TITLE: Business Case Study – TARGET SQL

Overveiw:

- Target is a globally renowned brand and a prominent retailer in the United States. Target makes itself a preferred shopping destination by offering outstanding value, inspiration, innovation and an exceptional guest experience that no other retailer can deliver.

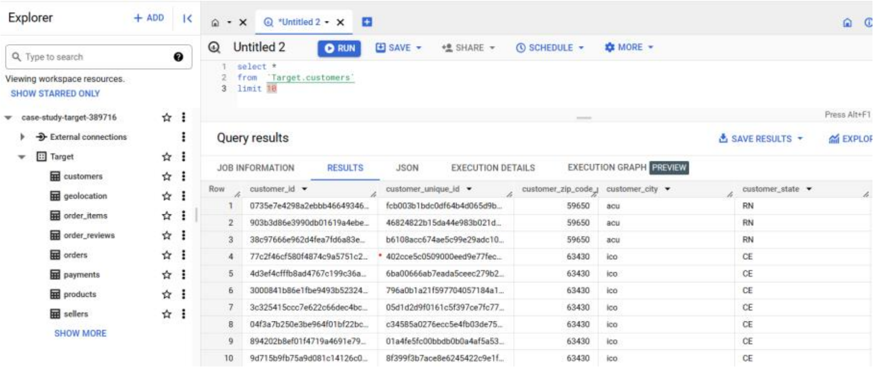
- This particular business case focuses on the operations of Target in Brazil and provides insightful information about 100,000 orders placed between 2016 and 2018. The dataset offers a comprehensive view of various dimensions including the order status, price, payment and freight performance, customer location, product attributes, and customer reviews.

- By analyzing this extensive dataset, it becomes possible to gain valuable insights into Target's operations in Brazil. 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.

- Exploring Individual Tables

Eg: Customers

```
SELECT *
FROM  `Target.customers`
LIMIT 10
```



```
select *
from `Target.customers`
limit 10
```

Query results

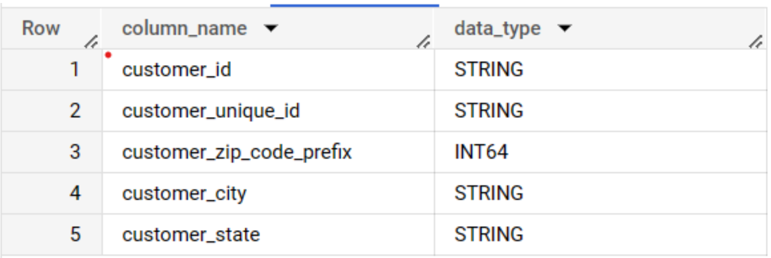
Row	customer_id	customer_unique_id	customer_zip_code_	customer_city	customer_state
1	0735e7e4298a2ebbb46649346...	fcb003b1bdc0df64b4d065d9b...	59650	acu	RN
2	903b3d86e3990db01619a4ebe...	46824822b15da44e983b021d...	59650	acu	RN
3	38c97666e962d4fea7fd6a83e...	b6108acc674ae5c99e29adc10...	59650	acu	RN
4	77c2f46cf580f4874c9a5751c2...	402cce5c0509000eed9e77fec...	63430	ico	CE
5	4d3ef4cfffb8ad4767c199c36a...	6ba00666ab7eada5ceec279b2...	63430	ico	CE
6	3000841b86e1fbe9493b52324...	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

Individually have researched all the tables in order to understand what are the visual representatiONs of each table individually but have attached ONly ONe to keep it neat and precise

1. Import the datASet AND do usual exploratory analysis steps like checking the structure & characteristics of the datASet:

1.1. Data type of all columns in the "customers" table.

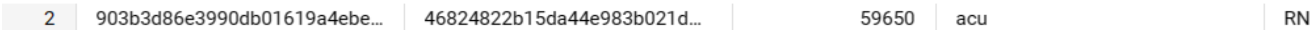
```
SELECT
column_name,
data_type
FROM Target.INFORMATION_SCHEMA.COLUMNS
WHERE TABLE_NAME = 'customers';
```



Row	column_name	data_type
1	customer_id	STRING
2	customer_unique_id	STRING
3	customer_zip_code_prefix	INT64
4	customer_city	STRING
5	customer_state	STRING

AS shown above we can understand ONly the 'customer_zip_code_prefix' is in INTEGER form else all of other columns are in STRING or alphabetical format

Just to illustrate WITH example

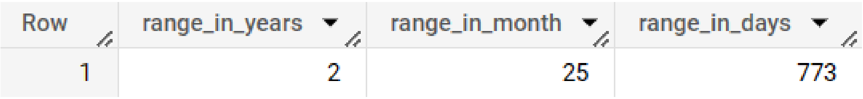


2	903b3d86e3990db01619a4ebe...	46824822b15da44e983b021d...	59650	acu	RN

1 .2 Get the time range between which the orders were placed.

```
WITH cte AS
(SELECT *,
EXTRACT (date FROM order_purchASe_timestamp) AS order_date
FROM `Target.orders`
)

SELECT
DATE_DIFF(MAX(order_date), MIN(order_date), year) AS range_in_years,
DATE_DIFF(MAX(order_date), MIN(order_date), mONth) AS range_in_mONth,
DATE_DIFF(MAX(order_date), MIN(order_date), day) AS range_in_days
FROM cte
```



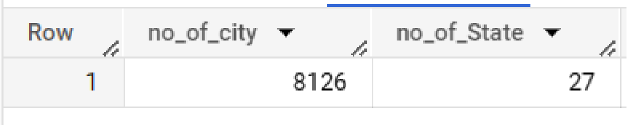
Row	range_in_years	range_in_month	range_in_days
1	2	25	773

AS depicted above total range is 25 mONths or 2 years 1 mONth

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

```
WITH cte AS
```

```
(
SELECT
geolocatiON_city AS city,
geolocatiON_state AS state
FROM `Target.geolocatiON`
GROUP BY geolocatiON_city,geolocatiON_state
UNION ALL
SELECT
customer_city AS city,
customer_state AS state
FROM `Target.customers`
UNION ALL
SELECT
seller_city AS city,
seller_state AS state
FROM `Target.sellers`
)
SELECT COUNT(distinct city) AS no_of_city,
COUNT(distinct state) AS no_of_State
FROM cte;
```



