



SI564 Final Project

Profit Patterns & Pricing Pitfalls: Strategic Insights from Superstore Data

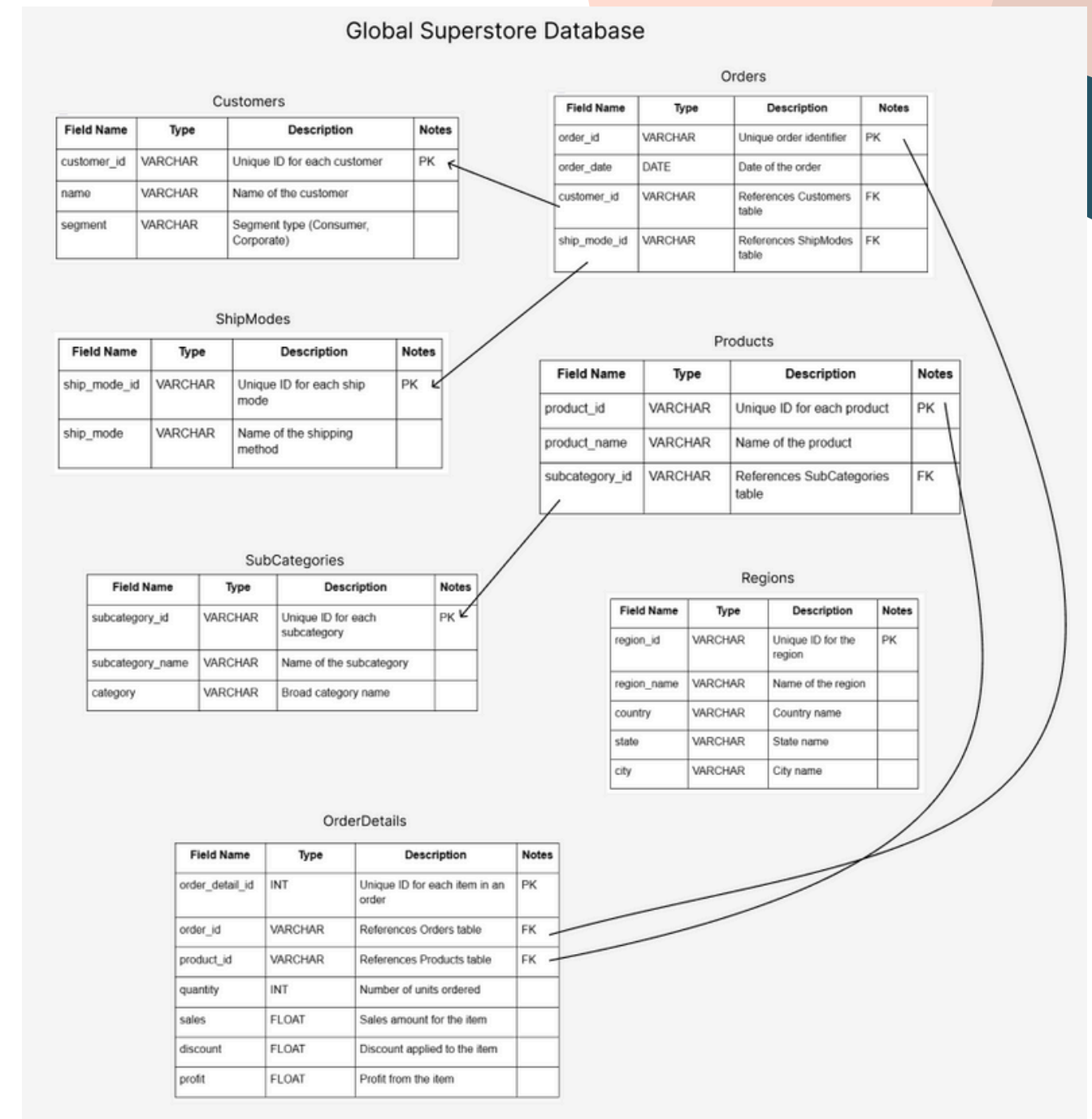
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Project Overview

- Dataset: Global Superstore Sales Data (500+ rows sampled)
- Source: Kaggle public dataset
- Goal: Identify profitable business opportunities using SQL
- Focus Areas: Product performance, pricing impact, customer value
- Approach:
 - Normalized raw data into 7 relational tables
 - Ran SQL queries to uncover key trends and patterns



Insight 1 — Top 5 Profitable Subcategories

📌 Why it matters: Shows what's working — where Borromean can safely invest more resources for a good return on investment.

