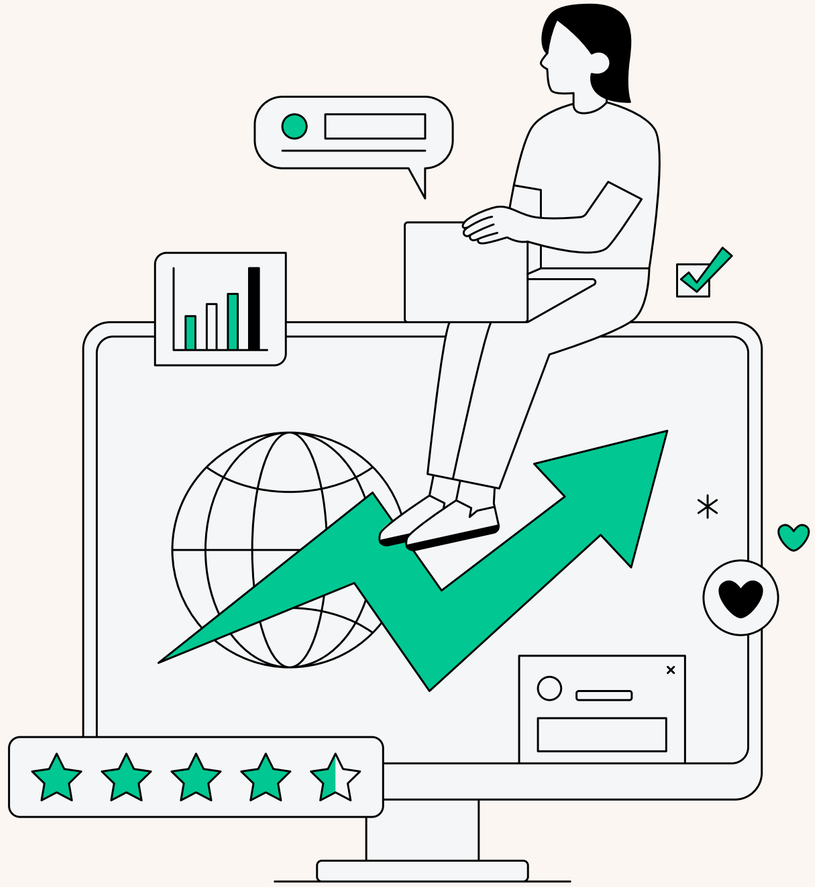
PostgerSQL Project

Supply Chain Dynamics: Real-World Logistics Analysis

By Chirag Sharma



1. What is the total profit generated by each product category across different markets?

Query | Query History

```
1  select category_name,
2  round(sum(cast(profit as decimal)),1) as Total_profit
3  from orders
4  group by 1
5  order by 2 desc
```

Data Output | Messages | Notifications

	category_name character varying (50)	total_profit numeric
1	Fishing	70894.1
2	Cleats	49145.4
3	Camping & Hiking	42061.6
4	Water Sports	33897.3
5	Indoor/Outdoor Games	31944.1
6	Women's Apparel	31924.9
7	Cardio Equipment	29878.4
8	Men's Footwear	22957.5
9	Shop By Sport	9460.6
10	Computers	4389.6
11	Cameras	3045.2

2. Find the average sales and profit for each customer segment by country.

Query | Query History

```sql
select customer_segment, customer_country,
round(cast(avg(profit) as decimal),1) as avg_profit,
round(avg(sales),1) as avg_sales
from orders
group by 1,2
```

Data Output | Messages | Notifications

	customer_segment character varying (100)	customer_country character varying (50)	avg_profit numeric	avg_sales numeric
1	Corporate	Puerto Rico	24.3	198.9
2	Corporate	EE. UU.	24.5	203.6
3	Home Office	EE. UU.	20.9	203.0
4	Consumer	EE. UU.	23.7	201.9
5	Home Office	Puerto Rico	19.2	201.2
6	Consumer	Puerto Rico	20.3	195.4

3. Identify the top 5 cities with the highest average order item discount and calculate their total sales.

Query | Query History

```
1  select customer_city,
2  round(cast(avg(order_item_discount) as decimal),1) as avg_order_discount,
3  sum(sales) as Total_sales
4  from orders
5  group by 1
6  order by 2 desc
7  limit 5
```

Data Output | Messages | Notifications

	customer_city character varying (50)	avg_order_discount numeric	total_sales numeric
1	Mechanicsburg	100.1	1344.210980
2	Louisville	89.2	1979.770000
3	Upland	72.0	399.960000
4	Lynnwood	64.6	3984.584460
5	Mesquite	57.8	1099.930000

4. Calculate the profit ratio for each product, grouped by customer segment and payment type.

Query | Query History

```
1  select product_name, customer_segment, payment_type,
2  round(cast(avg(order_item_profit_ratio) as decimal),1) as profit_ratio
3  from orders
4  group by 1,2,3
5
```