Row	no_of_city	no_of_State
1	8126	27

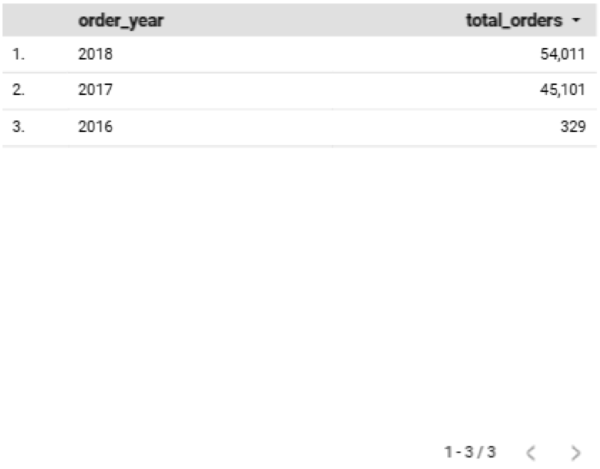
Total number of Cities in datASet is 8011 WITHin 27 mONths in geolocatiON, it is a junctiON table but when we actually do uniON of three tables i.e seller, customer, geolocatiON. So we get 8126 so there is 115 cities which is supposed to be added

2.In-depth ExploratiON:

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

```
WITH cte AS
(
SELECT *,
EXTRACT ( date FROM order_purchASe_timestamp) AS order_date,
EXTRACT ( year FROM order_purchASe_timestamp) AS order_year,
EXTRACT ( mONth FROM order_purchASe_timestamp) AS order_mONth,
FROM `Target.orders`
)


SELECT order_year,
COUNT(order_id) AS total_orders
FROM cte
GROUP BY order_year
ORDER BY  order_year
```



	order_year	total_orders ▾
1.	2018	54,011
2.	2017	45,101
3.	2016	329

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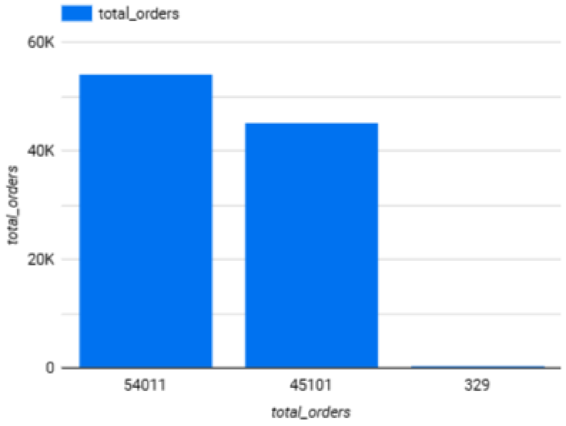
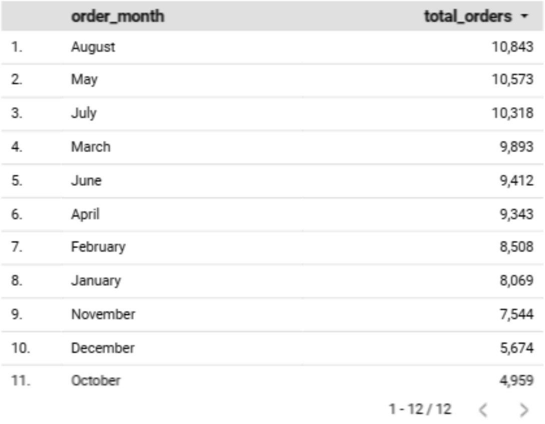


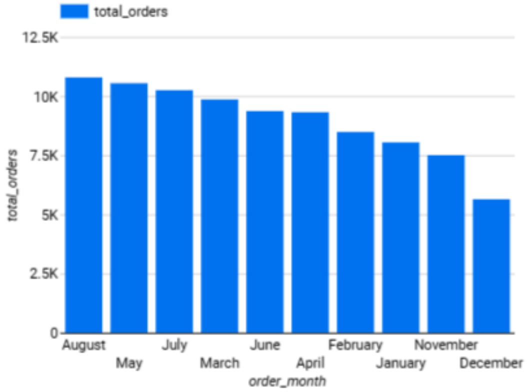
GROWTH RATE FROM 2107 TO 2018 = (54011-45101)/45101 = 19.2%

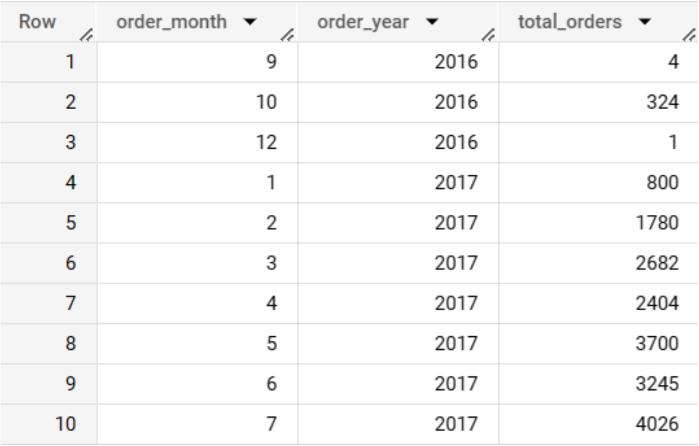
2. Can we see some kind of mONthly seasONality in terms of the no. of orders being placed?

```
WITH cte AS
(
SELECT *,
EXTRACT ( date FROM order_purchASe_timestamp) AS order_date,
EXTRACT ( year FROM order_purchASe_timestamp) AS order_year,
EXTRACT ( mONth FROM order_purchASe_timestamp) AS order_mONth,
FROM `Target.orders`
)


SELECT order_mONth, order_year,
COUNT(order_id) AS total_orders
FROM cte
GROUP BY order_mONth, order_year
ORDER BY  order_year, order_mONth

-- WE SEE A SEASONAL TREND FOR NOV 2017 WHERE THERE WAS BLACK FRIDAY
AND THERE IS A HUGE INCREASE IN THE ORDERS PLACED. NO DATA FOR 2016,
2018 AVAILABLE
-- THERE IS ALSO A GROWTH TREND IN JAN 2017 AND JAN 2018 WHERE NEW
YEARS IS EXPERIENCED AND ALSO PEOPLE MAY HAVE PREORDERED FOR THE
CARNIVAL IN FEB
-- THERE IS ALSO AN INCREASING IN ORDERS IN Q1 OF 2018 DURING WHICH
FIFA WORLD CUP WAS SCHEDULED.
```



	order_month	total_orders ▾
1.	August	10,843
2.	May	10,573
3.	July	10,318
4.	March	9,893
5.	June	9,412
6.	April	9,343
7.	February	8,508
8.	January	8,069
9.	November	7,544
10.	December	5,674
11.	October	4,959





