

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

A. Data type of all columns in the “customers” table.

The screenshot shows the BigQuery Table Explorer interface. The top navigation bar includes 'SCHEMA', 'DETAILS', 'PREVIEW', 'TABLE EXPLORER', and 'PREVIE'. Below the table name, there is a 'Filter' input field with placeholder text 'Enter property name or value'. The table itself has six columns: 'Field name', 'Type', 'Mode', and 'Key'. The rows list the columns of the 'customers' table: 'customer_id' (STRING, NULLABLE), 'customer_unique_id' (STRING, NULLABLE), 'customer_zip_code_prefix' (INTEGER, NULLABLE), 'customer_city' (STRING, NULLABLE), and 'customer_state' (STRING, NULLABLE).

Field name	Type	Mode	Key
customer_id	STRING	NULLABLE	-
customer_unique_id	STRING	NULLABLE	-
customer_zip_code_prefix	INTEGER	NULLABLE	-
customer_city	STRING	NULLABLE	-
customer_state	STRING	NULLABLE	-

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

Timestamp being generated:

```
SELECT min(order_purchase_timestamp) as first_order,max(order_purchase_timestamp) as last_order FROM `ecommerce-436710.TARGET.orders`
```

The screenshot shows the BigQuery Job Results interface. The top navigation bar includes 'JOB INFORMATION', 'RESULTS', 'CHART', and 'JSON'. The results table has three columns: 'Row', 'first_order', and 'last_order'. A single row is shown with the value '2016-09-04 21:15:19 UTC' for 'first_order' and '2018-10-17 17:30:18 UTC' for 'last_order'.

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

Date and time are generated separately:

```
select extract(date from first_order) as first_orderdate,extract(time from first_order) as first_ordertime,extract(date from last_order) as last_orderdate,extract(time from last_order) as last_ordertime from (SELECT min(order_purchase_timestamp) as first_order,max(order_purchase_timestamp) as last_order FROM `ecommerce-436710.TARGET.orders` )tb
```

Query results

 [SAVE RESULT](#)

JOB INFORMATION		RESULTS		CHART		JSON		EXECUTION DETAILS	
Row	first_orderdate	first_ordertime	last_orderdate	last_ordertime					
1	2016-09-04	21:15:19	2018-10-17	17:30:18					

Insights: The first order was placed on 4th September 2016 and last order was placed on 17th October 2018.

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

```
SELECT count(distinct customer_city) as city_count, count(distinct customer_state) as state_count FROM `TARGET.customers`
```

Query results

JOB INFORMATION		RESULTS		CHART	
Row	city_count	state_count			
1	4119	27			

Insights: The operations of target focuses on all the 27 states of Brazil and total number of cities are 4119.

II. In-depth Exploration:

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

```
SELECT EXTRACT(YEAR FROM ORDER_PURCHASE_TIMESTAMP) AS YEAR, EXTRACT(MONTH FROM ORDER_PURCHASE_TIMESTAMP) AS MONTH, COUNT(DISTINCT ORDER_ID) AS NO_OF_ORDERS
FROM `TARGET.orders`
GROUP BY YEAR,MONTH
ORDER BY YEAR,MONTH
```

Query results

JOB INFORMATION		RESULTS		CHART		JSON	
Row	YEAR	MONTH		NO_OF_ORDERS			
1	2016	9		4			
2	2016	10		324			
3	2016	12		1			
4	2017	1		800			
5	2017	2		1780			
6	2017	3		2682			
7	2017	4		2404			
8	2017	5		3700			
9	2017	6		3245			
10	2017	7		4026			

Insights:

- A) There is an increase in order count during year end due to festivities in 2017.
- B) In 2018, the orders remains constant throughout till the operations are closed.

Recommendations:

A) To effectively manage increasing orders during shopping season following strategies should be kept in mind such as Inventory Management, Promotions and Marketing, Logistics Optimization, Staffing, Data Analysis & Feedback Loop

B) In 2018, stable order count was observed that means there is a stable market demand for all products sold by target. To increase the order count we can further keep in mind to increase the product range to meet the customer demands and more promotional activities to attract customers. Also consider whether there were missed opportunities during seasonal peaks to increase order volumes.

