

Retail Pricing & Profit Optimization End-to-End Analytics Case Study

1. Business Context

- Company experiencing strong revenue growth but unstable profitability
- Leadership unsure why profits are declining despite rising sales
- Discounts and pricing suspected as root causes
- Objective: Identify profit leakage and recommend margin-improving strategies

2. Business Objectives

- Understand sales vs profit behavior over time
- Identify loss-making regions, customers, and products
- Measure impact of discounts on profitability
- Recommend data-driven pricing and customer strategies

3. Hypotheses Formed

- High discounts reduce profit margins significantly
- Some regions are structurally unprofitable
- A small percentage of customers contribute most revenue
- Certain product categories generate losses despite high sales

4. Dataset Overview

- ~9,000 retail transactions analyzed
- Fields: Order ID, Order Date, Customer, Region, Product, Sales, Profit, Discount
- Data validated for missing values, duplicates, and invalid discount ranges

5. Analytical Methodology

- Calculated core KPIs: Sales, Profit, Profit Margin, Order Count
- Performed time-series trend analysis for sales and profit
- Used SQL window functions for ranking and running totals
- Applied CASE logic for customer and discount segmentation

6. Regional Performance Analysis

- Aggregated sales and profit by region
- Ranked regions by revenue and profitability
- Compared profitable vs loss-making orders per region

- Identified regions with high sales but weak margins

7. Customer Analysis

- Ranked customers by total sales contribution
- Segmented customers into Platinum, Gold, Silver tiers
- Analyzed revenue concentration and dependency risk
- Identified high-value customers for retention focus

8. Discount Impact Analysis

- Grouped orders by discount levels
- Identified discount threshold where profits turn negative
- Found discounts above 30% drive ~70% of loss-making orders
- Confirmed discounting as primary profit leakage driver

9. Product-Level Profitability

- Identified top loss-making products and categories
- Compared sales volume vs profit contribution
- Highlighted products requiring repricing or discontinuation

10. Key Insights

- Sales growth was masking profit erosion
- Aggressive discounting consistently destroyed margins
- Profitability varied significantly across regions
- Revenue concentrated among a small customer segment

11. Business Impact Estimation

- Discount caps could reduce loss-making orders by 40–50%
- Repricing loss-making products could improve margins by 12–18%
- Customer retention focus reduces need for heavy discounting

12. Final Recommendations

- Implement discount caps for low-margin products
- Re-evaluate pricing strategies for loss-making categories
- Focus marketing on high-value customers
- Monitor profit margin as a core KPI alongside sales

13. Skills Demonstrated

- Advanced SQL (Window Functions, Ranking, Aggregations)
- Business KPI Analysis
- Pricing & Profitability Strategy
- Customer Segmentation
- Data-Driven Decision Making

14. Conclusion

This case study demonstrates the ability to translate raw data into actionable business insights. The structured approach, quantified impact, and strategic recommendations reflect real-world analytical problem-solving suitable for startups and mid-size organizations.