Task 3: SQL for Data Analysis

Problem Statement:

Customer Sales & Regional Performance Optimization

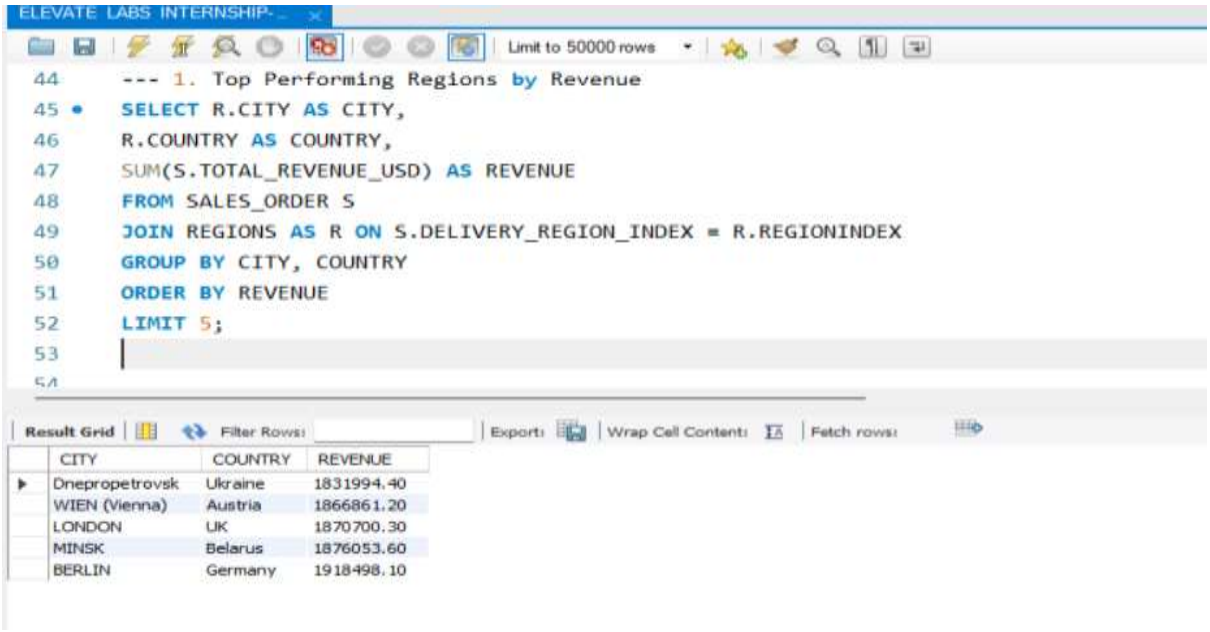
The goal is to analyse multi-dimensional sales data to gain actionable insights that optimize sales performance and strategic decision-making across various dimensions, such as customer behaviour, product performance, regional revenue, and sales channels. This analysis aims to assist in marketing, operational planning, and product development, ultimately improving overall business efficiency and profitability.

Key Areas of Focus:

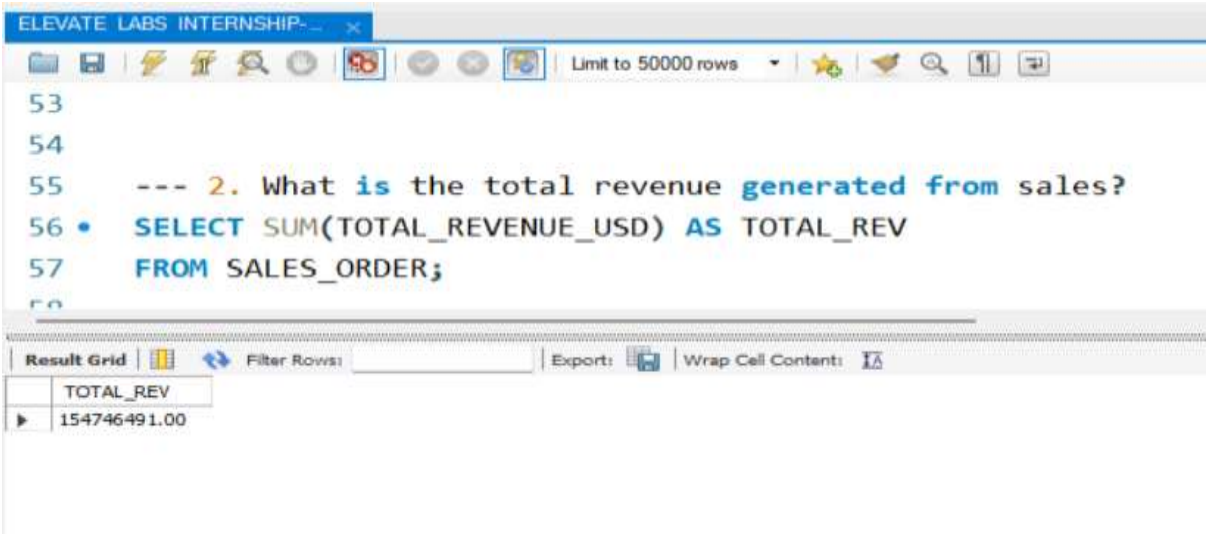
1. **Customer Behaviour**: Understanding the buying patterns, segmentation into high-value and low-value customers, and identifying repeat customers.
2. **Product Performance**: Assessing which products are most frequently sold and which ones generate the highest revenue.
3. **Regional Revenue**: Analysing regional sales data to identify top-performing regions, regional product performance, and the average order value by region.
4. **Sales Channels**: Comparing performance across different sales channels and their impact on revenue and customer engagement.

SQL Queries for Analysing Sales Data

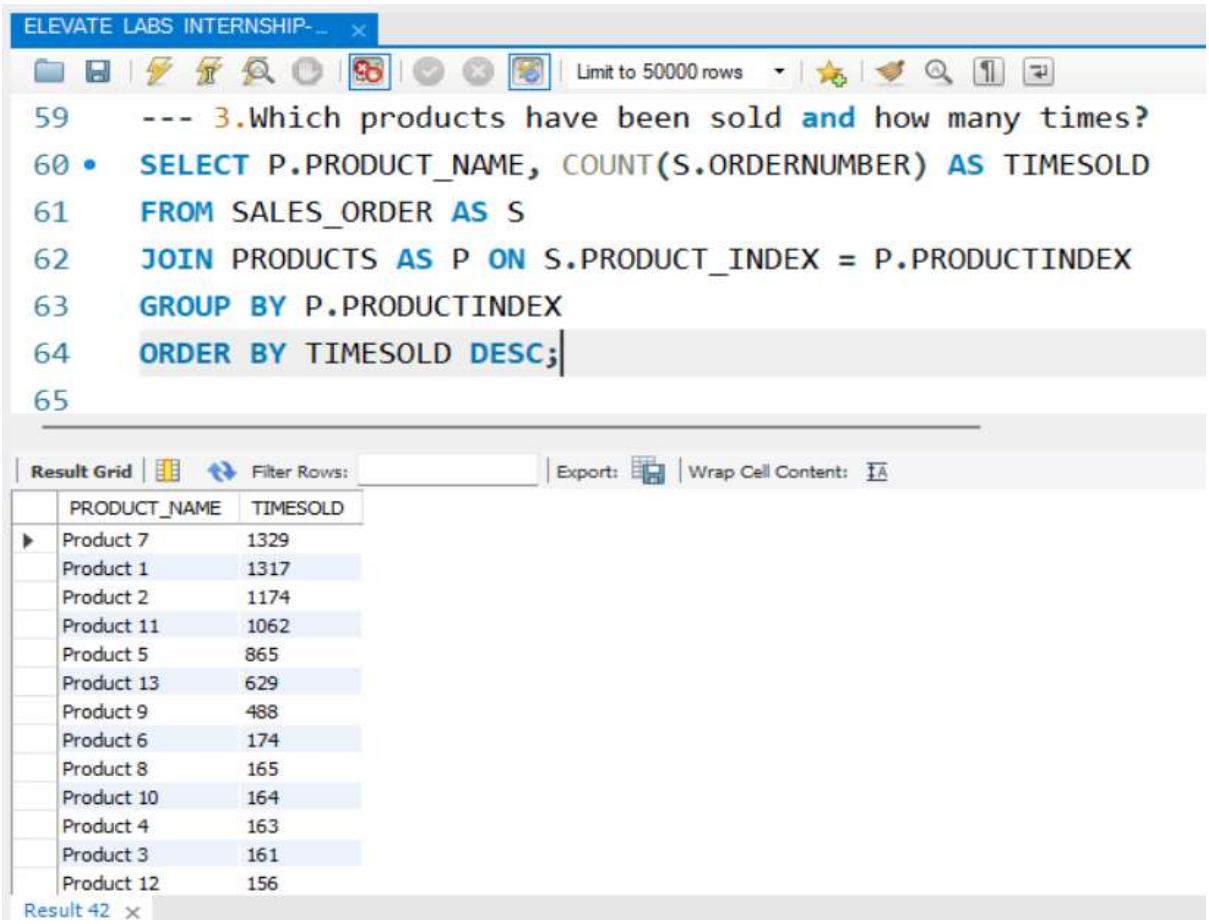
1. **Top Performing Regions by Revenue**
   This query identifies the regions generating the highest revenue, which helps in focusing resources on high-performing regions.