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

```
SELECT EXTRACT(YEAR FROM ORDER_PURCHASE_TIMESTAMP) AS YEAR, EXTRACT(MONTH FROM ORDER_PURCHASE_TIMESTAMP) AS MONTH, COUNT(DISTINCT ORDER_ID) AS NO_OF_ORDERS
FROM `TARGET.orders`
GROUP BY YEAR,MONTH
ORDER BY YEAR,MONTH
```

Query results				
JOB INFORMATION		RESULTS	CHART	JSON
Row	YEAR	MONTH	NO_OF_ORDERS	
12	2017	9	4285	
13	2017	10	4631	
14	2017	11	7544	
15	2017	12	5673	
16	2018	1	7269	
17	2018	2	6728	
18	2018	3	7211	
19	2018	4	6939	
20	2018	5	6873	

Insights:

- A) There is an increase in order count during year end due to festivities in 2017.
- B) In 2018, the orders remains constant throughout till the operations are closed.

Recommendations:

A) To effectively manage increasing orders during shopping season following strategies should be kept in mind such as Inventory Management, Promotions and Marketing, Logistics Optimization, Staffing, Data Analysis & Feedback Loop

B) In 2018, stable order count was observed that means there is a stable market demand for all products sold by target. To increase the order count we can further keep in mind to increase the product range to meet the customer demands and more promotional activities to attract customers. Also consider whether there were missed opportunities during seasonal peaks to increase order volumes.

C. 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

WAY A: If I am extracting hour

```
select case
when hour between 0 and 6
then "Dawn"
when hour between 7 and 12
then "Morning"
when hour between 13 and 18
then "Afternoon"
when hour between 19 and 23
then "Night" end as Day_Interval, count(order_id) as order_count
from (SELECT order_id, EXTRACT(hour FROM ORDER_PURCHASE_TIMESTAMP) AS hour,
FROM `TARGET.orders` ) tb
group by Day_Interval
order by order_count desc
```

Query results

JOB INFORMATION		RESULTS	CHART	JSON
Row	Day_Interval	order_count		
1	Afternoon	38135		
2	Night	28331		
3	Morning	27733		
4	Dawn	5242		

WAY B: If I am extracting time with time upto seconds

```
select case
when time between "00:00:00" and "06:59:59"
then "Dawn"
when time between "07:00:00" and "12:59:59"
then "Morning"
when time between "13:00:00" and "18:59:59"
then "Afternoon"
when time between "19:00:00" and "23:59:59"
then "Night" end as Day_Interval, count(order_id) as order_count
from (SELECT order_id, EXTRACT(time FROM ORDER_PURCHASE_TIMESTAMP) AS time,
FROM `TARGET.orders` ) tb
group by Day_Interval
order by order_count desc
```

Query results			
JOB INFORMATION		RESULTS	CHART
Row	Day_Interval	order_count	
1	Afternoon	38135	
2	Night	28331	
3	Morning	27733	
4	Dawn	5242	

Insights: The afternoon being the peak time suggests that customers may prefer shopping after work or during their lunch breaks. The low order volume at dawn indicates that customers are likely not active during early morning hours, possibly due to work schedules or sleep patterns.

Recommendations:

- 1) Focus marketing efforts and promotions during the peak afternoon hours.
- 2) Optimize the online shopping experience during peak times.
- 3) Since night orders are also significant, consider special evening promotions or flash sales to boost sales during this time.
- 4) Align inventory restocking with peak order times to ensure popular items are available when demand is highest.

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

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

```
select customer_state, EXTRACT(YEAR FROM ORDER_PURCHASE_TIMESTAMP) AS YEAR, EXTRACT(MONTH FROM
ORDER_PURCHASE_TIMESTAMP) AS MONTH, count( order_id) as statewise_orders_count
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
where order_status != 'canceled'
```

```
group by customer_state, year, month
order by statewise_orders_count desc, customer_state
```

Query results SAVE RESULTS

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS		EXEC
Row	customer_state	YEAR	MONTH	statewise_orders_count			
1	SP	2018	8	3205			
2	SP	2018	5	3190			
3	SP	2018	4	3046			
4	SP	2018	1	3044			
5	SP	2018	3	3018			
6	SP	2017	11	2987			
7	SP	2018	6	2761			
8	SP	2018	7	2755			
9	SP	2018	2	2663			
10	SP	2017	12	2352			
11	SP	2017	10	1780			
12	SP	2017	8	1715			
13	SP	2017	9	1624			

Insights: The states from where orders are placed with highest counts are São Paulo, Rio de Janeiro, Minas Gerais, Rio Grande do Sul, Paraná whereas states with lowest counts are Amazonas, Amapá, Mato Grosso do Sul, Paraíba, Piauí are likely due to difference in populations, urban centers, and economic activity.