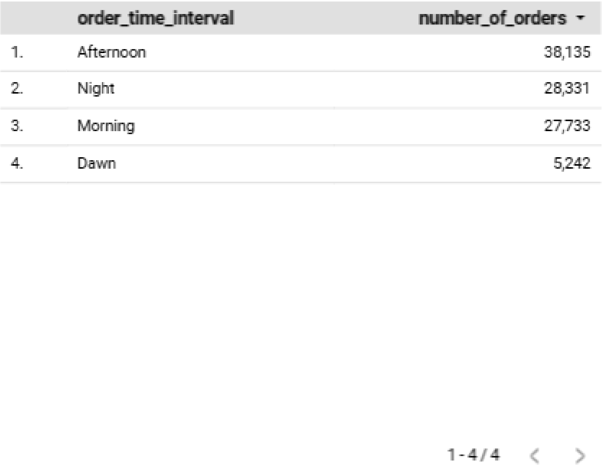
Row	order_month	order_year	total_orders
1	9	2016	4
2	10	2016	324
3	12	2016	1
4	1	2017	800
5	2	2017	1780
6	3	2017	2682
7	4	2017	2404
8	5	2017	3700
9	6	2017	3245
10	7	2017	4026

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) BETWEEN 0 AND 6 THEN 'Dawn'
   WHEN EXTRACT(HOUR FROM order_purchASe_timestamp) BETWEEN 7 AND 12 THEN 'Morning'
   WHEN EXTRACT(HOUR FROM order_purchASe_timestamp) BETWEEN 13 AND 18 THEN 'AfternoON'
   WHEN EXTRACT(HOUR FROM order_purchASe_timestamp) BETWEEN 19 AND 23 THEN 'Night'
END AS order_time_interval,
COUNT(*) AS number_of_orders
FROM `Target.orders`
GROUP BY order_time_interval
ORDER BY  number_of_orders DESC;
```

Insights: WE SEE THAT THE BRAZILLIAN CUSTOMERS ORDER MOST IN THE AFTERNOON FOLLOWED BY NIGHT TIME AND THE LEAST IS SEEN AT DAWN.



	order_time_interval	number_of_orders ▾
1.	Afternoon	38,135
2.	Night	28,331
3.	Morning	27,733
4.	Dawn	5,242

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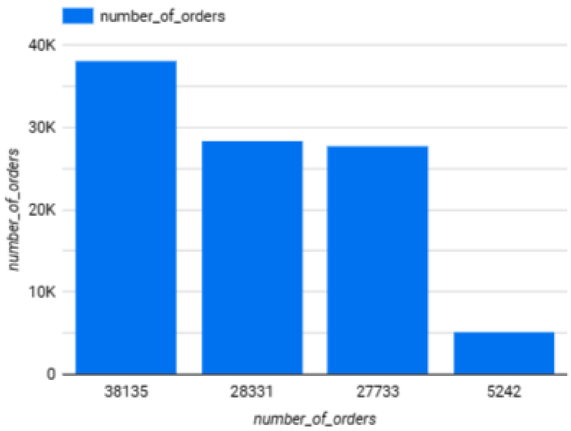
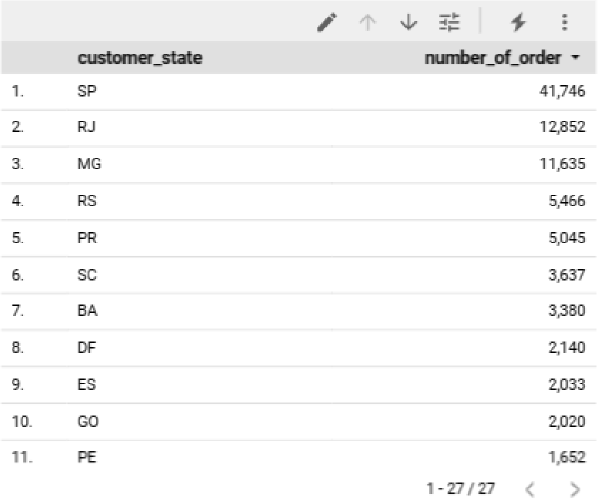


3. EvolutiON of E-commerce orders in the Brazil regiON:

1 . Get the mONth ON mONth no. of orders placed in each state.

