**1. Average Sales and Profit per Customer**

**Metric:** Sales per customer, profit per customer

**Question:** Show me the average sales per customer and the average profit per customer.

**SQL Queries**

SELECT AVG(Sales) AS Average\_Sales\_Per\_Customer,

AVG(Profit) AS Average\_Profit\_Per\_Customer

FROM (

SELECT Customer\_ID, SUM(Sales) AS Sales, SUM(Profit) AS Profit

FROM orders

GROUP BY Customer\_ID

) AS CustomerSalesProfit;

**Observation:** Sales per customer is \$1.9k and profit per customer is \$361.2.

**2. Sales and Profit per Customer by Region and Category**

**Metric:** Sales per customer, profit per customer

**Question:** How do sales and profit per customer vary across different regions and categories?

a. Sales per customer and profit per customer by region?

b. Sales per customer and profit per customer by category?

**SQL Queries:**

**a. By Region:**

SELECT Region,

AVG(Sales) AS Average\_Sales\_Per\_Customer,

AVG(Profit) AS Average\_Profit\_Per\_Customer

FROM (

SELECT Region, Customer\_ID, SUM(Sales) AS Sales, SUM(Profit) AS Profit

FROM orders

GROUP BY Region, Customer\_ID

) AS RegionCustomerSalesProfit

GROUP BY Region

ORDER BY Average\_Sales\_Per\_Customer DESC;

**b. By Category:**

SELECT Category,

AVG(Sales) AS Average\_Sales\_Per\_Customer,

AVG(Profit) AS Average\_Profit\_Per\_Customer

FROM (

SELECT Category, Customer\_ID, SUM(Sales) AS Sales, SUM(Profit) AS Profit

FROM orders

GROUP BY Category, Customer\_ID

) AS CategoryCustomerSalesProfit

GROUP BY Category

ORDER BY Average\_Sales\_Per\_Customer DESC;

**Observations:**

* **West and East lead the chart for both sales and profit per customer, while South and Central lag behind.**
* **Customers are spending high on Technology and Office Supplies, but furniture products are performing poorly.**

**3. Top Customers by Total Sales and Profit**

**Metric:** Total sales, total profit

**Question:** Who are our top customers in terms of total sales and profit?

a. Show me the customer ID with total sales and profit.

b. Show me the top 100 customer IDs by total sales and total profit by region.

**SQL Queries:**

**a. Customer ID with total sales and profit:**

SELECT Customer\_ID,

SUM(Sales) AS Total\_Sales,

SUM(Profit) AS Total\_Profit

FROM orders

GROUP BY Customer\_ID

ORDER BY Total\_Sales DESC, Total\_Profit DESC;

**b. Top 100 customers by region:**

SELECT Region, Customer\_ID,

SUM(Sales) AS Total\_Sales,

SUM(Profit) AS Total\_Profit

FROM orders

GROUP BY Region, Customer\_ID

ORDER BY Total\_Sales DESC, Total\_Profit DESC

LIMIT 100;

**Observation: South and Central regions seem to have customers in the lower quadrant while comparing sales vs. profit.**

**4. Customers Generating Negative Profits**

**Metric:** Total profit

**Question:** Who are the customers generating negative profits?

Show me the customer ID with total profit less than 0.

**SQL Queries:**

SELECT Customer\_ID,

SUM(Profit) AS Total\_Profit

FROM orders

GROUP BY Customer\_ID

HAVING SUM(Profit) < 0

ORDER BY Total\_Profit ASC;

**Observation:** Central region had the most number of customers generating negative profits, which needs further investigation.

**These queries and observations provide insights into customer behavior and regional performance, helping to identify key areas for potential improvement or further analysis.**

**1. Identify the top 3 products by sales amount for each region and customer segment.**

* **Description**: This query involves ranking products by sales within each region and segment.
* **SQL Query**:

WITH ProductRank AS (

SELECT Region, Segment, Product\_Name,

SUM(Sales) AS Total\_Sales,

RANK() OVER (PARTITION BY Region, Segment ORDER BY SUM(Sales) DESC) AS Sales\_Rank

FROM orders

GROUP BY Region, Segment, Product\_Name

)

SELECT Region, Segment, Product\_Name, Total\_Sales

FROM ProductRank

WHERE Sales\_Rank <= 3;

**2. Find the customer who has spent the most in each region, and list their top 2 purchased products by sales amount.**

* **Description**: This query identifies the highestspending customer in each region and then finds their top 2 products.
* **SQL Query**:

WITH TopCustomers AS (

SELECT Region, Customer\_ID, SUM(Sales) AS Total\_Sales,

RANK() OVER (PARTITION BY Region ORDER BY SUM(Sales) DESC) AS Customer\_Rank

FROM orders

GROUP BY Region, Customer\_ID

),

TopProducts AS (

SELECT Customer\_ID, Product\_Name, SUM(Sales) AS Product\_Sales,

RANK() OVER (PARTITION BY Customer\_ID ORDER BY SUM(Sales) DESC) AS Product\_Rank