Data Output | Messages | Notifications

	product_name character varying (50)	customer_segment character varying (100)	payment_type character varying (50)	profit_ratio numeric
1	Pelican Maverick 100X Kayak	Corporate	CASH	-1.6
2	Nike Men's CJ Elite 2 TD Football Cleat	Home Office	DEBIT	0.1
3	Under Armour Hustle Storm Medium Duffle ...	Consumer	PAYMENT	0.5
4	Fighting video games	Home Office	CASH	0.3
5	Cleveland Golf Collegiate My Custom Wedge...	Home Office	TRANSFER	0.4
6	Rock music	Consumer	CASH	-0.1
7	Nike Men's Comfort 2 Slide	Consumer	TRANSFER	0.4
8	Porcelain crafts	Corporate	CASH	0.4
9	Bridgestone e6 Straight Distance NFL San Di...	Home Office	TRANSFER	0.5
10	Under Armour Hustle Storm Medium Duffle ...	Consumer	CASH	0.5
11	TaylorMade White Smoke IN-12 Putter	Corporate	DEBIT	-0.2
12	Titleist Pro V1 High Numbers Personalized	Corporate	TRANSFER	-0.5

5. Which customer segment has the highest quantity for each category, and what is their average sales?

Query | Query History

```
1 select *, rank()over(partition by category_name order by total_quantity desc) as ranks from
2 (select customer_segment, category_name, sum(order_item_quantity) as Total_quantity, round(avg(sales),1) as avg_sales
3 from orders
4 group by 1,2)as q
```

Data Output | Messages | Notifications

	customer_segment character varying (100)	category_name character varying (50)	total_quantity bigint	avg_sales numeric	ranks bigint
1	Consumer	Accessories	174	76.1	1
2	Corporate	Accessories	155	74.8	2
3	Home Office	Accessories	50	100.8	3
4	Consumer	As Seen on TV!	34	174.9	1
5	Corporate	As Seen on TV!	5	551.2	2
6	Home Office	As Seen on TV!	2	120.0	3
7	Consumer	Baby	30	158.8	1
8	Home Office	Baby	8	187.5	2
9	Corporate	Baby	4	127.5	3
10	Consumer	Baseball & Softball	77	167.0	1
11	Corporate	Baseball & Softball	50	172.0	2
12	Home Office	Baseball & Softball	22	134.2	3

6. Determine the top 3 states with the most profitable orders, considering both sales and profit per order.

Query | Query History

```
1  select order_state, sum(profit) as profit, sum(sales) as sales
2  from orders
3  where profit > 0
4  group by 1
5  order by 2 desc
6  limit 3
7
```

Data Output | Messages | Notifications

	order_state character varying (50)	profit double precision	sales numeric
1	England	29092.144410769997	112777.488894
2	California	18321.300297020007	68863.254980
3	Isle of France	16481.071868099993	62717.283922

7. Analyze the impact of different shipping modes on profit margin for each market.

Query | Query History

```
1  select *, rank()over(partition by market order by avg_profit desc) from
2  (select shipping_mode, market, avg(profit) as avg_profit
3  from orders
4  where shipping_mode != 'Same Day'
5  group by 1,2)as q
```

Data Output | Messages | Notifications

	shipping_mode character varying (50)	market character varying (100)	avg_profit double precision	rank bigint
1	First Class	Africa	32.44988183916084	1
2	Second Class	Africa	31.445869809090915	2
3	Standard Class	Africa	29.983067553434744	3
4	Standard Class	Europe	24.68349106185422	1
5	First Class	Europe	23.101855622496547	2
6	Second Class	Europe	21.790365881673587	3
7	Standard Class	LATAM	24.022049204396012	1
8	First Class	LATAM	21.57256204125372	2
9	Second Class	LATAM	21.555473488080555	3
10	First Class	Pacific Asia	22.95476646191826	1
11	Standard Class	Pacific Asia	21.645416844339493	2

8. Identify the products with the highest sales-to-profit ratio, and group the results by department and market.

Query | Query History

```
1  select product_name, department_name, market,
2  avg(order_item_profit_ratio) from orders
3  group by 1,2,3
4  order by 4 desc
```

