SQL Challenge!

Problem Statement:

TechNova Inc., a global electronics retailer, is facing challenges in **sales performance, inventory management, supplier efficiency, and customer purchasing behavior**. The leadership team has hired you, a **Data Analyst**, to uncover **actionable insights** that will help optimize **sales, supply chain efficiency, and customer retention strategies**.

Your task is to **analyze real sales transactions** and provide **data-driven recommendations**.

SQL Challenge: 10 Complex Questions

1. Find the Top 5 Revenue-Generating Products Over the Last 6 Months
2. Identify the Most Loyal Customers Who Have Placed More Than 10 Orders
3. Find the Month With the Highest Sales Volume & Revenue
4. Identify Suppliers With High Lead Times & Low Reliability Scores
5. Find the Most Popular Payment Method for High-Value Orders (> $1,000)
6. Detect Customers Who Have Placed Orders but Later Canceled the Same Product
7. Find Products That Have Been Sold Recently
8. Rank the Top 3 Most Efficient Suppliers Based on Lead Time & Reliability
9. Identify Product Categories With the Highest Average Order Value
10. Find Customers Who Have Spent the Most in a Single Transaction

```sql
-- Renaming new cstomer_table
CREATE OR REPLACE TABLE `TechNova.renamed_customers` AS
SELECT
  string_field_0 AS customer_id,
  string_field_1 AS customer_name,
  string_field_2 AS address,
  string_field_3 AS country
FROM
  `TechNova.tn_customers`;
```

```sql
-- 1. Find the Top 5 Revenue-Generating Products Over the Last 6 Months
select p.product_name, cast(sum(total_amount) as int64) as product_sum
from `TechNova.tn_fact_sales` s
left join `TechNova.tn_products` as p
on p.product_id = s.product_id
where status not in ('Canceled')
and s.order_date >= date_sub((select max(order_date) from `TechNova.tn_fact_sales`),
interval 6 month)
group by p.product_name
order by product_sum desc limit 5;
```

Query results

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	product_name	product_sum
1	Attention Smartwatch	80821
2	Far Tablet	80633
3	Law Headphones	80148
4	Seek Mobile	77885
5	Pm Tablet	73976

```sql
--2. Identify the Most Loyal Customers Who Have Placed More Than 10 Orders
select c.customer_name, count(*) as total_orders
from `TechNova.tn_fact_sales` as s
left join `TechNova.renamed_customers` as c
on c.customer_id = s.customer_id
where status not in ('Canceled')
group by c.customer_name
having count(*) > 10
order by count(*) desc
limit 5;
```

Query results

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	customer_name	total_orders
1	Jennifer Lawson	16
2	Brian Ortega	14
3	Joshua Robinson	14
4	Adam Martinez	13
5	Julie Price	12

```sql
--3. Find the Month With the Highest Sales Volume & Revenue
select
format_date('%B', date_trunc(date(order_date), MONTH)) as month_name,
count(*) as total_orders, cast(sum(total_amount) as int64) as total_revenue,
rank() over( order by count(*) desc, cast(sum(total_amount) as int64) desc) as ranking
from `TechNova.tn_fact_sales`
where status not in ('Canceled')
group by month_name
order by ranking limit 1;
```

Query results

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	month_name	total_orders	total_revenue	ranking
1	March	77	397913	1

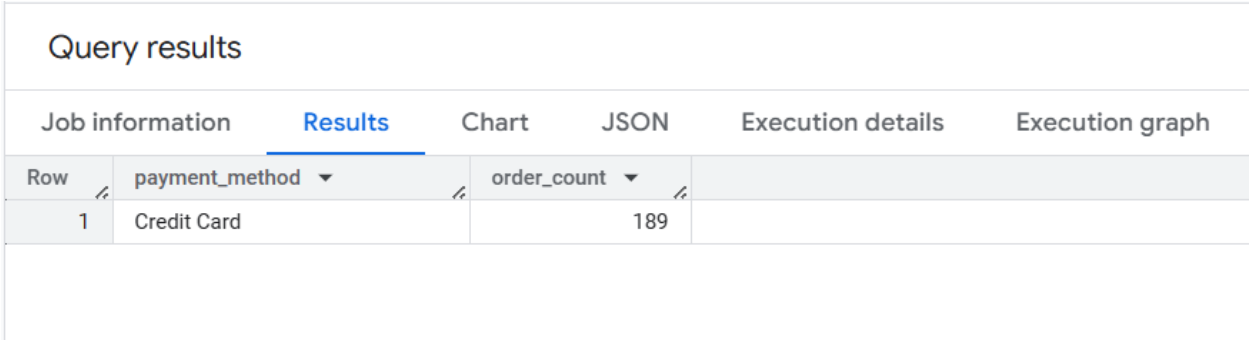
```sql
-- 4. Identify Suppliers With High Lead Times & Low Reliability Scores
select supplier_name,
country, reliability_score, lead_time_days,
rank() over(order by lead_time_days desc, reliability_score asc) as worst_ranking
from `TechNova.tn_suppliers`
order by worst_ranking limit 5;
```