- Recommendations:**
- 1) Focus marketing campaigns in high-order count states.
 - 2) Improve logistics and implement targeted promotions in low-order states to encourage shopping.
 - 3) Ensure that inventory aligns with demand in high-order states while exploring opportunities to increase product availability in lower-order regions along with research in low-order states to understand customer needs and preferences better.

B. How are the customers distributed across all the states?

```
select customer_state, count(customer_unique_id) as unique_customer_count
from `TARGET.customers`
group by customer_state
order by unique_customer_count desc
```

Query results

Row	customer_state	unique_customer_count
1	SP	41746
2	RJ	12852
3	MG	11635
4	RS	5466
5	PR	5045
6	SC	3637
7	BA	3380
8	DF	2140
9	ES	2033
10	GO	2020
11	PE	1652
12	CE	1336
13	PA	975

Insights: The states from where orders are placed with highest counts are São Paulo, Rio de Janeiro, Minas Gerais, Rio Grande do Sul, Paraná whereas states with lowest counts are Amazonas, Amapá, Mato Grosso do Sul, Paraíba, Piauí are likely due to difference in populations, urban centers, and economic activity.

- Recommendations:**
- 1) Focus marketing campaigns in high-order count states.
 - 2) Improve logistics and implement targeted promotions in low-order states to encourage shopping.
 - 3) Ensure that inventory aligns with demand in high-order states while exploring opportunities to increase product availability in lower-order regions along with research in low-order states to understand customer needs and preferences better.

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

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

```

with cost_per_year as (select FORMAT_DATE('%B',ORDER_PURCHASE_TIMESTAMP) AS month,
round(sum(case when EXTRACT(YEAR FROM ORDER_PURCHASE_TIMESTAMP) = 2017 then payment_value else 0 end ),2)as cost_2017, round(sum(case when EXTRACT(YEAR FROM ORDER_PURCHASE_TIMESTAMP) = 2018 then payment_value else 0 end ),2)as cost_2018
from `TARGET.orders` o
join `TARGET.payments` p
on o.order_id = p.order_id
where (EXTRACT(YEAR FROM ORDER_PURCHASE_TIMESTAMP) != 2016) AND (EXTRACT(month FROM ORDER_PURCHASE_TIMESTAMP) BETWEEN 1 AND 8)
group by MONTH)

select month,round(((cost_2018-cost_2017)/cost_2017 * 100),2) as percentage_increase

```

```
from cost_per_year
order by percentage_increase desc
```

Query results			
JOB INFORMATION		RESULTS	CHART
Row	month	percentage_increase	
1	January	705.13	
2	February	239.99	
3	April	177.84	
4	March	157.78	
5	June	100.26	
6	May	94.63	
7	July	80.04	
8	August	51.61	

Insights: The increase in order costs from 2017 to 2018, particularly with a maximum rise in January and a minimum in August.

The spike in January can be attributed to post-holiday sales, demand for New Year products, or price adjustments after holiday promotions.

August often sees a dip in consumer spending, possibly due to the mid-year period where disposable income may be lower or consumer behavior shifts.

Recommendations:

1. Capitalize on the January spike by planning targeted promotions or new product launches to maintain momentum. Consider "New Year" themes to attract buyers.
2. In months like August, focus on targeted marketing campaigns or loyalty programs to encourage spending.
3. Continuously analyze sales data to identify trends and adjust pricing strategies dynamically based on consumer behavior and external factors.

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

```
select customer_state,round(sum(price),2) as total_order_cost, round(avg(price),2) as
avg_order_cost
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
join `TARGET.order_items` i
on o.order_id = i.order_id
group by customer_state
order by total_order_cost desc, avg_order_cost desc, customer_state
```

Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUT
Row	customer_state	total_order_cost		avg_order_cost	
1	SP	5202955.05		109.65	
2	RJ	1824092.67		125.12	
3	MG	1585308.03		120.75	
4	RS	750304.02		120.34	
5	PR	683083.76		119.0	
6	SC	520553.34		124.65	
7	BA	511349.99		134.6	
8	DF	302603.94		125.77	
9	GO	294591.95		126.27	
10	ES	275037.31		121.91	
11	PE	262788.03		145.51	
12	CE	227254.71		153.76	