```
SELECT
EXTRACT(MONTH FROM o.order_purchASe_timestamp) AS order_mONth,
c.customer_state,
COUNT(*) AS number_of_order
FROM `Target.orders` AS o
JOIN `Target.customers` AS c
ON o.customer_id = c.customer_id
GROUP BY order_mONth, c.customer_state
ORDER BY  c.customer_state, order_mONth;
```



	customer_state	number_of_order ▾
1.	SP	41,746
2.	RJ	12,852
3.	MG	11,635
4.	RS	5,466
5.	PR	5,045
6.	SC	3,637
7.	BA	3,380
8.	DF	2,140
9.	ES	2,033
10.	GO	2,020
11.	PE	1,652

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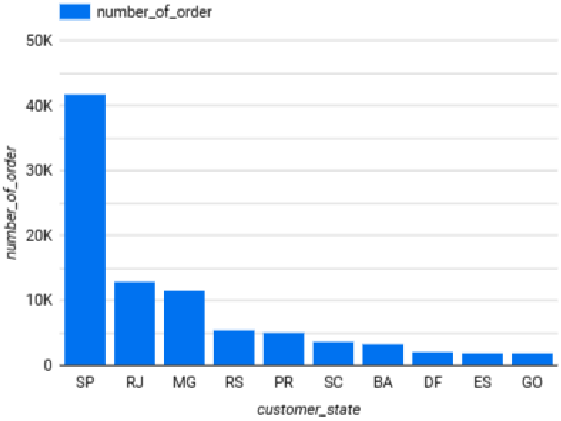
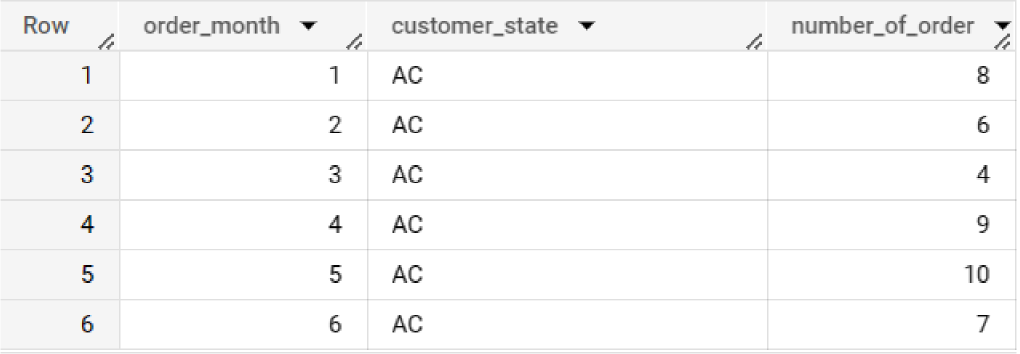




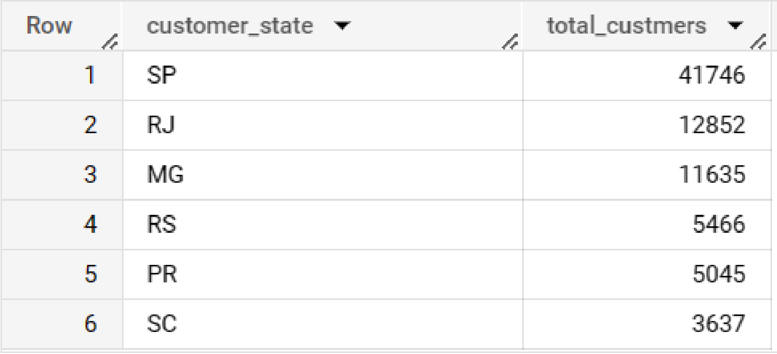
Row	order_month	customer_state	number_of_order
1	1	AC	8
2	2	AC	6
3	3	AC	4
4	4	AC	9
5	5	AC	10
6	6	AC	7

Insights:
1. We can learn more about the monthly order count for each state by examining the query's results. Over time, we can spot trends, patterns, or seasonality in the order volume for various states. We can use it to determine which states have consistently high order volumes and to pinpoint any months or states where order counts have significantly changed. Here in our data, we can find that for every month the state called SP has the highest number of orders.

2. We can target marketing efforts in states with rising order volumes, spot potential operational issues in states with falling order volumes or optimize inventory management based on order trends across different states by analyzing these insights.

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

```
SELECT customer_state, COUNT(DISTINCT customer_id) AS total_custmers
FROM `Target.customers`
GROUP BY customer_state
ORDER BY  total_custmers DESC;
```



Row	customer_state	total_custmers
1	SP	41746
2	RJ	12852
3	MG	11635
4	RS	5466
5	PR	5045
6	SC	3637

Insights:
1. The distribution of clients across states will be shown by analyzing the query's results. Which states have the most customers and which states have comparatively fewer consumers can be determined. Here the state called SP has the highest clients and the state called RR has the fewest clients. There are several uses for this information, including: Market targeting, Expansion opportunities and Customer service.

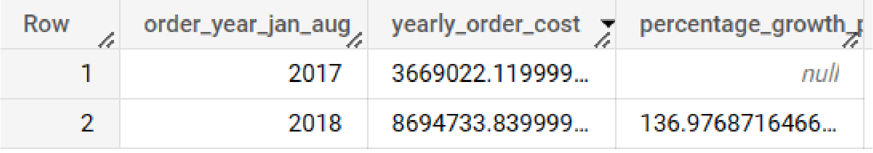
2. We can learn more about the geographic distribution of our client base, spot prospective growth areas, and make wise decisions to optimize our company strategy by looking at the customer distribution between states.

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 year 2017 to 2018 (include mONths between Jan to Aug ONly).
You can use the "payment_value" column in the payments table to get the cost of orders.

```
WITH cte AS
(
  SELECT
  EXTRACT(year FROM order_purchASe_timestamp) AS order_year,
  sum(payment_value) AS yearly_order_cost
  FROM `Target.payments` p
  JOIN `Target.orders` o
  ON p.order_id = o.order_id
  WHERE EXTRACT(year FROM order_purchASe_timestamp) BETWEEN 2017 and 2018
  AND   EXTRACT(mONth FROM order_purchASe_timestamp) BETWEEN 01 and 08
  GROUP BY order_year
  ORDER BY  order_year
)
SELECT
order_year AS order_year_jan_aug,
yearly_order_cost,
(yearly_order_cost - LAG(yearly_order_cost) over(ORDER BY
order_year))*100/LAG(yearly_order_cost) over(ORDER BY  order_year) AS
percentage_growth_percent
FROM cte
ORDER BY  order_year;

------- we see a growth rate of approximately 137% FROM 2017 to 2018
```



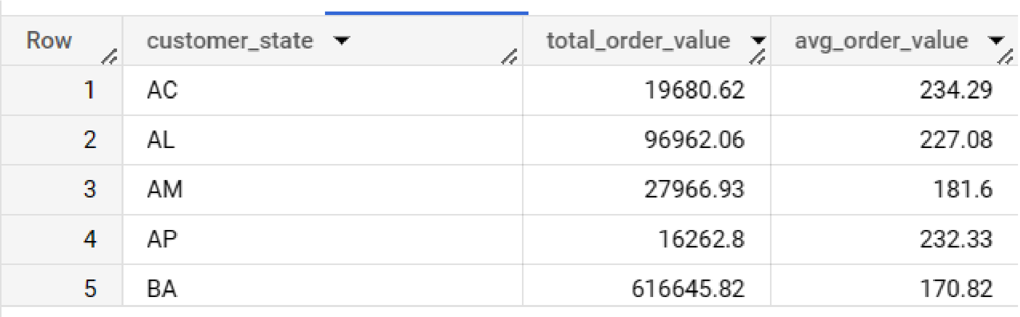
Row	order_year_jan_aug	yearly_order_cost	percentage_growth_
1	2017	3669022.119999...	*null*
2	2018	8694733.839999...	136.9768716466...

Insights:
1. For both 2017 and 2018, only orders placed from January to August are considered. 2. To get the % increase, the query analyses the monthly prices between 2017 and 2018. 3. The findings tell us a growth rate of approximately 137% from 2017 to 2018.

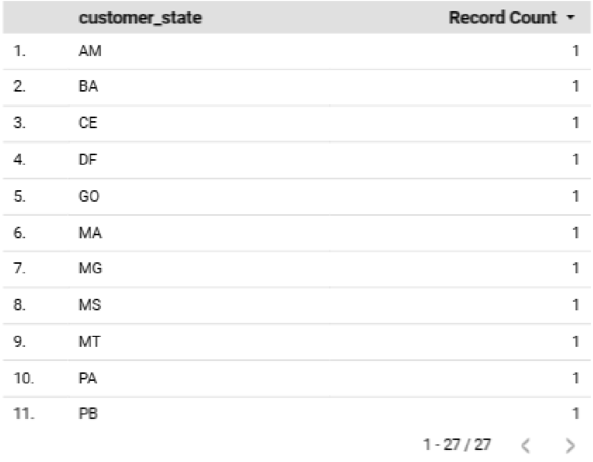
2.Calculate the Total & Average value of order price for each state.

