Sales & Profitability Performance Analysis (SQL → Power BI)

> An end-to-end data analytics project
>
> **SQL**
>
> **Power BI**
>
> **DAX**

Project Overview

This project demonstrates the full analytics workflow from querying raw retail data in SQL to developing a multi-page interactive Power BI dashboard.

The goal was to uncover **revenue drivers**, **profitability trends**, **discount impacts**, and **customer behavior patterns** to support data-driven retail decisions.

Dataset Description

Table	Description	Key Fields
Sales	Order-level transactional data	OrderID, OrderDate, Sales, Profit, Discount, Quantity, ProductID, CustomerID, RegionID
Products	Product details	ProductID, Category, Sub-Category, ProductName
Customers	Customer demographics & segments	CustomerID, CustomerName, Region, Segment
Dates	Calendar table for time intelligence	Date, Month, Year, Quarter

Business Objectives

1. Measure overall sales, profit, and profitability margin.
2. Identify high-performing and under-performing **regions**, **categories**, and **products**.
3. Evaluate **discount impact** on profit and margin.
4. Analyze **customer segments** and top buyers.
5. Deliver an **executive-ready** Power BI dashboard summarizing key insights.

Tools & Technologies

Purpose	Tool
Data Querying	**SQL (MySQL)**
Data Modeling & Visualization	**Power BI Desktop (.pbix)**
Business Calculations	**DAX**
Documentation	**Excel, Markdown, PDF**

Workflow Summary

1. **Data Exploration in SQL** – Verified completeness, cleaned missing values.
2. **KPI Creation in SQL** – Revenue, Profit, Margin, Orders, AOV, Discount.
3. **Data Validation** – Matched SQL KPIs to Power BI measures
4. **Data Modeling in Power BI** – Star schema with dimension tables.
5. **Visualization & Storytelling** – 4-page dashboard with insights.
6. **PDF & Portfolio Packaging** – Exported as Retail_Sales_Performance_Report.pdf.
7. **Insight Documentation** – Highlighted key findings for presentation.

Power BI Dashboard Overview

Page 1 - Sales & Profitability Overview

- KPIs: Revenue ($2.3 M), Profit ($286 K), Margin (12.5 %), Orders, Avg Order Value
- Daily & Monthly trend lines

- Quick business summary boxes

Page 2 - Regional & Category Performance

- Sales by Region
- Sales by Category
- Regional × Segment performance
- Dynamic insights (Top Region, Category, Segment)

Page 3 — Product Performance

- Top 5 / Bottom 5 Products by Sales & Profit
- Product category share
- Profit by Region mini-chart
- Dynamic insight cards summarizing best & worst performers

Page 4 — Customer & Discount Insights

- Discount impact on profit (waterfall)
- Customer segment contribution
- Top customers table with margin bars

Key Metrics

KPI	Definition	Value (2020–2023)
Total Revenue	SUM(Sales)	**$2.3M**
Total Profit	SUM(Profit)	**$286K**
Profit Margin	SUM(Profit)/SUM(Sales)	**12.5 %**
Total Orders	COUNT(DISTINCT OrderID)	**≈ 5,000**
Average Order Value (AOV)	SUM(Sales)/COUNT(DISTINCT OrderID)	**$458.6**
Average Discount	AVG(Discount)	**15.2 %**

Key Insights

- **West region** leads all with ~31 % of total sales.
- **Technology category** contributes 36 % of revenue and highest profit margin.
- **Discounts > 20 %** sharply reduce profitability.
- **Frequent Buyers** generate ~70 % of overall sales.
- **Top Product:** Canon imageCLASS 2200 ($61.6 K sales, $25.2 K profit).
- **Top Customer:** Emily Phan ($5.5 K profit).
- **Overall Profitability:** Average profit margin = **12.5%**, showing potential for pricing optimization.

Results & Business Impact

The analysis revealed clear **profit concentration zones** and **actionable levers**:

- Focus marketing on **West region** and **Technology category**.
- Limit discounts above 20 % to protect margins.
- Strengthen relationships with **high-value repeat customers**.
- Improve pricing on **low-margin product lines**.

Skills Demonstrated

- SQL Aggregations & Joins
- Data Cleaning & Validation
- Power BI Data Modeling (Star Schema)
- DAX Calculations & Dynamic Insights
- Visual Storytelling & Dashboard Design
- Business KPI Definition
- End-to-End Analytics Documentation

Author

Aijaz Ahmed

Data Analyst | Business Intelligence | SQL | Power BI | Python