Ordered by avg_order_cost

Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUT
Row	customer_state	total_order_cost		avg_order_cost	
1	PB	115268.08		191.48	
2	AL	80314.81		180.89	
3	AC	15982.95		173.73	
4	RO	46140.64		165.97	
5	PA	178947.81		165.69	
6	AP	13474.3		164.32	
7	PI	86914.08		160.36	
8	TO	49621.74		157.53	
9	RN	83034.98		156.97	
10	CE	227254.71		153.76	
11	SE	58920.85		153.04	
12	RR	7829.43		150.57	
13	MT	156453.53		148.3	

Insights: A higher total cost combined with a lower average cost (such as in São Paulo) suggests a scenario of high efficiency and volume. This indicates a strong market position in that state, allowing for strategic decisions to capitalize on this advantage while maintaining operational efficiency.

A lower total cost with a higher average (such as Paraíba) cost suggests challenges related to sales volume and operational efficiency. Addressing these issues through strategic planning and targeted initiatives can help improve market performance in that state.

Recommendations:

A higher total order cost combined with a lower average order cost state:

- 1) Maximize sales volume by promotional campaigns
- 2) Train staff to suggest complementary products to increase average transaction values.

- 3) Expand product offerings by introducing new products
- 4) Enhance marketing strategies by localized advertising and targeted digital marketing
- 5) Focus on customer experience, loyalty programs and customer feedback loop
- 6) Invest in staff training
- 7) Sales data analysis and predictive analytics should be observed.

A lower total cost with a higher average cost state:

- 1) Conduct Research to understand local market dynamics
- 2) Targeted Marketing Campaign
- 3) Diversify Product Range, expand offerings and promotions and discounts
- 4) Cost Analysis and Inventory Management
- 5) Gather Insights from the customers and give them loyalty benefits

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

```
select customer_state,round(sum(freight_value),2) as total_freight_value,
round(avg(freight_value),2) as avg_freight_value
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
join `TARGET.order_items` i
on o.order_id = i.order_id
group by customer_state
order by total_freight_value desc,avg_freight_value desc, customer_state
```

Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DE
Row	customer_state	total_freight_value	avg_freight_value		
1	SP	718723.07	15.15		
2	RJ	305589.31	20.96		
3	MG	270853.46	20.63		
4	RS	135522.74	21.74		
5	PR	117851.68	20.53		
6	BA	100156.68	26.36		
7	SC	89660.26	21.47		
8	PE	59449.66	32.92		
9	GO	53114.98	22.77		
10	DF	50625.5	21.04		
11	ES	49764.6	22.06		
12	CE	48351.59	32.71		

Insights: Higher total freight cost is due to that fact that high volume of orders were placed from those states and a lower average freight cost was observed for those states indicates efficient logistics operations, possibly benefiting from bulk shipping, negotiated rates with carriers, or effective route optimization.

Recommendations: By leveraging high shipment volumes, optimizing logistics operations, and analyzing cost drivers, businesses can effectively manage higher total freight costs while maintaining lower average freight costs.

Ordering by average freight cost:

Query results

Row	customer_state	total_freight_value	avg_freight_value
1	RR	2235.19	42.98
2	PB	25719.73	42.72
3	RO	11417.38	41.07
4	AC	3686.75	40.07
5	PI	21218.2	39.15
6	MA	31523.77	38.26
7	TO	11732.68	37.25
8	SE	14111.47	36.65
9	AL	15914.59	35.84
10	PA	38699.3	35.83
11	RN	18860.1	35.65
12	AP	2788.5	34.01
13	AM	5478.89	33.21
14	PE	59449.66	32.92

Insights: When the total freight cost for a state is lower than in others but the average freight cost is higher, it indicates specific logistical dynamics and operational challenges.

Recommendations: By focusing on increasing shipment frequency, optimizing logistics, and managing costs effectively, businesses can address the challenges associated with lower total freight costs and higher average freight costs in specific states.