```
SELECT
c.customer_state,
round(sum(p.payment_value),2) AS total_order_value,
round(avg(p.payment_value),2) AS avg_order_value
FROM `Target.orders` AS o
JOIN `Target.payments` AS p
ON o.order_id = p.order_id
JOIN `Target.customers` AS c
ON o.customer_id = c.customer_id

GROUP BY c.customer_state
ORDER BY  c.customer_state;
```



Row	customer_state	total_order_value	avg_order_value
1	AC	19680.62	234.29
2	AL	96962.06	227.08
3	AM	27966.93	181.6
4	AP	16262.8	232.33
5	BA	616645.82	170.82



	customer_state	Record Count
1.	AM	1
2.	BA	1
3.	CE	1
4.	DF	1
5.	GO	1
6.	MA	1
7.	MG	1
8.	MS	1
9.	MT	1
10.	PA	1
11.	PB	1

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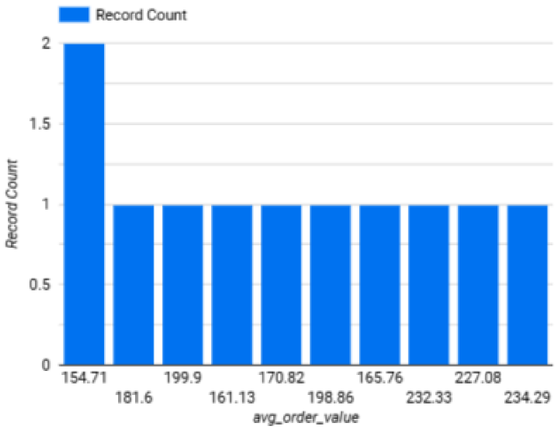


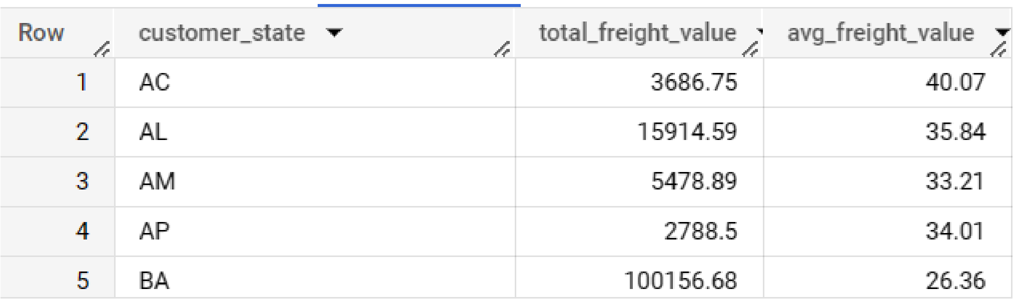
Insights:
1. The sum of all order prices for each state is displayed in the "total_order_price" column, which represents the total amount of orders placed.

2. The "average_order_price" column shows the normal order value for each state together with the average order price for that state.
3. We can find states with large total order values, which point to potentially profitable marketplaces, by analyzing the results.
4. To develop focused marketing or pricing strategies, it can be helpful to compare the average order prices across states to find areas with higher or lower average spending. 5. To obtain more understanding and make wise judgements based on the data, it's critical to consider the context of each state, such as population, economic variables, or customer behavior.

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

```
SELECT
c.customer_state,
round(sum(p.freight_value),2) AS total_freight_value,
round(avg(p.freight_value),2) AS avg_freight_value
FROM `Target.orders` AS o
JOIN `Target.order_items` AS p
ON o.order_id = p.order_id
JOIN `Target.customers` AS c
ON o.customer_id = c.customer_id

GROUP BY c.customer_state
ORDER BY  c.customer_state
```



Row	customer_state	total_freight_value	avg_freight_value
1	AC	3686.75	40.07
2	AL	15914.59	35.84
3	AM	5478.89	33.21
4	AP	2788.5	34.01
5	BA	100156.68	26.36

Insights:
1. We can find states with high total freight costs, here in our case a state called SP, by analyzing the results, which could point to regions with higher shipping prices or logistical difficulties.

2. When optimizing logistics operations or pricing strategies, it might be helpful to discover regions with higher or lower average shipping prices by comparing the average order freight costs across states.

3. Understanding the differences in order freight rates between states can offer information about local shipping habits, supplier locations, or client preferences that can be used to optimize processes and cut costs.

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.
   Do this in a single query.

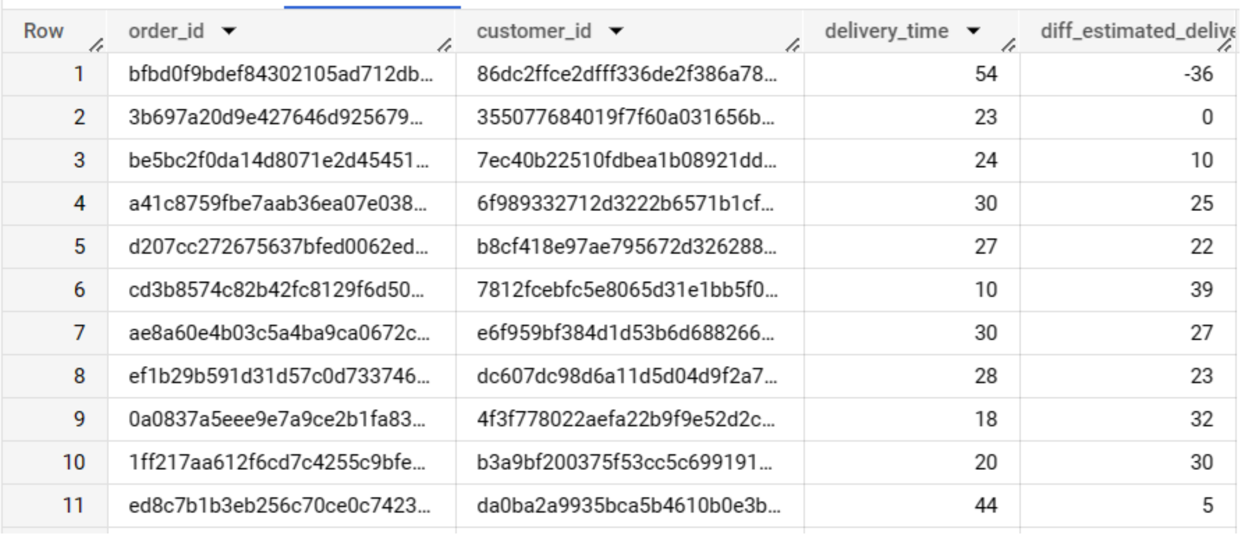
   You can calculate the delivery time and the difference between the estimated & actual delivery date using the given formula:
    - **time_to_deliver** = order_delivered_customer_date - order_purchASe_timestamp
    - **diff_estimated_delivery** = order_estimated_delivery_date - order_delivered_customer_date