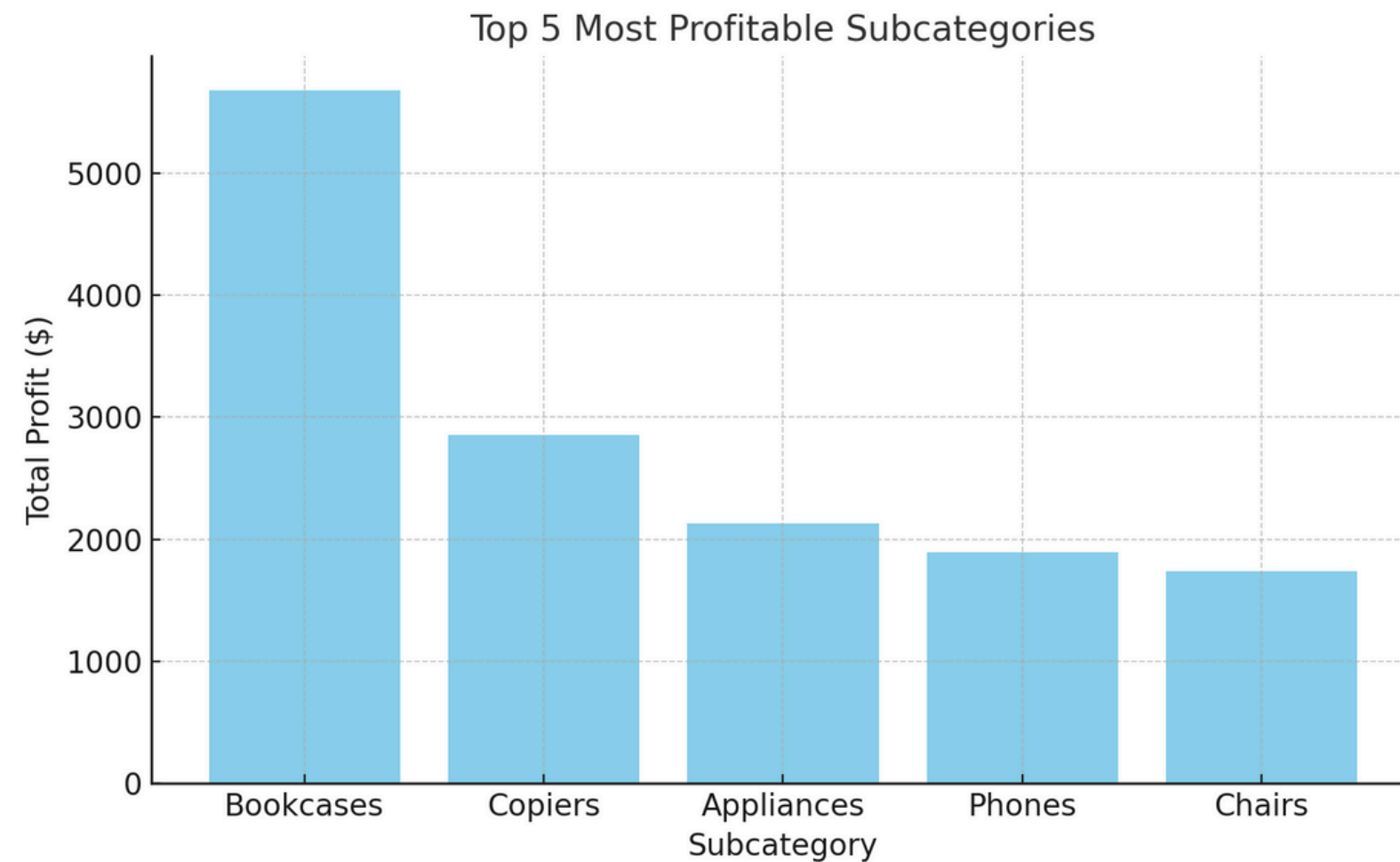
SQL queries and the output:

```
# Top 5 Most Profitable Subcategories
select sc.subcategory_name, sum(od.profit) as total_profit from orderdetails od
join products p 1..n<->1: on od.product_id = p.product_id
join subcategories sc 1..n<->1: on p.subcategory_id = sc.subcategory_id
group by sc.subcategory_name
order by total_profit desc
limit 5;
```

| | 📄 subcategory_name 📄 | ÷ | 📄 total_profit 📄 | ÷ |
|---|----------------------|---|--------------------|---|
| 1 | Bookcases | | 5678.93826007843 | |
| 2 | Copiers | | 2854.502189874649 | |
| 3 | Appliances | | 2131.6789112091064 | |
| 4 | Phones | | 1893.6011743545532 | |
| 5 | Chairs | | 1736.8277933807112 | |