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

A. 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. Do this in a single query.

```
select order_id, date_diff(order_delivered_customer_date,order_purchase_timestamp, day) as
time_to_deliver, date_diff(order_delivered_customer_date,order_estimated_delivery_date,day) as
diff_estimated_delivery
from `TARGET.orders`
where date(order_delivered_customer_date) is not null
order by time_to_deliver desc, diff_estimated_delivery desc
```

Query results					
JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DE
Row	order_id	time_to_deliver	diff_estimated_delivery	estimated_delivery	actual_delivery
1	ca07593549f1816d26a572e06...	209	181	Estimated delivery date: 2024-01-15	Actual delivery date: 2024-02-15
2	1b3190b2dfa9d789e1f14c05b...	208	188		
3	440d0d17af552815d15a9e41a...	195	165		
4	285ab9426d6982034523a855f...	194	166		
5	0f4519c5f1c541ddec9f21b3bd...	194	161		
6	2fb597c2f772eca01b1f5c561b...	194	155		
7	47b40429ed8cce3aee9199792...	191	175		
8	2fe324feb907e3ea3f2aa9650...	189	167		
9	2d7561026d542c8dbd8f0daea...	188	159		
10	c27815f7e3dd0b926b5855262...	187	162		
11	437222e3fd1b07396f1d9ba8c...	187	144		
12	dfe5f68118c2576143240b8d7...	186	153		

Insights: When delivery times exceed estimated timelines by more than 100+ days, it reflects significant operational challenges, supplier challenges, higher demands, lower logistical capacity, and can severely impact customer satisfaction, trust and business performance.

Recommendations: Conduct a root cause analysis, enhance supplier collaboration, optimize inventory management, streamline logistics operations, set realistic delivery estimates, and enhance customer communication

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

WAY 1

```
(select customer_state, round(avg(freight_value),2) as avg_freight_value
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
join `TARGET.order_items` i
on o.order_id = i.order_id
group by customer_state
order by avg_freight_value
limit 5)
union distinct
(select customer_state, round(avg(freight_value),2) as avg_freight_value
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
join `TARGET.order_items` i
on o.order_id = i.order_id
group by customer_state)
```

```
order by avg_freight_value desc  
limit 5)
```

Query results

JOB INFORMATION		RESULTS	CHART	JSON
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	RR	42.98		
7	PB	42.72		
8	RO	41.07		
9	AC	40.07		
10	PI	39.15		

WAY 2

CREATED VIEW QUERY: NAMED FREIGHT

```
select customer_state, round(avg(freight_value),2) as avg_freight_value  
from `TARGET.orders` o  
join `TARGET.customers` c  
on o.customer_id = c.customer_id  
join `TARGET.order_items` i  
on o.order_id = i.order_id  
group by customer_state
```

OUTER QUERY

```
(select customer_state, avg_freight_value  
from `TARGET.freight`  
order by avg_freight_value desc  
limit 5)  
union distinct  
(select customer_state, avg_freight_value  
from `TARGET.freight`  
order by avg_freight_value  
limit 5)
```

The screenshot shows a data analysis interface with a sidebar on the left containing a tree view of the 'TARGET' schema. The 'freight' table is currently selected. Below the schema view is a table titled 'Query results' with the following data:

customer_state	avg_freight_value
SP	15.15
PR	20.53
MG	20.63
RJ	20.96
DF	21.04
RR	42.98
PB	42.72
RO	41.07
AC	40.07
PI	39.15

Insights: Higher freight price were observed in states which shows inefficiencies in logistics which can be due to geographical challenges, low shipment volume or limited carrier options whereas lower freight price could be observed due to efficient logistics operations, higher shipment volume, its proximity to distribution centers.

Recommendations: The Company should optimize shipping routes, negotiate with carriers and monitor their performance, evaluate shipping methods, and improve inventory management so that freight price should be decreased in both kind of states.

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

```
(select customer_state, round(avg(time_to_deliver)) as avg_delivery_time from(select
c.customer_state,date_diff(order_delivered_customer_date,order_purchase_timestamp,day) as
time_to_deliver
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
where order_delivered_customer_date is not null)tb
```

```

group by customer_state
order by avg_delivery_time
limit 5)
union all
(select customer_state, round(avg(time_to_deliver)) as avg_delivery_time from(select
c.customer_state,date_diff(order_delivered_customer_date,order_purchase_timestamp,day) as
time_to_deliver
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
where order_delivered_customer_date is not null)tb
group by customer_state
order by avg_delivery_time
limit 5)

```

Query results

JOB INFORMATION		RESULTS	CHART	JSON
Row	customer_state	avg_delivery_time		
1	RR	29.0		
2	AP	27.0		
3	AM	26.0		
4	AL	24.0		
5	PA	23.0		
6	SP	8.0		
7	MG	12.0		
8	PR	12.0		
9	DF	13.0		
10	SC	14.0		

Insights: A) States which show higher average delivery time is due to operational inefficiencies due to geographical challenges, low order volume.