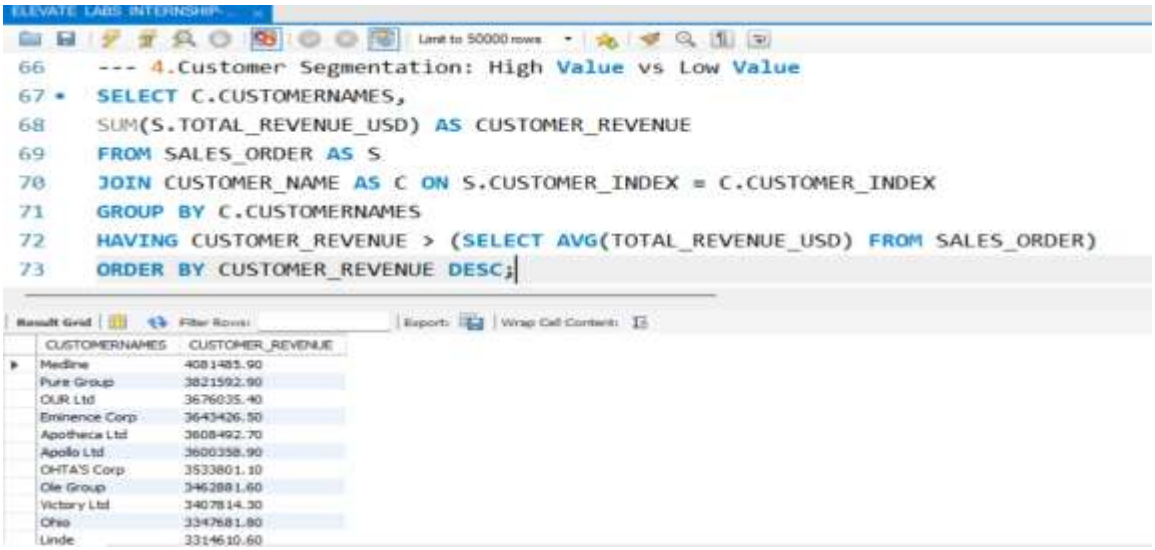
2. **Total Revenue Generated from Sales**
   This query calculates the total revenue from all sales, which is a basic but essential metric for financial performance



3. **Product Sales Frequency**
   This query identifies the products that have been sold the most times, providing insights into product popularity.



