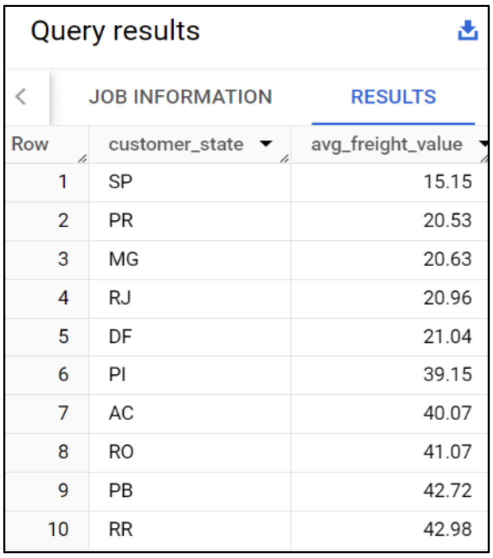
Insights: The least number of days taken to deliver any order is 0.5 days. The *highest* number of days taken to deliver any order is 209 days. The fastest delivery occurred 188 days before the estimated delivery date, while the longest delay observed was 144 days after the estimated delivery date. The wide variation in delivery times in this business case implies that this retailer brand caters to different products and services across all states in the country (Brazil) with varying delivery and order requirements.

Recommendations: Analyse the current locations of company's warehouses and establish strategically located warehouses to reduce shipping distances and minimize the time taken for orders to reach customers. Utilize predictive analytics to forecast demand and proactively manage inventory, preventing stockouts and ensuring timely deliveries.

12. Query:

```
WITH

Top_5 as (SELECT customer_state, round(avg(freight_value),2) as
`avg_freight_value`
FROM `target.customers` c
left join `target.orders` o
ON c.customer_id = o.customer_id
left join `target.order_items` oi
ON oi.order_id = o.order_id
group by customer_state
order by `avg_freight_value` DESC limit 5),

Bottom_5 as (SELECT customer_state, round(avg(freight_value),2) as
`avg_freight_value`
FROM `target.customers` c
left join `target.orders` o
ON c.customer_id = o.customer_id
left join `target.order_items` oi
ON oi.order_id = o.order_id
group by customer_state
order by `avg_freight_value` limit 5)

SELECT *
FROM Top_5
UNION ALL
SELECT *
FROM Bottom_5
order by avg_freight_value;
```

Output Screenshot:



Row	customer_state	avg_freight_value
1	SP	15.15
2	PR	20.53
3	MG	20.63
4	RJ	20.96
5	DF	21.04
6	PI	39.15
7	AC	40.07
8	RO	41.07
9	PB	42.72
10	RR	42.98

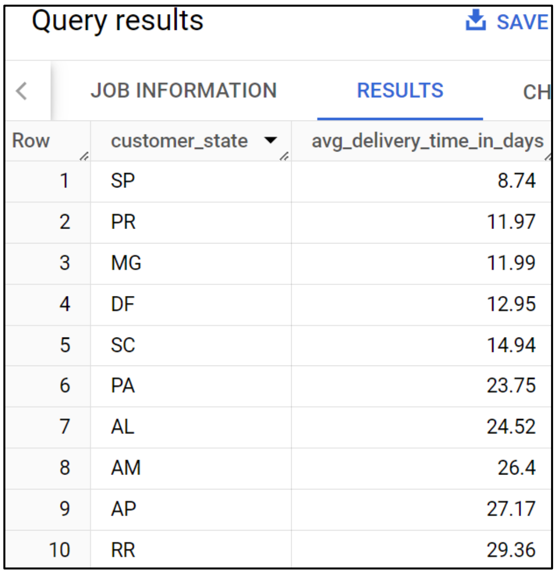
Insights: SP, PR, MG, RJ, and DF are the Top 5 states with *lowest* average freight value, while RR, PB, RO, AC, and PI exhibit the *highest* average freight value. The higher value of freight in certain states could be due to factors like longer distances, challenging terrains, or less efficient logistics networks.

Recommendations: The retailer brand can focus on cost optimization and strategic partnerships in regions with higher freight values. Consider setting up local warehouses strategically positioned in high-cost freight areas. This can minimize the distance goods need to travel, reducing freight expenses. The retailer can also cut cost by analyzing delivery routes to ensure the most cost-effective routes are taken. Engage in bulk-order agreements with logistics providers to negotiate better terms with them.

