

SQL 100 Days Challenge – Day 45 Reflection

Topic: Customer Segmentation & Profitability Analysis

Dataset: Customers, Products, Orders, OrderDetails

Practice Experience:

- Questions **1–7** were smooth and served as a warm-up — covering total sales by segment, category-wise revenue, order frequency, first vs latest purchases, cumulative revenue, high-value customers, and returned products.
- **Questions 8–9** (Customer Retention & Country Revenue Share) required more careful thinking with **window functions, CTEs, and ratio calculations**. They felt like a good intermediate challenge.
- **Question 10 and the Bonus RFM Analysis** were tough. Writing such long queries with multiple layers of aggregation, conditional logic, and customer segmentation was tedious but highly rewarding.

Key Learnings:

1. **Customer Analytics:** Segmentation by recency, frequency, and monetary value (RFM framework).
2. **Profitability Analysis:** Applied business rules to calculate profit margins by product category.
3. **Retention Metrics:** Detecting consecutive months of activity using LAG() and month comparisons.
4. **Rolling Revenue:** Learned to use cumulative sums for trend analysis.
5. **Advanced Segmentation:** Differentiating high, medium, and low-value customers with SQL logic.

Insights:

- **Corporate vs Retail segments** show different revenue contributions.
- Electronics (with 20% margin) and Furniture (with 30% margin) profitability highlighted how margin % drives overall profit.
- RFM analysis proved effective in classifying customers — showing how SQL can directly support **customer segmentation strategies**.
- Consecutive month analysis helped spot **loyal, retained customers**.

Skills Reinforced:

- Window functions (SUM() OVER, LAG(), RANK()).
- Complex multi-CTE queries.
- Conditional segmentation in SQL.
- Business-driven KPIs: CLV, RFM, Profitability.

Personal Note:

Till question 7, it felt easy and gave confidence. Questions 8 and 9 pushed me to think more deeply, while question 10 and the bonus RFM analysis were **demanding but transformational**. Writing such long queries was tedious, but the satisfaction of finishing them was worth it. Today's practice truly tested **patience, consistency, and problem-solving mindset**.

Next Steps:

- Automate RFM segmentation logic and apply on larger datasets.
- Compare profitability trends across time periods.
- Deep-dive into retention vs churn analysis at a regional level.