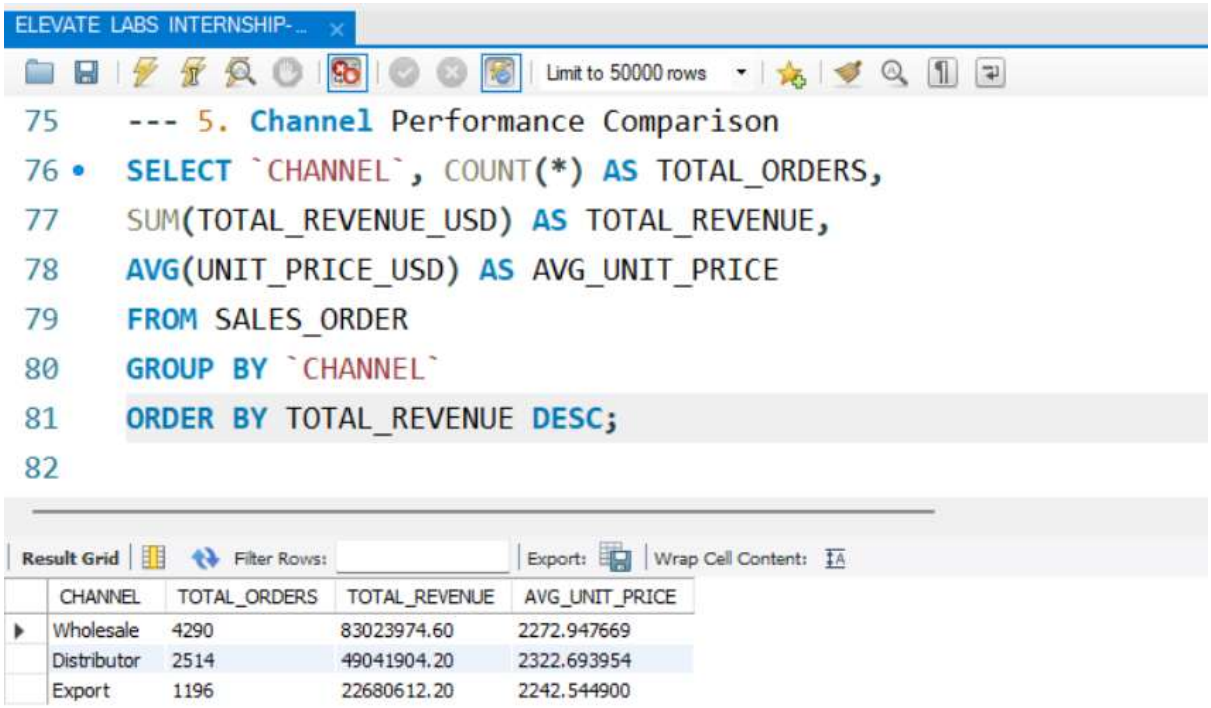
4. **Customer Segmentation: High Value vs Low Value**
   This query segments customers based on their revenue contributions. Customers with revenue greater than the average are considered high-value.



```
66    --- 4.Customer Segmentation: High Value vs Low Value
67 •  SELECT C.CUSTOMERNAMES,
68    SUM(S.TOTAL_REVENUE_USD) AS CUSTOMER_REVENUE
69    FROM SALES_ORDER AS S
70    JOIN CUSTOMER_NAME AS C ON S.CUSTOMER_INDEX = C.CUSTOMER_INDEX
71    GROUP BY C.CUSTOMERNAMES
72    HAVING CUSTOMER_REVENUE > (SELECT AVG(TOTAL_REVENUE_USD) FROM SALES_ORDER)
73    ORDER BY CUSTOMER_REVENUE DESC;
```

CUSTOMERNAMES	CUSTOMER_REVENUE
Medline	4081485.90
Pure Group	3821592.90
OUR Ltd	3676035.40
Eminence Corp	3643426.50
Apotheca Ltd	3608492.70
Apollo Ltd	3600358.90
OHTA'S Corp	3533801.10
Ole Group	3462881.60
Victory Ltd	3407814.30
Ohio	3347681.80
Linde	3314610.60

5. **Channel Performance Comparison**
   This query compares the performance of different sales channels, highlighting which channel generates the most revenue.

