Rahul Mahapatra

Optimizing Supply Chains

SQL INSIGHTS

Project Overview: Supply Chain Analytics

Rahul Mahapatra

Completed an in-depth analysis of a supply chain dataset, focusing on revenue, manufacturing costs, supplier performance, and transportation efficiency. Employed advanced SQL queries to gain insights into product sales, cost-effectiveness, and lead time management. This project enhanced skills in SQL and data analysis, with insights applicable to real-world scenarios

Creating Database & Table

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```
create database supply_chain;
use supply_chain;

create table supply_chain
( Product_type VARCHAR(50),
  SKU VARCHAR(50),
  Price DECIMAL(10, 2),
  available_quantity INT,
  sold_quantity INT,
  revenue_generated DECIMAL(15,2),
  Gender
enum("nonbinary","Male","Female"),
  Stock_level INT,
  fulfillment_lead_time INT,
  Order_quantitie INT,
  Shipping_time INT,
  Shipping_carrier VARCHAR(50),
  Shipping_cost DECIMAL(15, 2),
  Supplier_name VARCHAR(100),
  Location VARCHAR(100),
  Supplier_Lead_time INT,
  Production_volume INT,
  Manufacturing_lead_time INT,
  Manufacturing_cost DECIMAL(15, 2),
  Inspection_result VARCHAR(50),
  Transportation_mode VARCHAR(50),
  Routes VARCHAR(50),
  Cost DECIMAL(15, 2)
);
```

Q1. Find the total revenue of the products

input

```
select product_type ,
sum(revenue_generated) as
total_revenue
from supply_chain
group by product_type
order by total_revenue desc;
```

output

product_type	total_revenue
skincare	241629.00
haircare	174454.00
cosmetics	161519.00

Q2. Calculate the average fulfillment lead time for each supplier.

input

```
select supplier_name,
avg(fulfillment_lead_time) as
Avg_fulfillment_time
from supply_chain
group by supplier_name;
```

output

supplier_name	Avg_fulfillment_time
Nivea	14.3333
Unilever	16.7778
Loreal	14.7222
P&G	17.0000
Johnson & Johnson	16.2273

Q3. Identify the top 5 product's code that stock levels below 50 units

input

```
select sku,stock_level
from supply_chain
where stock_level < 50
order by stock_level desc
limit 5;
```

output

sku	stock_level
SKU28	48
SKU81	48
SKU19	48
SKU27	47
SKU11	46

Q4. Determine the total manufacturing cost by supplier.

input

```
select supplier_name ,
sum(Manufacturing_cost) as
total_manufacturing_cost
from supply_chain
group by supplier_name
order by
total_manufacturing_cost;
```

output

supplier_name	total_manufacturing_cost
Nivea	655.00
Loreal	808.00
Johnson & Johnson	915.00
P&G	1129.00
Unilever	1223.00

Q5. Find the top suppliers based on the quantity of products supplied.

input

```
select supplier_name
,sum(Order_quantitie)as
total_product_supplied
from supply_chain
group by supplier_name
order by
total_product_supplied desc
limit 1 ;
```

output

supplier_name	total_product_supplied
Unilever	1458

Q6. Calculate the average shipping cost for each transportation mode.

input

```
select Transportation_mode ,
round(avg(Shipping_cost),2)
as avg_shipping_cost
from supply_chain
group by Transportation_mode
order by avg_shipping_cost
desc;
```

output

Transportation_mode	avg_shipping_cost
Air	6.08
Road	5.55
Rail	5.46
Sea	4.88

Q7. Identify the products with the highest sales volume.

input

```
select product_type,
sum(revenue_generated) as
total_revenue
from supply_chain
group by product_type
order by total_revenue desc;
```

output

product_type	total_revenue
skincare	241629.00
haircare	174454.00
cosmetics	161519.00

Q8. List suppliers name who located in 'Mumbai' and his total revenue > 30,000.

input

```
select supplier_name ,
sum(revenue_generated) as
total_revenue
from supply_chain
where location= "mumbai"
group by supplier_name
having sum(revenue_generated)
> 30000;
```

output

supplier_name	total_revenue
Unilever	40602.00

Q9. Identify top 5 product with a fulfillment lead time exceeding 27 days.

input

```
select sku
,Supplier_Lead_time
from supply_chain
where Supplier_Lead_time > 27
order by Supplier_Lead_time
desc limit 5;
```

output

sku	Supplier_Lead_time
SKU39	30
SKU32	30
SKU0	29
SKU9	29
SKU99	29

Q10. List all the transportation modes used for shipping the most products in descendeing order

input

```
select Transportation_mode,
sum(sold_quantity) as
total_quantity_shipped
from supply_chain
group by Transportation_mode
order by
total_quantity_shipped desc;
```

output

Transportation_mode	total_quantity_shipped
Rail	13493
Road	13120
Air	10882
Sea	8604

Q11. count the supplier inspection where result is fail

input

```
select supplier_name ,
count(Inspection_result)
from supply_chain
where Inspection_result =
"fail"
group by supplier_name
order by
count(Inspection_result);
```

output

supplier_name	count(Inspection_result)
Nivea	3
Unilever	6
Loreal	7
Johnson & Johnson	8
P&G	12

Q12. Find the suppliers with the highest variance in lead times.

input

```
select supplier_name ,
max(Supplier_Lead_time) as
max_lead_time,
min(Supplier_Lead_time) as
min_lead_time,
max(Supplier_Lead_time)-
min(Supplier_Lead_time) as
lead_time_varience
from supply_chain
group by supplier_name
order by lead_time_varience;
```

output

supplier_name	max_lead_time	min_lead_time	lead_time_varience
Nivea	30	5	25
Loreal	28	1	27
Unilever	29	1	28
P&G	29	1	28
Johnson & Johnson	30	2	28

Q13. Identify the most cost effective routes for transporting products.

input

```
select routes , avg(cost) as
avg_cost
from supply_chain
group by routes
order by avg_cost;
```

output

routes	avg_cost
Route A	485.465116
Route C	500.450000
Route B	595.675676