

# Retail Sales Analysis Using SQL

## Understanding Customer Behavior & Product Performance

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**Role:** Aspiring Data Analyst

**Project Date:** September 12, 2025

**Tools Used:** SQL (SQLite)

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### About This Project

As a beginner learning SQL, I analyzed a retail sales dataset to practice writing queries and extracting business insights. This project helped me understand how to use SQL for real business questions like "Who are our best customers?" and "Which products make the most money?"

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### The Dataset

I worked with a single table called orders that contained:

- Customer names and locations (cities)
- Product categories (Electronics, Furniture, Clothing)
- Prices and quantities for each order
- Order IDs to track individual purchases

**Total Records:** 7 orders

**Total Revenue:** £5,300

**Customers:** 7 unique customers

**Cities:** 3 (London, Leeds, Bristol)

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### Questions I Answered with SQL

#### 1 Which Product Category Makes the Most Money?

**My SQL Query:**

sql

```
SELECT productcategory, SUM(price*quantity) AS total_revenue
```

```
FROM orders
```

```
GROUP BY productcategory;
```

## **What I Found:**

- Electronics = £2,900
- Furniture = £1,900
- Clothing = £500

**What This Means:** Electronics is by far the biggest revenue generator, bringing in more than Furniture and Clothing combined.

**Business Insight:** The store should prioritize Electronics in inventory and marketing.

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## **2 Who Are the Top 3 Spending Customers?**

### **My SQL Query:**

sql

```
SELECT customername, SUM(price*quantity) AS total_spent  
FROM orders  
GROUP BY customername  
ORDER BY total_spent DESC  
LIMIT 3;
```

### **What I Found:**

1. Ella = £1,600
2. Clara = £1,500
3. Frank = £800

**What This Means:** Ella and Clara are VIP customers who account for a huge portion of total sales (58% of all revenue!).

**Business Insight:** These customers are extremely valuable and should receive special attention, loyalty rewards, or exclusive offers.

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## **3 Which Orders Were Above Average?**

### **My SQL Query:**

sql

```
SELECT orderid, customername, (price*quantity) AS revenue  
FROM orders
```

```
WHERE (price*quantity) > (
    SELECT AVG(price*quantity) FROM orders
);
```

#### What I Found:

- Average order value = £883.33
- Only 2 orders were above average:
  - Clara: £1,500
  - Ella: £1,600

**What This Means:** Sales are "top-heavy" - most revenue comes from just a couple of big orders.

**Business Insight:** The business needs more mid-to-high value customers to reduce dependence on just a few big spenders.

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#### 4 Which City Performs Best?

##### My SQL Query:

```
sql
SELECT city, SUM(price*quantity) AS total_revenue
FROM orders
GROUP BY city
ORDER BY total_revenue DESC;
```

#### What I Found:

1. London = £2,500
2. Leeds = £2,000
3. Bristol = £800

**What This Means:** London is the strongest market, generating more than 3 times Bristol's revenue.

**Business Insight:** London should be treated as a priority market, while Bristol might need targeted marketing to boost performance.

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#### 5 Who Are the VIP Customers? (Above Average Spenders)

##### My SQL Query:

sql

```
SELECT customername, SUM(price*quantity) AS customer_revenue
FROM orders
GROUP BY customername
HAVING SUM(price*quantity) > (
    SELECT AVG(customer_revenue)
    FROM (
        SELECT SUM(price*quantity) AS customer_revenue
        FROM orders
        GROUP BY customername
    ) AS sub
);
```

#### What I Found:

- Average customer revenue ≈ £883
- VIP Customers:
  - Clara (£1,500)
  - Ella (£1,600)

What This Means: Only 2 out of 7 customers spend above the average.

Business Insight: Focus on nurturing these VIPs while finding ways to increase spending from other customers.

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## 6 What's the Most Popular Product Category by Quantity?