B) States which show lower average delivery time is due to operational efficiency, high shipment volume, proximity to distribution centers.

Recommendations: A) conduct a root cause analysis, enhance supplier relationships, optimize logistics operations, should invest in technology to improve communication.

B) leverage competitive advantage, expand delivery options, invest in automation, and explore new markets

D. Find out the top 5 states where the order delivery is really fast as compared to the estimated date of delivery. You can use the difference between the averages of actual & estimated delivery date to figure out how fast the delivery was for each state.

```

select customer_state, round(avg(diff_estimated_delivery)) as estimated_delivery_time from
(select customer_state,

```

```

date_diff(order_estimated_delivery_date,order_delivered_customer_date,day) as
diff_estimated_delivery
from `TARGET.orders` o
join `TARGET.customers` c
on o.customer_id = c.customer_id
where date(order_delivered_customer_date) is not null
group by customer_state
order by estimated_delivery_time desc
limit 5

```

Query results			
JOB INFORMATION		RESULTS	CHART
Row	customer_state	estimated_delivery_time	
1	AC	20.0	
2	AM	19.0	
3	RO	19.0	
4	AP	19.0	
5	RR	16.0	

Insights: States which show very fast delivery time is due to operational efficiency, high shipment volume, proximity to distribution centers, urbanization and logistics hubs.

Recommendations: leverage competitive advantage, expand delivery options, invest in automation, and explore new markets

VI. Analysis based on the payments:

A. Find the month on month no. of orders placed using different payment types.

```

select FORMAT_DATE('%Y %B',ORDER_PURCHASE_TIMESTAMP) as purchase_date,
payment_type,count(order_id)as order_count
from `TARGET.orders` o
join `TARGET.payments` p
using (order_id)
where order_status = "delivered"
group by purchase_date,payment_type
order by purchase_date, order_count desc

```

Query results SAVE RESULT

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS	EX
Row	purchase_date	payment_type		order_count		
1	2016 December	credit_card		1		
2	2016 October	credit_card		209		
3	2016 October	UPI		51		
4	2016 October	voucher		20		
5	2016 October	debit_card		2		
6	2017 April	credit_card		1772		
7	2017 April	UPI		474		
8	2017 April	voucher		165		
9	2017 April	debit_card		25		
10	2017 August	credit_card		3186		
11	2017 August	UPI		902		
12	2017 August	voucher		272		
13	2017 August	debit_card		33		

[Load more](#) Results per page: 50 ▾

Ordering by order_count and payment_type

Query results SAVE RESULT

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS	EX
Row	purchase_date	payment_type		order_count		
1	November 2017	credit_card		5716		
2	March 2018	credit_card		5526		
3	May 2018	credit_card		5398		
4	January 2018	credit_card		5368		
5	April 2018	credit_card		5341		
6	February 2018	credit_card		5114		
7	August 2018	credit_card		4904		
8	June 2018	credit_card		4760		
9	July 2018	credit_card		4660		
10	December 2017	credit_card		4245		
11	October 2017	credit_card		3416		
12	August 2017	credit_card		3186		

Insights: There are four types of payment modes: credit card, UPI, debit card and voucher. The prominence of credit cards as a payment mode in Brazil reflects consumer preferences and the evolving landscape of e-commerce.

Recommendations: By offering flexible payment options, optimize checkout process, consider installment plans, and enhance security measures, promotions and discounts

B. Find the no. of orders placed on the basis of the payment installments that have been paid.

```
select payment_installments, count(order_id) as order_count
from `TARGET.payments`
where payment_installments > 0
group by payment_installments
order by order_count desc
```

Query results

JOB INFORMATION		RESULTS	CHART
Row	payment_installment	order_count	▼
1	1	52546	
2	2	12413	
3	3	10461	
4	4	7098	
5	10	5328	
6	5	5239	
7	8	4268	
8	6	3920	
9	7	1626	
10	9	644	

Insights: The preference for one-time payments over installment options indicates a consumer inclination toward simplicity and immediacy.

Recommendations: Highlight one-time payment benefits, offer promotions for one-time payments, monitor consumer behavior, educate customers on installment benefits, streamlined checkout process.