Query results

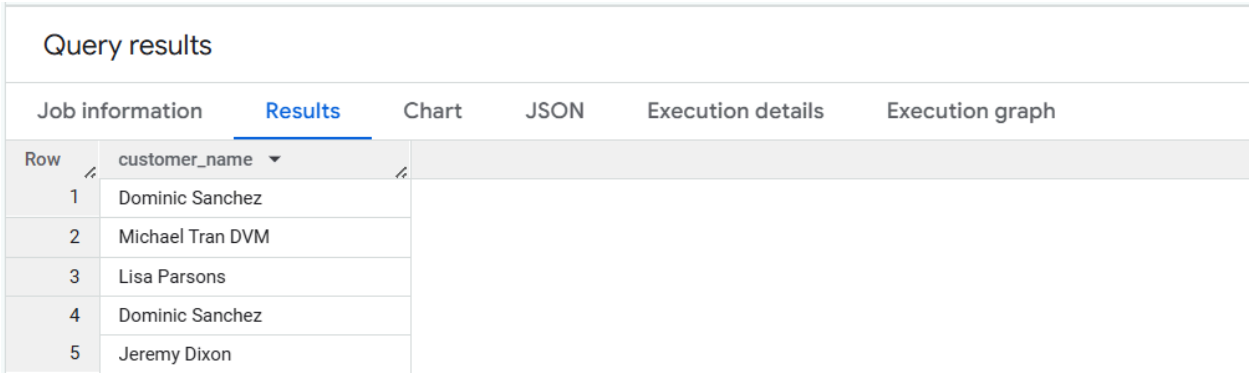
Job information | Results | Chart | JSON | Execution details | Execution graph

Row	supplier_name	country	reliability_score	lead_time_days	worst_ranking
1	Owens-Reyes	Jamaica	83	20	1
2	Phillips-Davenport	Uzbekistan	100	19	2
3	Kennedy, Gates and Brown	Antigua and Barbuda	92	18	3
4	Barnes-Kramer	Cape Verde	90	13	4
5	Tran, Rogers and Williams	Papua New Guinea	85	12	5

```sql
-- 5. Find the Most Popular Payment Method for High-Value Orders (> $1,000)
select payment_method, count(*) as order_count
from `TechNova.tn_fact_sales`
where status not in ('Canceled')
and total_amount > 1000
group by payment_method
order by count(*) desc
limit 1;
```




```sql
-- 6. Detect Customers Who Have Placed Orders but Later Canceled the Same Product
select c.customer_name
from `TechNova.tn_fact_sales` as s1
join `TechNova.tn_fact_sales` as s2
  on s1.customer_id = s2.customer_id
  and s1.product_id = s2.product_id
join `TechNova.renamed_customers` as c
  on c.customer_id = s1.customer_id
where s1.status not in ('Canceled')
  and s2.status = 'Canceled';
```



```sql
-- 7. Find Products That Have Been Sold Recently
select p.product_name, s.order_date
from `TechNova.tn_fact_sales` as s
left join `TechNova.tn_products` as p
on p.product_id = s.product_id
where s.status not in ('Canceled')
and s.order_date >= date_sub((select max(order_date) from `TechNova.tn_fact_sales`),
interval 30 day)
order by order_date desc
```

Query results

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	product_name	order_date
1	Major Smartwatch	2023-12-31
2	Data Mobile	2023-12-30
3	Summer Headphones	2023-12-30
4	Source TV	2023-12-30
5	Town Laptop	2023-12-29

```sql
-- 8. Rank the Top 3 Most Efficient Suppliers Based on Lead Time & Reliability
select supplier_name, country,
reliability_score, lead_time_days,
rank() over( order by lead_time_days asc, reliability_score desc) as ranking
from `TechNova.tn_suppliers`
order by ranking
limit 3;
```

Query results

Save re

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	supplier_name	country	reliability_score	lead_time_days	ranking
1	Spencer Group	Israel	95	5	1
2	Nelson, Gordon and Morales	United States of America	85	8	2
3	Wilson, Jimenez and Lewis	Monaco	79	11	3

```sql
-- 9. Identify Product Categories With the Highest Average Order Value
select p.category, cast(avg(total_amount) as int64) as avg_total_amount
from `TechNova.tn_fact_sales` as s
join `TechNova.tn_products` as p
on p.product_id = s.product_id
where status not in ('Canceled')
group by p.category
order by avg_total_amount desc;
```

Query results

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	category	avg_total_amount
1	Tablet	5495
2	Laptop	4967
3	TV	4578
4	Headphones	4092
5	Mobile	3913
6	Smartwatch	3186

```sql
-- 10. Find Customers Who Have Spent the Most in a Single Transaction
select c.customer_name, cast(max(total_amount) as int64) as highest_order_value
from `TechNova.tn_fact_sales` as s
join `TechNova.renamed_customers` as c
on c.customer_id = s.customer_id
where s.status not in ('Canceled')
group by c.customer_name
order by cast(max(total_amount) as int64) desc
limit 5;
```

Query results

Job information | Results | Chart | JSON | Execution details | Execution graph

Row	customer_name	highest_order_value
1	Richard Becker	14615
2	Joseph Ramos	14615
3	Nicholas Davis	13785
4	Joshua Robinson	13305
5	Jacob Schwartz	13250