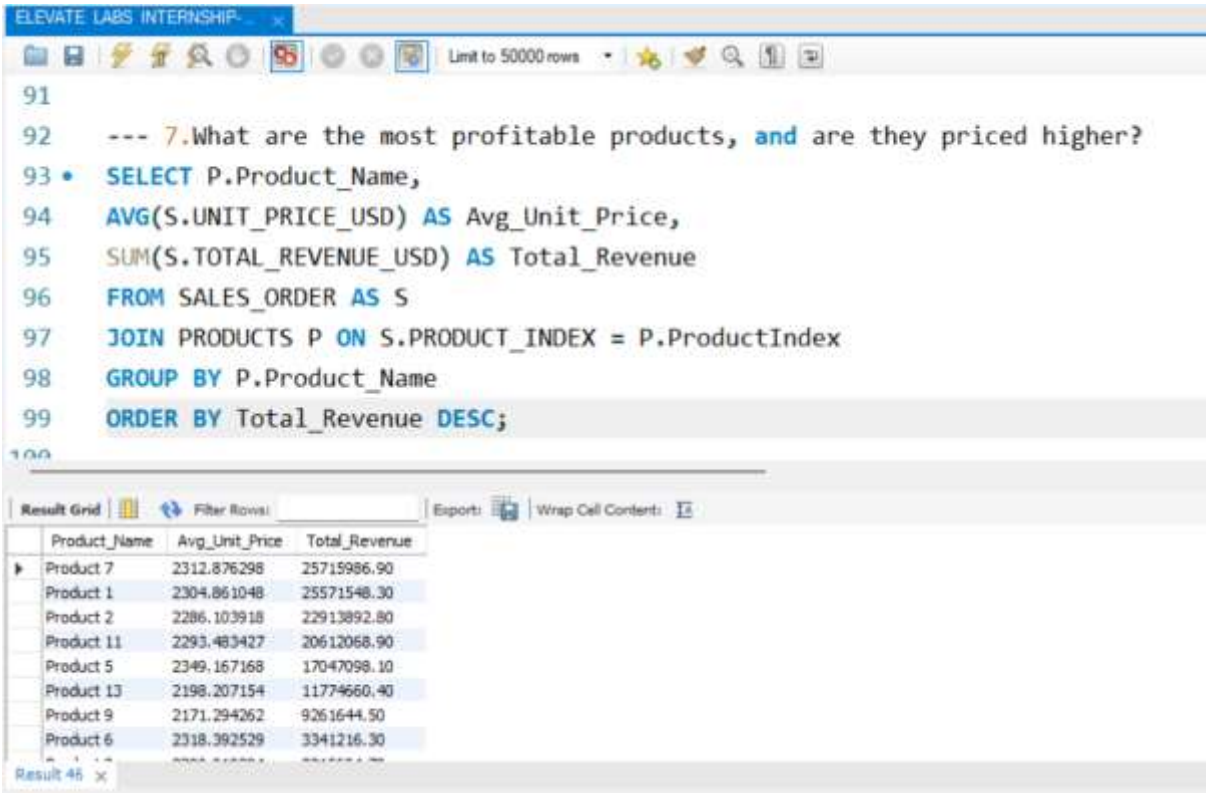


```
75    --- 5. Channel Performance Comparison
76 •  SELECT `CHANNEL`, COUNT(*) AS TOTAL_ORDERS,
77    SUM(TOTAL_REVENUE_USD) AS TOTAL_REVENUE,
78    AVG(UNIT_PRICE_USD) AS AVG_UNIT_PRICE
79    FROM SALES_ORDER
80    GROUP BY `CHANNEL`
81    ORDER BY TOTAL_REVENUE DESC;
82
```

CHANNEL	TOTAL_ORDERS	TOTAL_REVENUE	AVG_UNIT_PRICE
Wholesale	4290	83023974.60	2272.947669
Distributor	2514	49041904.20	2322.693954
Export	1196	22680612.20	2242.544900

7. **Most Profitable Products & Their Pricing**

This query evaluates which products are the most profitable and analyzes whether high-priced products correlate with higher revenue.

