

Letter 2: Insights and Answers to Strategic Questions

To: Borromean

From: Zhile Wu, Data Analyst

Subject: Strategic Answers – Superstore Dataset Business Insights

Dear Borromean Leadership,

Following the questions presented, I am pleased to share insights derived from analyzing the Superstore dataset. Below are the key findings, organized by the original questions:

1. Which product subcategories are driving the most profit?

```
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

The answer to this question is summarized in this table:

Subcategory	Total Profit (Rounded)
Bookcases	\$5,679
Copiers	\$2,855

Appliances	\$2,132
Phones	\$1,894
Chairs	\$1,737

Interpretation of the results:

- Bookcases lead all subcategories by a wide margin, generating nearly double the profit of the next-highest, Copiers.
- Together, these top 5 categories contributed a significant portion of total profit, suggesting they are key drivers of business performance.
- While Bookcases may be bulky and require more logistics, their high profitability suggests a healthy margin, likely due to strong demand or efficient sourcing.
- Copiers and Appliances often carry higher price tags, which can lead to larger profit-per-sale, even if sales volume is moderate.
- Phones and Chairs, while behind in absolute numbers, may have strong unit sales and steady profit, potentially good candidates for bundling or cross-selling.

Business Recommendation:

- Double down on Bookcases: consider targeted marketing, inventory prioritization, and competitive pricing to maximize this leading product line.
- Explore Copiers and Appliances as mid-tier investment opportunities, especially if operational costs remain low.
- Analyze Phones and Chairs for potential growth — can these categories scale via promotions or regional expansion?

2. How do different discount levels affect profit margins across our product portfolio?

```
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

The answer to this question is summarized in this table:

Discount Rate	Num Items	Avg Profit
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0.00	274	67.54
0.07–0.10	Low volume	220.23, 87.47
≥ 0.15	Mixed volume	Avg. 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

Interpretation of the results:

- No Discount (0.0) leads to solid average profit (\$67.54 per item), which is expected.
- Slight discounts (7–10%) actually yield higher average profit, particularly at 0.07 (\$220.23) and 0.10 (\$87.47). This might reflect higher conversion or customer responsiveness.
- As discounts increase past 15–20%, the average profit starts declining, and by the 30% range, profit becomes consistently negative.
- At 30–35%, profit margins collapse (e.g., -\$118 to -\$145), indicating a loss per item sold.
- Surprisingly, even though 40–60% discounts move a decent number of units (e.g., 32, 23, 23 items), the average profit remains negative (e.g., -\$42, -\$63).

Business Takeaway:

- Small discounts (up to 10%) may increase appeal without hurting profit, likely due to upselling or bundling.
- High discounts (30% and above) are clearly unprofitable, regardless of sales volume.
- Frequent large markdowns might be eroding margin significantly, possibly used to move excess stock at a cost.

Recommendation:

- Cap discounts at 10% to maintain healthy margins.

- Avoid high-discount campaigns unless paired with margin-saving strategies (e.g., vendor subsidies or inventory clearance).
- Investigate what's driving positive results at 0.07 and 0.10 — could these be part of targeted seasonal or loyalty promotions?

3. What are the most frequently purchased individual products, and how can we capitalize on them?

```
select
    p.product_name,
    sum(od.quantity) as total_units_sold
from orderdetails od
join products p 1..n<->1: on od.product_id = p.product_id
group by p.product_name
order by total_units_sold desc
limit 5;
```

	product_name	total_units_sold
1	Hewlett Wireless Fax, Laser	22
2	Fiskars Box Cutter, Serrated	14
3	Hamilton Beach Toaster, White	14
4	Dania Floating Shelf Set, Metal	13
5	Sanford Canvas, Easy-Erase	13

The answer to this question is summarized in this table:

Product Name	Total Units Sold
Hewlett Wireless Fax, Laser	22
Fiskars Box Cutter, Serrated	14
Hamilton Beach Toaster, White	14

Dania Floating Shelf Set, Metal	13
Sanford Canvas, Easy-Erase	13

Interpretation of the results:

- Hewlett Wireless Fax, Laser clearly stands out with 22 units sold, making it the most popular product based on volume, likely due to its utility or pricing.
- The remaining top products all sold 13–14 units, suggesting a relatively balanced demand for small home or office goods.
- Products like Fiskars Box Cutter and Toaster likely fall into the low-cost, high-frequency purchase category.
- Items like Floating Shelf Sets and Whiteboards (Canvas) might reflect demand for home organization and productivity tools, indicating customer lifestyle trends.

Business Recommendation:

- Keep inventory high for top-selling items like the fax machine — consider bundling with related tech.
- Investigate pricing and promotion strategies that worked well for these items, and apply them to similar SKUs.
- Consider featuring these top sellers in "best value" collections to drive even more volume.
- Explore cross-category pairings, e.g., box cutter with storage bins or shelves.

4. What trends exist in monthly profit, and are there seasonal opportunities or losses to address?

```
select
    date_format(o.order_date, '%Y-%m') as month,
    sum(od.profit) as monthly_profit
from orders o
join orderdetails od 1<->1..n: on o.order_id = od.order_id
group by month
order by month;
```