```
SELECT
order_id,customer_id,
TIMESTAMP_DIFF(order_delivered_customer_date, order_purchASe_timestamp, day) AS
delivery_time,
TIMESTAMP_DIFF(order_estimated_delivery_date, order_delivered_customer_date,
day) AS diff_estimated_delivery

FROM `Target.orders`

WHERE order_status = 'delivered' AND order_delivered_customer_date IS NOT NULL

ORDER BY  order_purchASe_timestamp ASC
```



Row	order_id	customer_id	delivery_time	diff_estimated_delive
1	bfbd0f9bdef84302105ad712db...	86dc2ffce2dfff336de2f386a78...	54	-36
2	3b697a20d9e427646d925679...	355077684019f7f60a031656b...	23	0
3	be5bc2f0da14d8071e2d45451...	7ec40b22510fdbea1b08921dd...	24	10
4	a41c8759fbe7aab36ea07e038...	6f989332712d3222b6571b1cf...	30	25
5	d207cc272675637bfed0062ed...	b8cf418e97ae795672d326288...	27	22
6	cd3b8574c82b42fc8129f6d50...	7812fcebfc5e8065d31e1bb5f0...	10	39
7	ae8a60e4b03c5a4ba9ca0672c...	e6f959bf384d1d53b6d688266...	30	27
8	ef1b29b591d31d57c0d733746...	dc607dc98d6a11d5d04d9f2a7...	28	23
9	0a0837a5eee9e7a9ce2b1fa83...	4f3f778022aefa22b9f9e52d2c...	18	32
10	1ff217aa612f6cd7c4255c9bfe...	b3a9bf200375f53cc5c699191...	20	30
11	ed8c7b1b3eb256c70ce0c7423...	da0ba2a9935bca5b4610b0e3b...	44	5

Insights:
1. We can find states with high total freight costs, here in our case a state called SP, by analyzing the results, which could point to regions with higher shipping prices or logistical difficulties.

2. When optimizing logistics operations or pricing strategies, it might be helpful to discover regions with higher or lower average shipping prices by comparing the average order freight costs across states.

3. Understanding the differences in order freight rates between states can offer information about local shipping habits, supplier locations, or client preferences that can be used to optimize processes and cut costs.

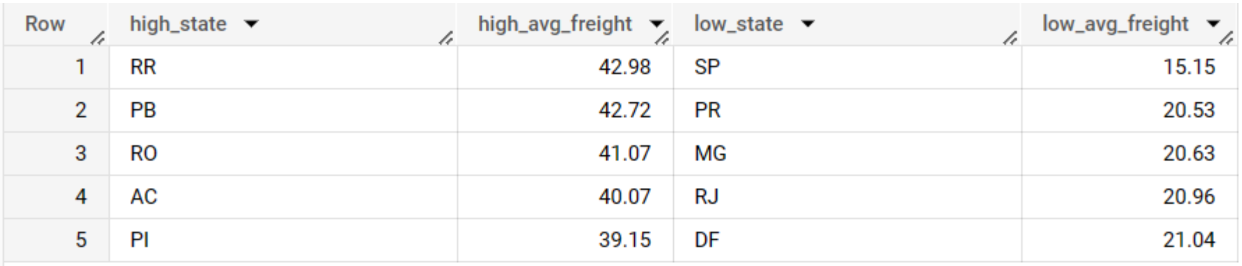
2. Find out the top 5 states WITH the highest & lowest average freight value.

```
SELECT
high.customer_state AS high_state,
high.average_freight_value AS high_avg_freight,
low.customer_state AS low_state,
low.average_freight_value AS low_avg_freight
FROM
(
SELECT
c.customer_state,
ROUND(AVG(p.freight_value),2) AS average_freight_value,
ROW_NUMBER() OVER(ORDER BY  (ROUND (AVG(p.freight_value),2))DESC) AS rowval1
FROM `Target.orders` AS o
JOIN `Target.order_items` AS p
ON o.order_id = p.order_id
JOIN `Target.customers` AS c
ON o.customer_id = c.customer_id

GROUP BY c.customer_state
ORDER BY  average_freight_value DESC
LIMIT 5
) AS high
JOIN
(
SELECT
c.customer_state,
ROUND (avg(p.freight_value),2) AS average_freight_value,
ROW_NUMBER() OVER(ORDER BY  (ROUND (avg(p.freight_value),2))) AS rowval2
FROM `Target.orders` AS o
JOIN `Target.order_items` AS p
ON o.order_id = p.order_id
JOIN `Target.customers` AS c
ON o.customer_id = c.customer_id