Data Output | Messages | Notifications

	product_name character varying (50)	department_name character varying (100)	market character varying (100)	avg double precision
1	Titleist Pro V1x High Numbers Personalized Go	Apparel	Europe	0.5
2	Smart watch	Outdoors	Pacific Asia	0.5
3	MDGolf Pittsburgh Penguins Putter	Fan Shop	USCA	0.5
4	DVDs	Footwear	Pacific Asia	0.5
5	Under Armour Men's Tech II T-Shirt	Fan Shop	LATAM	0.5
6	Team Golf New England Patriots Putter Grip	Fitness	LATAM	0.5
7	O'Brien Men's Neoprene Life Vest	Footwear	LATAM	0.49
8	MDGolf Pittsburgh Penguins Putter	Outdoors	Africa	0.49
9	Under Armour Girls' Toddler Spine Surge Runni	Footwear	LATAM	0.49
10	Garmin Approach S3 Golf GPS Watch	Fan Shop	Europe	0.49
11	Nike Men's Free 5.0+ Running Shoe	Outdoors	Europe	0.49

9. Find the total sales generated by customers who placed more than 3 orders.

Query | Query History

```sql
select * from
(select customer_id, round(sum(sales),1) as Total_sales,
count(*) as Total_orders
from orders
group by 1)as d
where total_orders > 3
```

Data Output | Messages | Notifications

	customer_id integer	total_sales numeric	total_orders bigint
1	5230	1039.9	4
2	10792	850.0	4
3	3150	1379.8	5
4	3199	1010.0	5
5	8630	845.0	6
6	3068	670.8	4
7	2773	765.9	4
8	8579	970.0	4
9	1613	979.9	4
10	3378	829.8	4
11	312	809.9	4

10. Calculate the profit per order by customer segment and market, and rank them in descending order of profit.

Query | Query History

```sql
select *, rank()over(order by profit desc) as ranks from
(select customer_segment, market, round(cast(sum(profit) as decimal),1) as profit
from orders
group by 1,2)as d

```

Data Output | Messages | Notifications

	customer_segment character varying (100)	market character varying (100)	profit numeric	ranks bigint
1	Consumer	Europe	59995.6	1
2	Consumer	LATAM	57988.9	2
3	Corporate	Europe	34504.4	3
4	Consumer	Pacific Asia	33400.3	4
5	Corporate	LATAM	26966.1	5
6	Corporate	Pacific Asia	26538.1	6
7	Consumer	USCA	21116.7	7
8	Corporate	USCA	15224.5	8
9	Home Office	LATAM	14945.4	9
10	Consumer	Africa	13896.0	10
11	Home Office	Europe	13224.2	11

11. Find the total discount applied on all orders by customer country and compare it with the total sales in each country.

Query | Query History

```sql
with discount as (
    select *, row_number()over(order by customer_country) as ranks from
    (select customer_country, sum(order_item_discount) as Total_discount
    from orders
    group by 1
    order by 2 desc)as q
),
sales as (
select *, row_number()over(order by customer_country) as ranki from
    (select customer_country, sum(sales) as Total_Sales
    from orders
    group by 1
    order by 2 desc)as q
)

select a.customer_country, a.total_discount, b.customer_country, b.total_sales
from discount as a
join sales as b
ON a.ranks = b.ranki
```

Data Output | Messages | Notifications

	customer_country character varying (50)	total_discount double precision	customer_country character varying (50)	total_sales numeric
1	EE. UU.	196814.6316022252	EE. UU.	1912156.629287
2	Puerto Rico	126326.52010622347	Puerto Rico	1206386.402260

12. Identify the cities where the profit margin is negative, and analyze the total sales, order quantity, and profit.

Query | Query History

```
1  select order_city, sum(order_item_quantity) as Total_quantity,
2  sum(sales) as Total_sales, count(*) as Total_orders, sum(profit) as profit
3  from orders
4  where profit < 0
5  group by 1
```

Data Output | Messages | Notifications

	order_city character varying (100)	total_quantity bigint	total_sales numeric	total_orders bigint	profit double precision
1	Cruz das Almas	7	300.000000	2	-438.78033
2	Izmir	16	1320.710900	7	-858.047347
3	Springfield	3	611.144750	3	-314.8139504
4	Mangalore	1	129.990000	1	-8.38022
5	Lyon	13	649.840000	4	-935.5656256999999
6	Billings	5	299.950000	1	-2.596508
7	Crato	1	129.990000	1	-58.18101
8	Panama City	19	2782.410000	12	-1298.204734
9	Mwanza	1	199.990000	1	-290.0505
10	Vernon	3	150.000000	1	-30.4074
11	Horlivka	3	59.990000	1	88.37825

13. Determine the correlation between latitude/longitude and total sales for each customer country.

Query | Query History

```sql
select round(cast(corr(langitude, total_sales) as decimal),4) as Correlation from
(select customer_country, sum(longitude) as langitude,
sum(sales) as total_sales
from orders
group by 1)as d
```

Data Output | Messages | Notifications

	correlation numeric
1	-1.0000

A correlation value of **-1.000** indicates a **perfect negative correlation** between longitude and Total Sales. This means that as one variable increases, the other variable decreases in a perfectly linear manner.