13. Query:

```
WITH

Top_5 as (select customer_state,
round(avg(timestamp_diff(order_delivered_customer_date,
order_purchase_timestamp, hour)/24),2) as `avg_delivery_time_in_days`,
from `target.orders` o
inner join `target.customers` c
ON c.customer_id = o.customer_id
where order_delivered_customer_date is not null
group by customer_state
order by `avg_delivery_time_in_days` DESC limit 5),

Bottom_5 as (select customer_state,
round(avg(timestamp_diff(order_delivered_customer_date,
order_purchase_timestamp, hour)/24),2) as `avg_delivery_time_in_days`,
from `target.orders` o
inner join `target.customers` c
ON c.customer_id = o.customer_id
where order_delivered_customer_date is not null
group by customer_state
order by `avg_delivery_time_in_days` limit 5)

SELECT *
FROM Top_5
UNION ALL
SELECT *
FROM Bottom_5
order by avg_delivery_time_in_days;
```

Output Screenshot:



Row	customer_state	avg_delivery_time_in_days
1	SP	8.74
2	PR	11.97
3	MG	11.99
4	DF	12.95
5	SC	14.94
6	PA	23.75
7	AL	24.52
8	AM	26.4
9	AP	27.17
10	RR	29.36

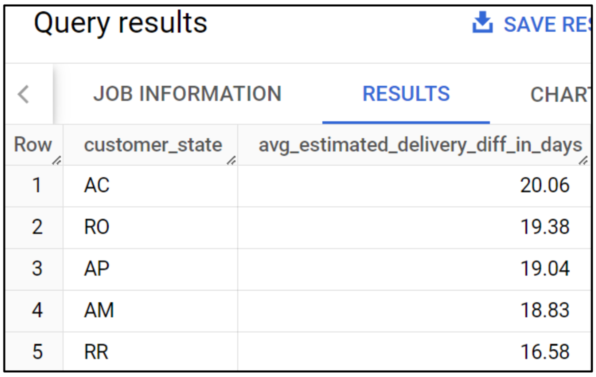
Insights: SP, PR, MG, DF, and SC are the Top 5 states with *lowest* average delivery time, while RR, AP, AM, AL, and PA exhibit the *highest* average delivery time. This geographical disparity suggests potential logistical and operational challenges in regions with longer delivery times.

Recommendations: The retailer brand can focus on optimizing their supply chain and delivery networks in high-delivery time states. The brand can start with maintaining larger inventory of most frequently ordered items in these regions even before orders are being placed. For this, the retailer can partner with local agencies to maintain warehouses. They can then ship items from warehouse nearest to the customer as and when orders are placed, reducing shipping time and ensuring efficient order fulfilment.

14. Query:

```
SELECT customer_state,

ROUND(avg(timestamp_diff(order_estimated_delivery_date,
order_delivered_customer_date, hour)/24),2) as
`avg_estimated_delivery_diff_in_days`
FROM `target.orders` o
INNER JOIN `target.customers` c
ON c.customer_id = o.customer_id
WHERE order_status = 'delivered'
GROUP BY  customer_state
ORDER BY `avg_estimated_delivery_diff_in_days`DESC
limit 5;
```

Output Screenshot:



Row	customer_state	avg_estimated_delivery_diff_in_days
1	AC	20.06
2	RO	19.38
3	AP	19.04
4	AM	18.83
5	RR	16.58

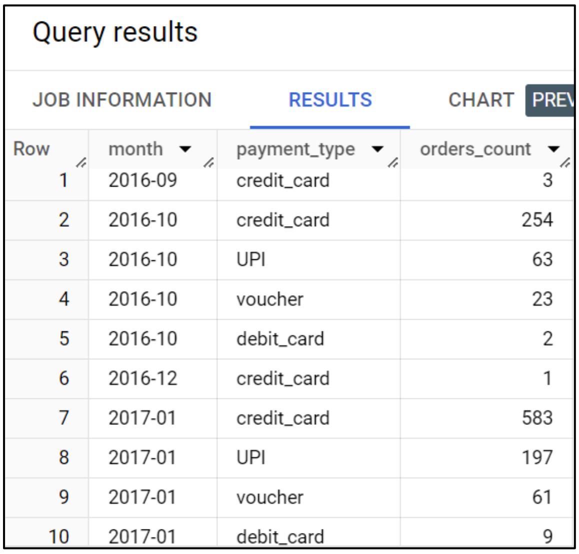
Insights: Top 5 States with fastest order delivery as compared to estimate delivery are AC, RO, AP, AM, RR. It is important to note that, in earlier observations, most of these specified states seem to have had higher average delivery time, higher average freight value and fewest number of monthly orders. Considering these factors, it's possible that the retailer brand, in anticipation of logistical challenges, set a relatively longer estimated delivery date for orders in these regions. The retailer brand is trying to prioritize accuracy and reliability in estimated delivery dates over speed in these states to manage customer expectations, ensuring that customers receive their orders within or before the promised timeframe.