__Monthly_Profit_Trends.csv	
C: > Users > 31201 > Desktop > __Monthly_Profit_Trends.csv	
1	2011-01,-23.4235999584198
2	2011-02,374.6699975132942
3	2011-03,-332.95019483566284
4	2011-04,66.34410285949707
5	2011-05,805.5135226249695
6	2011-06,475.4561896920204
7	2011-07,460.57309383153915
8	2011-08,434.1109936237335
9	2011-09,190.50660133361816
10	2011-10,61.420058250427246
11	2011-11,194.32079696655273
12	2011-12,88.85340094566345
13	2012-01,-52.676000356674194
14	2012-02,14.761800169944763
15	2012-03,328.98299264907837
16	2012-04,-11.737606287002563
17	2012-05,-79.07399654388428
18	2012-06,-2.9326010942459106
19	2012-07,517.0499963760376
20	2012-08,612.327312707901
21	2012-09,595.4600089788437
22	2012-10,316.5512001514435
23	2012-11,455.946799993515
24	2012-12,316.0463974028826
25	2013-01,62.23199653625488
26	2013-02,183.49240016937256
27	2013-03,1366.5260254144669
28	2013-04,-289.24798929691315
29	2013-05,159.72120118141174
30	2013-06,1173.6170591413975
31	2013-07,9.691399574279785
32	2013-08,-371.2088221311569
33	2013-09,527.5053145885468
34	2013-10,804.0188796520233
35	2013-11,1945.6942491531372
36	2013-12,620.0731941075064
37	2014-01,121.90200328826904
38	2014-02,240.8652946949005
39	2014-03,49.33240205049515
40	2014-04,846.235990524292
41	2014-05,-165.64653420448303
42	2014-06,919.6843843460083
43	2014-07,1238.800898551941
44	2014-08,763.6321039199829
45	2014-09,1662.5853226184845
46	2014-10,769.2142847776413
47	2014-11,169.15220794081688
48	2014-12,218.17139780521393

Interpretation of the results:

- March 2011 saw a major loss of -\$332.95, which may signal a promotion misstep, bulk returns, or over-discounting.
- In contrast, May 2011 had a peak profit of over \$805, likely due to a high-demand season or a successful campaign.
- The period from May to August maintained consistently strong profitability, indicating this is a high-performing season for sales.
- January and October–December showed lower, but positive profits, suggesting moderate activity around the year-end.
- This seasonal pattern may reflect school-year planning, office restocking, or fiscal calendar effects.

Business Recommendation:

- Capitalize on May–August with increased marketing and inventory availability.
- Investigate March loss: Was there a pricing, shipping, or refund policy issue?
- Consider launching new product lines or bundles in Q2, when profitability tends to rise.
- Use these trends to guide ad spend, staffing, and logistics by month.

5. Which shipping methods generate the best balance of volume and profitability?

```
select
    sm.ship_mode,
    count(distinct o.order_id) as total_orders,
    round(avg(od.profit), 2) as avg_profit
from orders o
join orderdetails od 1<->1..n: on o.order_id = od.order_id
join shipmodes sm 1..n<->1: on o.ship_mode_id = sm.ship_mode_id
group by sm.ship_mode
order by avg_profit desc;
```

	ship_mode	total_orders	avg_profit
1	Standard Class	285	43.7
2	Second Class	107	33.65
3	First Class	74	26.53
4	Same Day	30	21.67

The answer to this question is summarized in this table:

Shipping Mode	Total Orders	Average Profit (\$)
Standard Class	285	43.70
Second Class	107	33.65
First Class	74	26.53
Same Day	30	21.67

Interpretation of the results:

- Standard Class is both the most used and most profitable shipping mode, making it the operational and financial sweet spot.
- As shipping becomes faster (from Second Class → First Class → Same Day), average profit declines steadily.
- Same-day shipping, despite offering speed, yields the lowest profit per order (\$21.67), possibly due to higher delivery costs not being offset by higher margins.
- The gap between Standard Class and Same Day is over 2x in profit per order.

Business Recommendations:

- Prioritize and promote Standard Class shipping by default — it's both profitable and preferred.
- Consider incentivizing customers to choose Standard or Second Class (e.g., free shipping threshold).
- Review pricing for fast shipping options — either reduce reliance on Same Day or increase fees to maintain margins.
- For expensive products or large orders, same-day shipping could be offered selectively to avoid loss-making behavior.

6. Who are our most valuable customers, and how might we better serve and retain them?

```
select
  c.name as customer_name,
  c.segment,
  round(sum(od.profit), 2) as total_profit
from orderdetails od
join orders o 1..n<->1: on od.order_id = o.order_id
join customers c 1..n<->1: on o.customer_id = c.customer_id
group by c.customer_id
order by total_profit desc
limit 5;
```

	customer_name	segment	total_profit
1	Rob Beeghly	Consumer	1470.21
2	Tiffany House	Corporate	1060.56
3	Doug Bickford	Consumer	959.22
4	Christopher Conant	Consumer	890.46
5	Emily Phan	Consumer	709.94

The answer to this question is summarized in this table:

Customer Name	Segment	Total Profit (\$)
Rob Beeghly	Consumer	1470.21
Tiffany House	Corporate	1060.56
Doug Bickford	Consumer	959.22
Christopher Conant	Consumer	890.46

Emily Phan	Consumer	709.94
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Interpretation of the results:

- Rob Beeghly, a Consumer segment customer, is the top profit contributor across the dataset, possibly due to repeat purchases or high-ticket items.
- Interestingly, 4 out of 5 top customers are from the Consumer segment, suggesting it's a strong individual-driven market.
- Tiffany House represents the Corporate segment, indicating there is also high potential for B2B or bulk purchasing clients.

Business Recommendations:

- Identify what drives Rob Beeghly's behavior: product preference? discounts? shipping? Use this pattern to find and nurture similar high-value customers.
- Personalize offers and loyalty programs for top customers — early access, exclusive bundles, etc.
- Don't overlook Corporate clients — while fewer in number, they can be highly profitable. Consider targeting them with account-based marketing.

These insights will support strategic planning across departments, enabling you to make more informed choices on product focus, pricing strategy, logistics efficiency, and customer targeting.

Looking forward to discussing how we can activate these findings.

Sincerely,
Zhile Wu
DBA Team