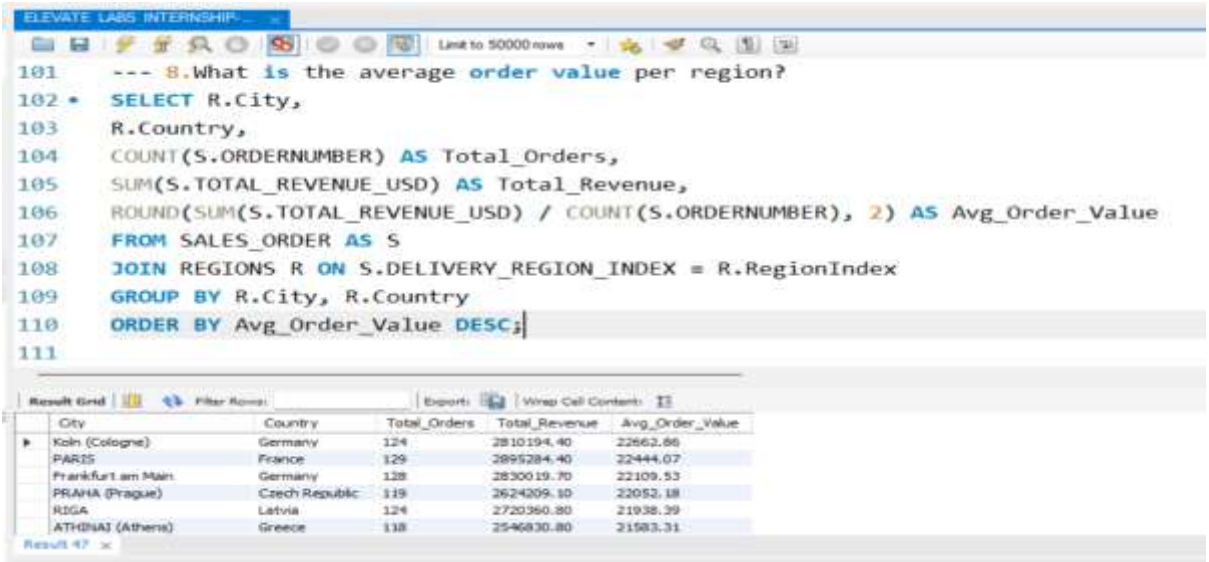


```
91
92    --- 7.What are the most profitable products, and are they priced higher?
93 •  SELECT P.Product_Name,
94    AVG(S.UNIT_PRICE_USD) AS Avg_Unit_Price,
95    SUM(S.TOTAL_REVENUE_USD) AS Total_Revenue
96    FROM SALES_ORDER AS S
97    JOIN PRODUCTS P ON S.PRODUCT_INDEX = P.ProductIndex
98    GROUP BY P.Product_Name
99    ORDER BY Total_Revenue DESC;
```

Product_Name	Avg_Unit_Price	Total_Revenue
Product 7	2312.876298	25715986.90
Product 1	2304.861048	25571548.30
Product 2	2286.103918	22913892.80
Product 11	2293.483427	20612068.90
Product 5	2349.167168	17047098.10
Product 13	2198.207154	11774660.40
Product 9	2171.294262	9261644.50
Product 6	2318.392529	3341216.30

8. **Average Order Value Per Region**

This query calculates the average order value by region, which helps in understanding the purchasing behaviour by geographic location.