FROM orders

GROUP BY Customer\_ID, Product\_Name

)

SELECT t.Region, t.Customer\_ID, tp.Product\_Name, tp.Product\_Sales

FROM TopCustomers t

JOIN TopProducts tp ON t.Customer\_ID = tp.Customer\_ID

WHERE t.Customer\_Rank = 1 AND tp.Product\_Rank <= 2;

**3. List all customers who have purchased a specific product category (e.g., "Furniture") but have not purchased any products from another category (e.g., "Technology").**

* **Description**: This query finds customers who have purchased items from one category but never from another.
* **SQL Query**:

SELECT Customer\_ID, Customer\_Name

FROM orders

WHERE Customer\_ID IN (

SELECT Customer\_ID

FROM orders

WHERE Category = 'Furniture'

)

AND Customer\_ID NOT IN (

SELECT Customer\_ID

FROM orders

WHERE Category = 'Technology'

)

GROUP BY Customer\_ID, Customer\_Name;

**4. Determine the first and last purchase dates for each customer and calculate the total sales amount within that period.**

* **Description**: This query calculates the total sales amount between the first and last purchase dates for each customer.
* **SQL Query**:

WITH PurchaseDates AS (

SELECT Customer\_ID,

MIN(Order\_Date) AS First\_Purchase\_Date,

MAX(Order\_Date) AS Last\_Purchase\_Date

FROM orders

GROUP BY Customer\_ID

)

SELECT pd.Customer\_ID,

pd.First\_Purchase\_Date,

pd.Last\_Purchase\_Date,

SUM(o.Sales) AS Total\_Sales

FROM PurchaseDates pd

JOIN orders o ON pd.Customer\_ID = o.Customer\_ID

AND o.Order\_Date BETWEEN pd.First\_Purchase\_Date AND pd.Last\_Purchase\_Date

GROUP BY pd.Customer\_ID, pd.First\_Purchase\_Date, pd.Last\_Purchase\_Date;

**5. Find the average discount given on products in the top 3 most profitable categories.**

* **Description**: This query identifies the top 3 categories by total profit and then calculates the average discount for products in those categories.
* **SQL Query**:

WITH ProfitableCategories AS (

SELECT Category, SUM(Profit) AS Total\_Profit,

RANK() OVER (ORDER BY SUM(Profit) DESC) AS Profit\_Rank

FROM orders

GROUP BY Category

)

SELECT o.Category, AVG(o.Discount) AS Average\_Discount

FROM orders o

JOIN ProfitableCategories pc ON o.Category = pc.Category

WHERE pc.Profit\_Rank <= 3

GROUP BY o.Category;

**6. Calculate the percentage of total sales contributed by each customer in each region, and identify those who contributed more than 10%.**

* **Description**: This query calculates each customer's contribution to total sales in their region and identifies significant contributors.
* **SQL Query**:

WITH RegionalSales AS (

SELECT Region, Customer\_ID, SUM(Sales) AS Customer\_Sales,

SUM(SUM(Sales)) OVER (PARTITION BY Region) AS Total\_Regional\_Sales

FROM orders

GROUP BY Region, Customer\_ID

)

SELECT Region, Customer\_ID, Customer\_Sales,

(Customer\_Sales / Total\_Regional\_Sales) 100 AS Sales\_Percentage

FROM RegionalSales

WHERE (Customer\_Sales / Total\_Regional\_Sales) 100 > 10;

* **Total amount spent by each customer:**

SELECT Customer\_ID, SUM(Sales) AS Total\_Amount\_Spent

FROM orders

GROUP BY Customer\_ID;

* **Number of days each customer placed an order:**

SELECT Customer\_ID, COUNT(DISTINCT Order\_Date) AS Number\_of\_Days

FROM orders

GROUP BY Customer\_ID;

* **First item purchased by each customer:**

SELECT Customer\_ID, MIN(Order\_Date) AS First\_Purchase\_Date, Product\_Name

FROM orders

GROUP BY Customer\_ID, Product\_Name

HAVING Order\_Date = MIN(Order\_Date);

* **Most purchased product and number of times it was purchased:**

SELECT Product\_Name, COUNT() AS Purchase\_Count

FROM orders

GROUP BY Product\_Name

ORDER BY Purchase\_Count DESC

LIMIT 1;

* **Most popular product for each customer:**

SELECT Customer\_ID, Product\_Name, COUNT() AS Purchase\_Count

FROM orders

GROUP BY Customer\_ID, Product\_Name

ORDER BY Customer\_ID, Purchase\_Count DESC;

* **First product purchased after becoming a member:**

SELECT Customer\_ID, MIN(Order\_Date) AS First\_Purchase\_After\_Member, Product\_Name

FROM orders

WHERE Segment = 'Member'

GROUP BY Customer\_ID, Product\_Name

HAVING Order\_Date = MIN(Order\_Date);