#### My SQL Query:

sql

```
SELECT productcategory, SUM(quantity) AS total_quantity
FROM orders
GROUP BY productcategory
ORDER BY total_quantity DESC;
```

#### What I Found:

- Electronics = 16 units

- Clothing = 10 units
- Furniture = 6 units

**What This Means:** Electronics isn't just the top earner - it's also the most frequently purchased category.

**Business Insight:** High demand + high revenue = Electronics is the clear winner. Keep it well-stocked!

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## Summary of Key Findings

### Product Performance

- **Electronics dominates** in both revenue (£2,900) and units sold (16)
- Furniture comes second but has potential for growth
- Clothing significantly underperforms

### Customer Insights

- **Ella and Clara are VIP customers** - they represent 58% of total revenue
- Only 2 customers spend above average
- Need to diversify the customer base to reduce risk

### Location Performance

- **London is the strongest market** (£2,500)
- Leeds performs well (£2,000)
- Bristol needs attention (£800)

### Business Risk

- Sales are too dependent on just 2-3 customers
  - Only 2 orders were above average value
  - Need strategies to increase order values and customer base
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## My Recommendations

### 1. Protect VIP Relationships

- Create loyalty programs for Ella and Clara
- Offer exclusive previews or discounts
- Ensure excellent customer service

## **2. Focus on Electronics**

- Maintain strong inventory levels
- Feature Electronics prominently in marketing
- Consider expanding the Electronics product range

## **3. Boost Other Categories**

- Run promotions on Furniture and Clothing
- Create bundle deals (e.g., Electronics + Furniture)
- Investigate why Clothing is underperforming

## **4. Grow the Customer Base**

- Attract more mid-value customers (£800-£1,500 range)
- Target marketing campaigns in Bristol
- Reduce dependence on just 2-3 high spenders

## **5. Geographic Strategy**

- Double down on London marketing
  - Investigate why Bristol underperforms
  - Consider location-specific product offerings
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## **What I Learned from This Project**

### **SQL Skills I Practiced:**

- **Basic queries:** SELECT, FROM, WHERE
- **Aggregations:** SUM(), AVG(), COUNT()
- **Grouping data:** GROUP BY
- **Filtering groups:** HAVING
- **Subqueries:** Queries inside queries
- **Sorting:** ORDER BY with DESC/ASC
- **Limiting results:** LIMIT

### **Key Concepts I Understood:**

- How to calculate revenue (price × quantity)
- The difference between WHERE (filters rows) and HAVING (filters groups)

- How subqueries help answer complex questions
- Why grouping data reveals business patterns

### My Biggest Challenge:

The VIP customer query with the nested subquery was tricky! I had to calculate the average of customer totals, which meant:

1. First grouping by customer to get their totals
2. Then finding the average of those totals
3. Then filtering customers above that average

But working through it helped me understand how SQL processes data step by step.

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### What I'd Do Next

If I were continuing this analysis, I would:

1. **Add more data** - Time periods to see trends over months
  2. **Analyze purchase frequency** - How often do customers return?
  3. **Look at profit margins** - Which products are most profitable, not just highest revenue?
  4. **Customer segmentation** - Group customers by behavior patterns
  5. **Create a dashboard** - Visualize these insights for stakeholders
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### Honest Reflection

This project really helped me see how SQL is used in real business scenarios. I'm still practicing and sometimes need to look up syntax, but I now understand:

- **Why** we use GROUP BY (to see patterns in categories)
- **When** to use subqueries (for comparing against averages or totals)
- **How** aggregation functions work (SUM, AVG, COUNT)

The hardest part was thinking through the logic before writing the query - like "What question am I really asking?" Once I understood that, the SQL became easier.

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### Portfolio Note

This is a beginner SQL project demonstrating my ability to:

- Write queries to answer business questions

- Analyze retail sales data
- Extract actionable insights from data
- Communicate findings clearly

I'm actively building my SQL skills and learning how to use data to support business decisions!

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**Tools Used:** SQLite

**Skills Demonstrated:** Data Analysis, SQL Queries, Business Intelligence, Critical Thinking

Thank you xx