Comprehensive Retail Sales Analysis

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Problem Statement:

You are working as a data analyst for a retail company. Your goal is to analyze sales data to provide insights into the performance of different regions, products, and customer segments using SQL. This project aims to extract and manipulate data to uncover valuable insights and trends.

Overview:

This presentation examines the sales performance of a retail company through detailed SQL analysis. We explore key metrics, customer insights, and profitability across different product categories and regions.

Key Objectives:

Analyze total sales, profit margins, and average order values by region.
Identify top-performing products based on sales and profit.
Understand customer behavior and segmentation through SQL-derived insights.

1.Sales Analysis

What are the total sales, total profit, and average order value by region?

```sql
SELECT region,
    round(sum(sales)) as total_sales ,
    round(sum(profit)) as total_profit,
    round(avg(sales)) as avg_order
FROM orders GROUP BY region;
```

region text	total_sales double precision	total_profit double precision	avg_order double precision
South	391722	46749	242
West	739814	110799	227
East	691828	94883	232
Central	502751	39813	215

Who are the top 10 products by total sales and profit?

```sql
SELECT product_name,
       round(SUM(sales)) AS total_sales,
       round(SUM(profit)) AS total_profit

FROM orders

    GROUP BY product_name
    having round(SUM(sales)) >0 and
    round(SUM(profit) ) >0

    order by total_sales desc,
    total_profit desc
    LIMIT 10;
```

	product_name text	total_sales double precision	total_profit double precision
1	Canon imageCLASS 2200 Advanced Copier	61600	25200
2	Fellowes PB500 Electric Punch Plastic Comb Binding Machine with Manual Bi...	27453	7753
3	GBC DocuBind TL300 Electric Binding System	19823	2234
4	GBC Ibimaster 500 Manual ProClick Binding System	19024	761
5	Hewlett Packard LaserJet 3310 Copier	18840	6984
6	HP Designjet T520 Inkjet Large Format Printer - 24" Color	18375	4095
7	Ibico EPK-21 Electric Binding System	15876	3345
8	3D Systems Cube Printer, 2nd Generation, Magenta	14300	3718
9	Samsung Galaxy Mega 6.3	13944	1823
10	Apple iPhone 5	12997	1612

What are the monthly sales trends over the past two years?

```sql
SELECT
    DATE_TRUNC('month', order_date) AS month,
    round(SUM(sales)) AS total_sales
FROM
    orders
WHERE
    order_date >= CURRENT_DATE - INTERVAL '2 years'
GROUP BY
    DATE_TRUNC('month', order_date)
ORDER BY
    month;
```

month timestamp with time zone 🔒	total_sales double precision 🔒
2022-07-01 00:00:00+05:30	25782
2022-08-01 00:00:00+05:30	31717
2022-09-01 00:00:00+05:30	73522
2022-10-01 00:00:00+05:30	59831
2022-11-01 00:00:00+05:30	79412
2022-12-01 00:00:00+05:30	97502
2023-01-01 00:00:00+05:30	44259
2023-02-01 00:00:00+05:30	20301
2023-03-01 00:00:00+05:30	60728
2023-04-01 00:00:00+05:30	36779
2023-05-01 00:00:00+05:30	45155
2023-06-01 00:00:00+05:30	53056
2023-07-01 00:00:00+05:30	45990
2023-08-01 00:00:00+05:30	64130
2023-09-01 00:00:00+05:30	88065
2023-10-01 00:00:00+05:30	83475
2023-11-01 00:00:00+05:30	118454
2023-12-01 00:00:00+05:30	85175

2.Customer Insights

Who are the top 10 customers based on total sales?

```sql
SELECT
    customer_name,
    round(sum(sales)) as total_sales

FROM orders
    GROUP BY customer_name
    order by total_sales desc limit 10;
```

	customer_name text	total_sales double precision
1	Sean Miller	25043
2	Tamara Chand	19052
3	Raymond Buch	15117
4	Tom Ashbrook	14596
5	Adrian Barton	14474
6	Ken Lonsdale	14175
7	Sanjit Chand	14142
8	Hunter Lopez	12873
9	Sanjit Engle	12209
10	Christopher Conant	12129

What is the average discount given to each customer segment?

```sql
SELECT
    segment,
    round(avg(discount)::numeric, 2) as avg_disc
FROM orders
    GROUP BY segment;
```

	segment text	avg_disc numeric
1	Consumer	0.16
2	Corporate	0.16
3	Home Office	0.15

Which customer segments have the highest average profit per order?

```sql
SELECT
    segment,
    round(avg(profit)::numeric ,2) as avg_profit
FROM orders
    GROUP BY segment
    ORDER BY avg_profit desc;
```

	segment text	avg_profit numeric
1	Home Office	33.83
2	Corporate	30.50
3	Consumer	25.82

3.Order Details

Which orders have the highest profit margins?

```sql
select order_id,
    max(profit) as max_profit
from orders
    group by order_id
    order by max_profit desc limit 5;
```

	order_id text	max_profit double precision
1	US-2022-118689	8399.98
2	US-2023-140151	6719.98
3	US-2023-166709	5039.99
4	US-2022-117121	4946.37
5	US-2020-116904	4630.48