Insight 1 – Result Analysis

| Subcategories | Total Profit |
|---------------|--------------|
| Bookcases | \$5,679 |
| Copiers | \$2,855 |
| Appliances | \$2,132 |
| Phones | \$1,894 |
| Chairs | \$1,737 |



- Bookcases lead by a wide margin — nearly double Copiers
- These 5 subcategories are key profit drivers
- Bookcases likely benefit from high demand and healthy margins
- Copiers & Appliances offer high profit-per-sale
- Phones & Chairs are solid bundling candidates

Insight 1 – Business Recommendation

Focus on Bookcases

Bookcases generated the highest total profit at \$5,679, nearly double the next subcategory. This suggests strong demand and efficient margins, making it a safe area for further investment in marketing, pricing, and stock.

Expand Copiers & Appliances

Copiers and Appliances delivered solid profits (\$2,855 and \$2,132), likely due to high unit prices. These categories are promising mid-tier opportunities if costs are managed effectively.

Grow Phones & Chairs via Promotions

Phones and Chairs showed steady profits and likely have high sales volume. With targeted promotions or bundling strategies, they can be scaled to increase overall revenue.

Insight 2 — Discount Impact on Profit

📌 Why it matters: Reveals where profits are being eroded, helping Borromean avoid unnecessary losses.

SQL queries and the output:

```
# Discount Impact on Profit
select
    round(od.discount, 2) as discount_rate,
    count(*) as num_items,
    round(avg(od.profit), 2) as avg_profit
from orderdetails od
group by discount_rate
order by discount_rate;
```

| | discount_rate ▾ | num_items ▾ | avg_profit ▾ |
|----|-----------------|-------------|--------------|
| 1 | 0 | 274 | 67.54 |
| 2 | 0.07 | 4 | 220.23 |
| 3 | 0.1 | 41 | 87.47 |
| 4 | 0.15 | 6 | 56.41 |
| 5 | 0.17 | 5 | -0.53 |
| 6 | 0.2 | 51 | 21.79 |
| 7 | 0.25 | 2 | 28.38 |
| 8 | 0.27 | 8 | 9.7 |
| 9 | 0.3 | 3 | -118.16 |
| 10 | 0.35 | 3 | -145.17 |
| 11 | 0.37 | 1 | 53.15 |
| 12 | 0.4 | 32 | -42.01 |
| 13 | 0.45 | 1 | -43.01 |
| 14 | 0.47 | 8 | -17.76 |
| 15 | 0.5 | 23 | -63.51 |
| 16 | 0.6 | 23 | -59.23 |
| 17 | 0.7 | 13 | -46.07 |
| 18 | 0.8 | 2 | -17.36 |

Insight 2 – Result Analysis

| Discount Rate | Number of Items | Average Profit |
|---------------|-----------------|--------------------------------------|
| 0.00 | 274 | 67.54 |
| 0.07–0.10 | Low volume | 220.23, 87.47 |
| ≥ 0.15 | Mixed volume | Average. Profit drops significantly |
| 0.30–0.35 | Low volume | Negative profit (-118.16 to -145.17) |
| 0.40–0.80 | Medium volume | Mostly negative avg profit |



- No discount (0%) yields solid average profit of \$67.54 per item — as expected.
- Slight discounts (7–10%) actually increase profit, reaching up to \$220.23, likely due to better conversion rates.
- Once discounts exceed 15%, average profit begins to drop sharply.
- At 30–35%, profit margins collapse — turning into losses between –\$118 and –\$145 per item.
- Even at 40–60% discounts, where some volume is recovered, profit remains negative.

Insight 2 – Business Recommendation

Business Takeaway

- Small discounts (up to 10%) can increase customer appeal while preserving profit margins. The data shows that discounts at 0.07 and 0.10 led to the highest average profits.
- In contrast, discounts above 30% consistently lead to losses, regardless of volume. Frequent deep markdowns appear to erode profitability — likely used to clear stock at a cost.

Recommendation

- Cap discounts at 10% to protect margin while still driving sales.
- Avoid high-discount campaigns unless supported by vendor support or part of an inventory clearance strategy.
- Explore why slight discounts performed best — these may align with seasonal promotions or loyalty-based offers.

CONCLUSION

- Our analysis identified what drives profit and what erodes it.
- Bookcases and Copiers stand out as reliable growth opportunities, supported by strong profit data.
- High discounts (30% and above) consistently lead to negative returns, while small discounts can enhance profit.
- By focusing on high-performing products and optimizing discount strategy, Borromean can drive sustainable growth.
- These data-driven insights provide a clear path to maximize revenue, protect margins, and scale smart.



Thank You!