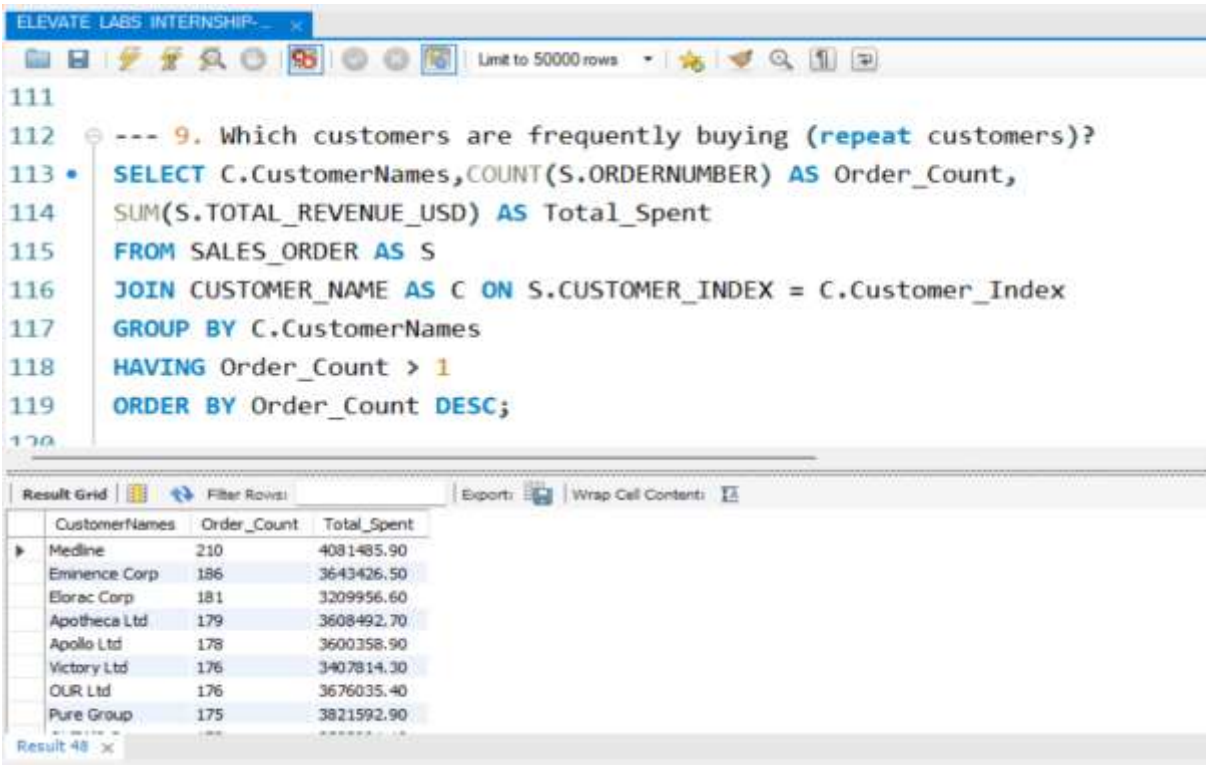


```
101   --- 8.What is the average order value per region?
102 • SELECT R.City,
103   R.Country,
104   COUNT(S.ORDERNUMBER) AS Total_Orders,
105   SUM(S.TOTAL_REVENUE_USD) AS Total_Revenue,
106   ROUND(SUM(S.TOTAL_REVENUE_USD) / COUNT(S.ORDERNUMBER), 2) AS Avg_Order_Value
107   FROM SALES_ORDER AS S
108   JOIN REGIONS R ON S.DELIVERY_REGION_INDEX = R.RegionIndex
109   GROUP BY R.City, R.Country
110   ORDER BY Avg_Order_Value DESC;
111
```

City	Country	Total_Orders	Total_Revenue	Avg_Order_Value
Koln (Cologne)	Germany	124	2810194.40	22662.86
PARIS	France	129	2895284.40	22444.07
Frankfurt am Main	Germany	128	2830019.70	22109.53
PRAHA (Prague)	Czech Republic	119	2624209.10	22052.18
RIGA	Latvia	124	2720360.80	21938.39
ATHINAI (Athens)	Greece	118	2546830.80	21583.31

9. Repeat Customers

This query identifies customers who frequently place orders, helping the business focus on retaining high-value, repeat customers.