14. Find the percentage of orders that were processed, shipped, or closed, grouped by customer country.

Query | Query History

```sql
SELECT
    customer_country,
    COUNT(*) AS total_orders,
    (SUM(CASE WHEN order_status IN ('COMPLETE', 'PROCESSING', 'CLOSED') THEN 1 ELSE 0 END) * 100.0 / COUNT(*)) AS percn
FROM orders
GROUP BY customer_country;

```

Data Output | Messages | Notifications

	customer_country character varying (50)	total_orders bigint	percn numeric
1	EE. UU.	9438	58.1267217630853994
2	Puerto Rico	6111	59.1228931435117002

15. Which product categories show the highest fluctuations in order_item_profit_ratio over time?

Query | Query History

```
1  select *, rank()over(partition by category_name order by months) as ranks from
2  (select category_name, extract(month from order_date) as months,
3  round(cast(sum(order_item_profit_ratio) as decimal),1) as profit_ratio
4  from orders
5  group by 1,2)as d
```

Data Output | Messages | Notifications

	category_name character varying (50)	months numeric	profit_ratio numeric	ranks bigint
1	Accessories	1	-0.4	1
2	Accessories	2	0.7	2
3	Accessories	3	0.7	3
4	Accessories	4	2.0	4
5	Accessories	5	4.6	5
6	Accessories	6	-3.2	6
7	Accessories	7	2.5	7
8	Accessories	8	1.7	8
9	Accessories	9	1.1	9
10	Accessories	10	2.2	10

16. Calculate the total profit for each customer country and region, and rank the results based on profit.

Query | Query History

```
1  select *, rank()over(order by total_profit desc) as ranks from
2  (select customer_country, order_region, sum(profit) as total_profit
3  from orders
4  group by 1,2
5  )as d
```

Data Output | Messages | Notifications

	customer_country character varying (50)	order_region character varying (100)	total_profit double precision	ranks bigint
1	EE. UU.	Western Europe	39066.39339800003	1
2	EE. UU.	Central America	34223.942600489965	2
3	Puerto Rico	Central America	22966.96155820002	3
4	Puerto Rico	Western Europe	21543.644491650004	4
5	EE. UU.	Northern Europe	15565.718268239989	5
6	EE. UU.	South America	15363.024415939995	6
7	EE. UU.	Oceania	12647.393189999999	7
8	EE. UU.	Southern Europe	11573.184691220004	8
9	Puerto Rico	South America	10652.981229315992	9
10	EE. UU.	South Asia	9791.68620781	10
11	EE. UU.	Caribbean	9686.264245820003	11

17. Identify the top 5 product names with the highest order_item_profit_ratio, grouped by order status and shipping mode.

Query | Query History

```
1  select product_name, order_status, shipping_mode,
2  round(cast(sum(order_item_profit_ratio) as decimal),1) as profit_ratio
3  from orders
4  group by 1,2,3
5
```

Data Output | Messages | Notifications

	product_name character varying (50)	order_status character varying (50)	shipping_mode character varying (50)	profit_ratio numeric
1	Bridgestone e6 Straight Distance NFL Tennesse	PENDING	Second Class	0.1
2	Under Armour Hustle Storm Medium Duffle Bag	PROCESSING	Second Class	0.6
3	Under Armour Girls' Toddler Spine Surge Runni	CLOSED	Same Day	-3.1
4	TYR Boys' Team Digi Jammer	PENDING_PAYMENT	Second Class	-0.3
5	Smart watch	CLOSED	Standard Class	-0.2
6	Nike Men's CJ Elite 2 TD Football Cleat	PENDING	First Class	3.3
7	Perfect Fitness Perfect Rip Deck	PENDING	First Class	8.2
8	Under Armour Men's Tech II T-Shirt	CLOSED	Same Day	-0.7
9	Yakima DoubleDown Ace Hitch Mount 4-Bike R...	PENDING_PAYMENT	Same Day	0.1
10	Diamondback Women's Serene Classic Comfor...	PENDING_PAYMENT	Standard Class	17.9
11	Summer dresses	PENDING	Second Class	0.5

18. Find the number of orders that have a profit margin lower than the average order profit per state.

Query | Query History

```
1  select order_state, profit, count(*) as TOtal_orders
2  from orders
3  where profit > (select avg(profit) from orders)
4  group by 1,2
```

Data Output | Messages | Notifications

	order_state character varying (50)	profit double precision	total_orders bigint
1	Capital Nacional	30.208607	1
2	New South Wales	24.64121	1
3	Jalisco	68.68675	1
4	Illinois	47.296677	1
5	Provence-Alpes-Côte d'Azur	51.79233	1
6	California	38.787556	1
7	California	48.60658	1
8	Arizona	68.549736	1
9	Peking	87.76434	1
10	Bogota	135.36884	1
11	Auvergne-Rhone-Alpes	51.64086	1

Thank you very much!

Chirag Sharma