Recommendations: Looking at the historical trend of average difference (in days) between actual delivery and estimated delivery, the brand can now start setting a relatively shorter estimated date than before in these states. A longer estimated delivery date can demotivate some customers to place orders, being unaware of the potential of these orders reaching them way before the estimated date. This could be employed as a marketing strategy. It has the potential to convince customers of the reduced estimate, leading to a boost in the number of orders placed from these states.

15. Query:

```
SELECT payment_type,

FORMAT_DATE("%Y-%m", order_purchase_timestamp) as `month`,
COUNT(*) as orders_count
FROM `target.payments` p
INNER JOIN `target.orders` o
ON o.order_id = p.order_id
GROUP BY `month`, payment_type
ORDER BY `month`, orders_count;
```

Output Screenshot:



Row	month	payment_type	orders_count
1	2016-09	credit_card	3
2	2016-10	credit_card	254
3	2016-10	UPI	63
4	2016-10	voucher	23
5	2016-10	debit_card	2
6	2016-12	credit_card	1
7	2017-01	credit_card	583
8	2017-01	UPI	197
9	2017-01	voucher	61
10	2017-01	debit_card	9

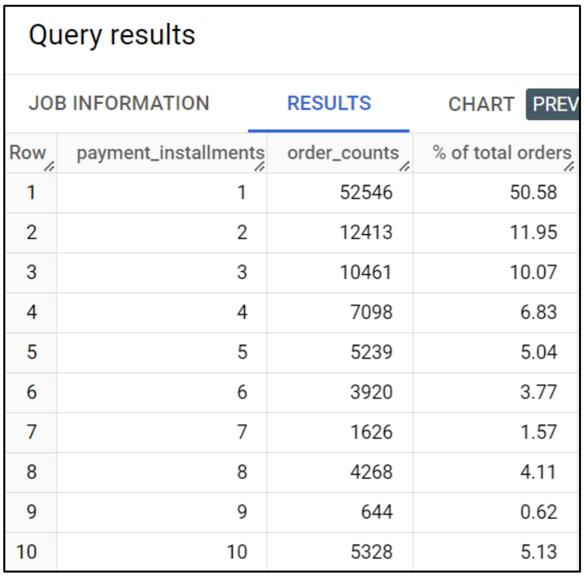
Insights: Most number of orders in each month was placed through credit card payment, followed by UPI, vouchers, and finally, debit cards. This suggests that majority of customers have a clear payment preference. Credit cards often have associated benefits and offers. UPI enable quick transaction processing. Hence, they are considered the most convenient.

Recommendations: To further incentivize customers to continue using these payment methods, collaborate with more banks to introduce new lifetime free co-branded credit cards or to offer joint promotions or discounts for credit card users. Offer exclusive cashbacks and discounts for orders placed using UPI. This can attract a larger customer base. As much as we ensure increased use of these predominant payment methods, it is important to optimise the payment method mix. For that, implement a loyalty program for customers using vouchers. Offer reward points for purchase made with vouchers, encouraging repeat usage.

16. Query:

```
SELECT *, ROUND(order_counts/sum(order_counts) over()*100,2)

as `% of total orders`

FROM(SELECT payment_installments , COUNT(*) as order_counts
FROM `target.payments`
WHERE payment_installments > 0 GROUP BY payment_installments) t
ORDER BY payment_installments;
```

Output Screenshot:



Row	payment_installments	order_counts	% of total orders
1	1	52546	50.58
2	2	12413	11.95
3	3	10461	10.07
4	4	7098	6.83
5	5	5239	5.04
6	6	3920	3.77
7	7	1626	1.57
8	8	4268	4.11
9	9	644	0.62
10	10	5328	5.13

Insights: 50% of total orders are placed via a single payment instalment, surpassing those with two or more instalments. 70% of total orders are placed through three or less than three instalments. This indicates a strong preference for a simplified and straightforward payment structure.

Recommendations: Retain flexible payment plans allowing customers to choose between single or multiple instalment mode of their choice. Continuously optimize the checkout process to make it as smooth and user-friendly as possible. Allow guest checkouts without compulsory account creation. Many users prefer a quick one-time purchase without the commitment of creating an account. Ensure a responsive and mobile-friendly checkout experience. Offer a variety of payment options, including digital wallets, credit cards, UPI, coins converted to as balance etc. The payment interface should equally cater to different user preferences. Streamline the checkout page design and maintain a simple design removing unnecessary steps. Enable autofill for common information and provide suggestions where applicable. This improves efficiency and minimizes errors.