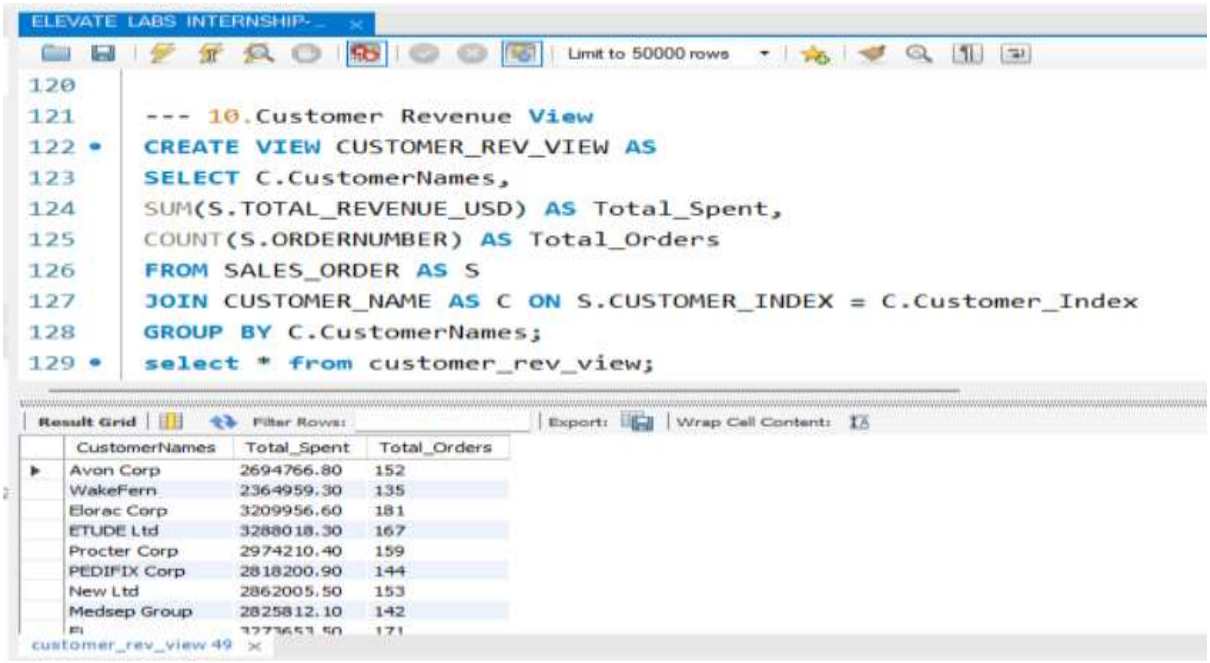


```
111
112  --- 9. Which customers are frequently buying (repeat customers)?
113  SELECT C.CustomerNames,COUNT(S.ORDERNUMBER) AS Order_Count,
114  SUM(S.TOTAL_REVENUE_USD) AS Total_Spent
115  FROM SALES_ORDER AS S
116  JOIN CUSTOMER_NAME AS C ON S.CUSTOMER_INDEX = C.Customer_Index
117  GROUP BY C.CustomerNames
118  HAVING Order_Count > 1
119  ORDER BY Order_Count DESC;
```

CustomerNames	Order_Count	Total_Spent
Medline	210	4081485.90
Eminence Corp	186	3643426.50
Elorac Corp	181	3209956.60
Apotheca Ltd	179	3608492.70
Apollo Ltd	178	3600358.90
Victory Ltd	176	3407814.30
OUR Ltd	176	3676035.40
Pure Group	175	3821592.90

10. Customer Revenue View

This view aggregates revenue and order count by customer, providing a quick overview of customer spending.



```
120
121  --- 10.Customer Revenue View
122  CREATE VIEW CUSTOMER_REV_VIEW AS
123  SELECT C.CustomerNames,
124  SUM(S.TOTAL_REVENUE_USD) AS Total_Spent,
125  COUNT(S.ORDERNUMBER) AS Total_Orders
126  FROM SALES_ORDER AS S
127  JOIN CUSTOMER_NAME AS C ON S.CUSTOMER_INDEX = C.Customer_Index
128  GROUP BY C.CustomerNames;
129  select * from customer_rev_view;
```

CustomerNames	Total_Spent	Total_Orders
Avon Corp	2694766.80	152
WakeFern	2364959.30	135
Elorac Corp	3209956.60	181
ETUDE Ltd	3288018.30	167
Procter Corp	2974210.40	159
PEDIFIX Corp	2818200.90	144
New Ltd	2862005.50	153
Medsep Group	2825812.10	142

Business Insights & Strategic Actions

- **Customer Segmentation**: High-value customers should be nurtured with targeted campaigns, while low-value customers could be incentivized to increase their spending.
- **Regional Focus**: Sales efforts can be directed toward top-performing regions to further boost revenue, while underperforming regions might benefit from localized marketing.
- **Product Strategy**: Most profitable products should be prioritized for inventory and promotional strategies, with pricing reviews for underperforming products.
- **Channel Optimization**: Channels generating the highest revenue should be further optimized, and underperforming channels may need reevaluation in terms of marketing or operational processes.
- **Repeat Customer Focus**: Encouraging repeat customers is crucial for long-term revenue stability. Loyalty programs or special offers could be effective strategies for increasing repeat purchases.

By implementing these insights, businesses can optimize their customer sales and regional performance, ultimately leading to improved operational and strategic outcomes.