GROUP BY c.customer_state
ORDER BY  average_freight_value
LIMIT 5
) AS low

ON high.rowval1 = low.rowval2
```



Row	high_state	high_avg_freight	low_state	low_avg_freight
1	RR	42.98	SP	15.15
2	PB	42.72	PR	20.53
3	RO	41.07	MG	20.63
4	AC	40.07	RJ	20.96
5	PI	39.15	DF	21.04

Insights:
1. The states with the highest average freight values like states called RR and PB may experience greater shipping prices due to reasons like remote locations, higher transportation costs, or supply chain difficulties.
2. It might be useful for our company to try to optimize logistics operations or save costs to locate places with relatively reduced shipping prices by looking at the states with the lowest average freight values like states such as SP and PR.
3. This data can help us develop focused initiatives, bargain freight costs, or spot possible opportunities to reduce costs in our supply chain operations. 4. When assessing the data and drawing conclusions from these insights, it is crucial to consider additional elements like distance, transportation infrastructure, carrier availability, or regional economic variations.

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

```
WITH cte AS
(
SELECT
c.customer_state,
ROUND(AVG(t1.delivery_time),2) AS avg_delivery_time

FROM
(
SELECT *,
TIMESTAMP_DIFF(order_delivered_customer_date, order_purchASe_timestamp, day) AS
delivery_time,
FROM `Target.orders`

WHERE order_status = 'delivered' AND order_delivered_customer_date IS NOT NULL

ORDER BY  order_purchASe_timestamp ASC
) AS t1

JOIN `Target.customers` AS c

ON t1.customer_id = c.customer_id

GROUP BY c.customer_state

ORDER BY  avg_delivery_time
)
```

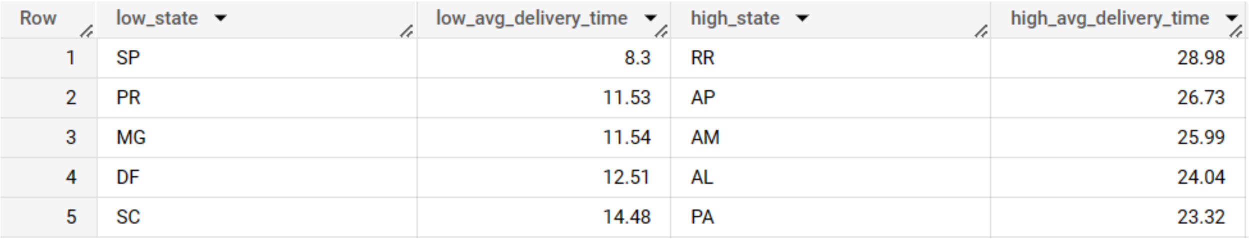
```
SELECT
c1.customer_state AS low_state,
c1.avg_delivery_time AS low_avg_delivery_time,
c2.customer_state AS high_state,
c2.avg_delivery_time AS high_avg_delivery_time
FROM
(
SELECT *,
ROW_NUMBER() OVER (ORDER BY  cte.avg_delivery_time DESC) AS rowval2
FROM cte
ORDER BY  rowval2
) AS c2

JOIN

(
SELECT *,
ROW_NUMBER() OVER (ORDER BY  cte.avg_delivery_time) AS rowval1
FROM cte
ORDER BY  rowval1
) AS c1

ON c1.rowval1 = c2.rowval2

LIMIT 5:
```



Row	low_state	low_avg_delivery_time	high_state	high_avg_delivery_time
1	SP	8.3	RR	28.98
2	PR	11.53	AP	26.73
3	MG	11.54	AM	25.99
4	DF	12.51	AL	24.04
5	SC	14.48	PA	23.32

Insights:
1. Finding areas with effective delivery operations, quicker transit times, or solid logistics networks can be done by looking at the states like SP and PR with the lowest average delivery times and states called RR and AP with highest average delivery times.

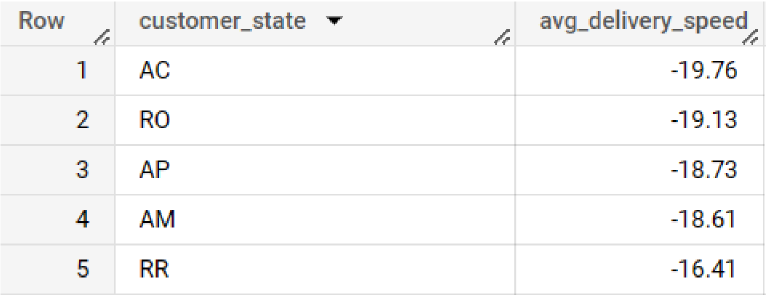
2. These insights can be helpful for our company looking to improve customer satisfaction, operational efficiency, delivery process optimization, and setting reasonable expectations for customers based on regional delivery time patterns.

3. When evaluating the data and drawing conclusions from these insights, it's crucial to take additional elements into account, such as population density, the distinction between urban and rural locations, customer expectations, or unique logistical restrictions.

4. Utilizing this information, our company can concentrate on areas where delivery efficiency improvements can be made, thereby improving customer experiences and operational efficiencies.

4 . 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.