What is the total quantity sold for each product sub-category, and what trends can be identified?

```
select
    sub_category,
    sum(quantity) as total_quantity
from orders
    group by sub_category
    order by total_quantity desc;
```

	sub_category text	total_quantity numeric
1	Binders	6071
2	Paper	5207
3	Furnishings	3799
4	Phones	3350
5	Storage	3191
6	Art	3092
7	Accessories	2976
8	Chairs	2431
9	Appliances	1750
10	Labels	1410
11	Tables	1261
12	Fasteners	980
13	Envelopes	914
14	Bookcases	878
15	Supplies	653
16	Machines	442
17	Copiers	242

Which products have the highest and lowest profit margins?

```sql
select
    product_id,
    max(profit) as max_profit,
    min(profit) as min_profit
from orders
    group by product_id
    order by max_profit desc, min_profit asc limit 10;
```

	product_id text	max_profit double precision	min_profit double precision
1	TEC-CO-10004722	8399.98	1120
2	OFF-BI-10000545	4946.37	-1141.47
3	OFF-BI-10001120	4630.48	-2929.48
4	OFF-BI-10003527	3177.48	-2287.78
5	TEC-MA-10001127	2799.98	-944.99
6	TEC-CO-10001449	2591.96	192
7	OFF-BI-10004995	2504.22	-3701.89
8	TEC-MA-10003979	2400.97	1371.98
9	TEC-MA-10001047	2365.98	1351.99
10	TEC-CO-10003763	2302.97	377.99

What are the total sales and total profit for each product category?

```sql
select category,
    round(sum(sales)::numeric,2) as total_sales,
    round(sum(profit)::numeric,2) as total_profit
from orders
    group by category
    order by total_sales desc;
```

	category text	total_sales numeric	total_profit numeric
1	Technology	839473.41	146491.36
2	Furniture	754747.86	19729.81
3	Office Supplies	731893.23	126022.27

How does the quantity sold vary across different customer segments?

```sql
select segment,
    sum(quantity) as total_quantity
from orders
    group by segment;
```

	segment text	total_quantity numeric
1	Consumer	19837
2	Corporate	11898
3	Home Office	6912

4.Profit Analysis

What is the profit margin for each product?

```sql
select product_name ,
    product_id,
    round((sum(profit) / sum(sales) *100)::numeric, 2) as profit_margin
from orders
    group by product_name,product_id
    order by profit_margin desc
    limit 10;
```

	product_name text	product_id text	profit_margin numeric
1	Avery 475	OFF-LA-10003498	50.00
2	Adams Telephone Message Book w/Frequently-Called Numbers Space, 400 Messages per Bo...	OFF-PA-10004082	50.00
3	Tops Green Bar Computer Printout Paper	OFF-PA-10004092	50.00
4	Canon imageCLASS MF7460 Monochrome Digital Laser Multifunction Copier	TEC-MA-10002927	50.00
5	Southworth Structures Collection	OFF-PA-10004734	50.00
6	Xerox 1890	OFF-PA-10002499	50.00
7	Color-Coded Legal Exhibit Labels	OFF-LA-10004055	49.02
8	Easy-staple paper	OFF-PA-10002764	49.00
9	Xerox 193	OFF-PA-10001801	49.00
10	Xerox 1918	OFF-PA-10000919	49.00

Which regions have the highest and lowest profit margins?

```sql
select region,
    max(profit) as max_profit,
    min(profit) as min_profit
from orders
    group by region
    order by max_profit desc,
    min_profit asc;
```

	region text	max_profit double precision	min_profit double precision
1	Central	8399.98	-3701.89
2	West	6719.98	-3399.98
3	East	5039.99	-6599.98
4	South	3177.48	-3839.99

Which products and categories have negative profit margins, and what might be the reasons?

```sql
select product_name,
    category,
    min(profit) as min_profit
from orders
    group by category, product_name
    having min(profit) <0
    order by min_profit
    limit 10;
```

	product_name text	category text	min_profit double precision
1	Cubify CubeX 3D Printer Double Head Print	Technology	-6599.98
2	Cubify CubeX 3D Printer Triple Head Print	Technology	-3839.99
3	GBC DocuBind P400 Electric Binding System	Office Supplies	-3701.89
4	Lexmark MX611dhe Monochrome Laser Printer	Technology	-3399.98
5	Ibico EPK-21 Electric Binding System	Office Supplies	-2929.48
6	Fellowes PB500 Electric Punch Plastic Comb Binding Machine with Manual Bi...	Office Supplies	-2287.78
7	Chromcraft Bull-Nose Wood Oval Conference Tables & Bases	Furniture	-1862.31
8	Cisco TelePresence System EX90 Videoconferencing Unit	Technology	-1811.08
9	Riverside Palais Royal Lawyers Bookcase, Royale Cherry Finish	Furniture	-1665.05
10	GBC DocuBind TL300 Electric Binding System	Office Supplies	-1480.03

Thank you!

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