```
WITH delivery_speed AS (
  SELECT
    c.customer_state,
    ROUND(AVG(DATE_DIFF(o.order_delivered_customer_date,
o.order_estimated_delivery_date, DAY)),2) AS avg_delivery_speed,
    ROW_NUMBER() OVER (ORDER BY  AVG(DATE_DIFF(o.order_delivered_customer_date,
o.order_estimated_delivery_date, DAY))) AS rank_fAStest
  FROM `Target.orders` AS o
  JOIN `Target.customers` AS c
  ON o.customer_id = c.customer_id
  WHERE o.order_delivered_customer_date IS NOT NULL AND o.order_estimated_delivery_date
IS NOT NULL
  GROUP BY c.customer_state
)
SELECT customer_state, avg_delivery_speed
FROM delivery_speed
WHERE rank_fAStest <= 5
ORDER BY  avg_delivery_speed;
```



Row	customer_state	avg_delivery_speed
1	AC	-19.76
2	RO	-19.13
3	AP	-18.73
4	AM	-18.61
5	RR	-16.41

Insights:

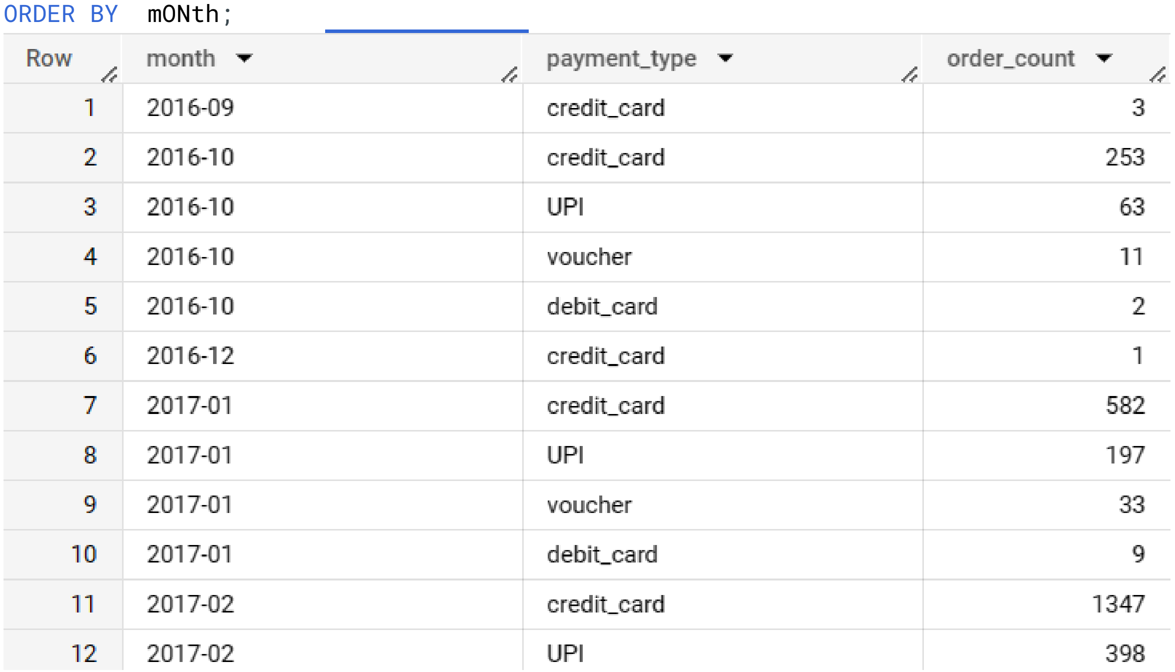
1. Our company operating in these states called AC, RO, AP, and AM where average delivery speed is highest can take advantage of the quicker delivery times by highlighting their rapid and dependable service, thereby drawing more clients, and boosting client satisfaction.

2. These data can help us improve our operations, enhance customer experience, optimize logistics, or look for expansion prospects in areas with a track record of quick order delivery.

6.Analysis bASed ON the payments:

1. Find the mONth ON mONth no. of orders placed using different payment types.

```
SELECT
  FORMAT_TIMESTAMP('%Y-%m', o.order_purchASe_timestamp) AS mONth,
  p.payment_type,
  COUNT(DISTINCT o.order_id) AS order_COUNT
FROM `Target.orders` AS o
JOIN `Target.payments` AS p
ON o.order_id = p.order_id
GROUP BY mONth, p.payment_type
ORDER BY  mONth;
```



Row	month	payment_type	order_count
1	2016-09	credit_card	3
2	2016-10	credit_card	253
3	2016-10	UPI	63
4	2016-10	voucher	11
5	2016-10	debit_card	2
6	2016-12	credit_card	1
7	2017-01	credit_card	582
8	2017-01	UPI	197
9	2017-01	voucher	33
10	2017-01	debit_card	9
11	2017-02	credit_card	1347
12	2017-02	UPI	398

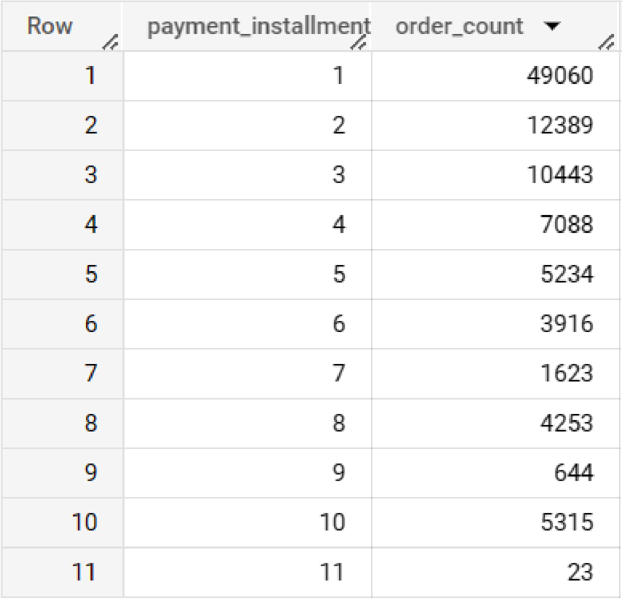
Insights:
1. We identify that credit card as a payment method was most used in November 2017.

2. To analyze seasonality, identify peak months, or evaluate the effects of marketing efforts or outside variables on consumer behavior, tracking the month-to-month trends in order counts can be helpful.

3. Based on the payment preferences noticed during various months, these insights might help firms optimize their payment procedures, customize marketing campaigns, or enhance customer experiences.

2. Find the no. of orders placed ON the bASis of the payment installments that have been paid.

```
SELECT payment_installments, COUNT(DISTINCT order_id) AS order_COUNT
FROM `Target.payments`
WHERE payment_installments <> 0
GROUP BY payment_installments
ORDER BY  payment_installments;
```



Row	payment_installment	order_count ▼
1	1	49060
2	2	12389
3	3	10443
4	4	7088
5	5	5234
6	6	3916
7	7	1623
8	8	4253
9	9	644
10	10	5315
11	11	23

Insights:

1. 49060 orders were placed where payment installment was 1.

2. This analysis can help determine whether payment installment alternatives are popular or preferred by clients.

3. Customers' preferences for budgeting or financing may be discerned by whether they tend to select a particular number of payment installments.

4. Monitoring the distribution of orders according to payment installments might reveal information about the buying habits of clients and their preference for flexible payment methods.

SELF DRIVEN INSIGHT CUM RECOMMENDATIONS

1. Payment Behavior in Co-Relation with shopping Behaviour:

Push UPI payments and promote as customers are liking it with time, credit card customers can be offered more facilities and increase the userbase to negotiate FROM bank, also can bring in more footfalls.

2. Offers to be rolled out for bringing in sales:

It is observed that there is a slump in orders after seasonal peaks, so offers and schemes should be run at that time to boost sales in these months.

3. Betterment in Logistics and Delivery:

Delivery time can be lessened by reducing approval time of orders by introducing further automation in approval steps.