Retail Store Data Analysis Report

10/09/2024
Excel for Data Analysis

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INTRODUCTION

The project undertakes a comprehensive data analysis of a sample super store to understand its operational intricacies. By examining key metrics and trends, the study aims to derive actionable insights for business optimization. Using a blend of statistical tools and data visualization techniques, we will evaluate the store's sales, profitability, and customer behaviour patterns. The findings from this analysis can offer valuable perspectives for stakeholders, aiding in informed decision-making and strategy formulation for the store's future.

INFORMATION ABOUT DATA SET

Row ID: A unique identifier for each row.
Order ID: The sales order number.
Order/Ship Date: The dates the order was placed and shipped.
Ship Mode: The shipping method
Customer ID/Name: The buyer's unique ID and name.
Segment: Customer type
City/State/Country/Region/Market: Location details of the customer.
Product ID/Name/Category/Sub-Category: Information about the purchased product.
Sales/Quantity/Discount/Profit/Shipping Cost: Transactional details including the sales amount, number of items sold, discounts, profit earned, and shipping fees.
Order Priority: The urgency of the order.
Column1: An additional, unspecified column

DATA PREPRATION

We have three tables Orders, Returns, and People, all connected using common keys like Order ID and Customer ID. I cleaned up the data by ensuring all columns were properly labeled and formatted. I replaced black values with Not Available. I sorted and filtered the data to focus on relevant parts and added new columns for calculations, like shipping duration. Conditional formatting was applied to highlight important trends and outliers, making the data ready for clear and effective analysis. During the data preparation phase, it was identified that some records contain inconsistencies, such as the 'Order Date' being later than the 'Ship Date'. For example, the record with an 'Order Date' of 06-10-2014 and a 'Ship Date' of 14-06-2014 is not possible. Such anomalies should be flagged and corrected to ensure data accuracy

DATA CLEANING

- Converted all columns to their appropriate data types.
- Removed the Row ID column as it was not necessary for analysis.
- Addressed missing mileage values by marking as "**Not Available**".
- Dropped the Pin Code column due to missing or incomplete data.
- Checked for duplicate entries and removed any repeated rows to avoid redundancy.
- Standardized date formats across the entire dataset for consistency.
- Ensured the Discount column values fall within a valid range (0-10) and corrected any invalid entries.

QUICK INSIGHTS (Using Conditional Formatting, Filter, custom filters, sorts.)

- Highlight cells in the Profit column that are less than 0 with a red fill to quickly identify orders with negative profits.
- Highlight cells in the Discount column greater than 0.5 with a yellow fill to spot orders with significant discounts.7
- Apply a color scale to the Sales column to visualize high and low sales values, using gradient colors to indicate performance.
- The top 10 highest sales and profit values were highlighted.
- The lowest 10 sales and profit values were highlighted.
- GBC Ibimaster 500 Manual ProClick Binding System, 3D Systems Cube Printer, 2nd Generation, Magenta, Canon imageCLASS 2200 Advanced Copier, Lexmark MX611dhe Monochrome Laser Printer, Hoover Stove, Red, Samsung Smart Phone, VoIP, Hamilton Beach Stove, Silver, Motorola Smart Phone, Full Size, Fellowes PB500 Electric Punch Plastic Comb Binding Machine with Manual Bind These are our best-selling products, recognized for their exceptional performance and popularity across various categories.
- Adrian Barton, Bill Shonely, and Christopher Conant are among our most valuable customers.
- Cost-to-profit ratio highlighted orders where high shipping costs are negatively impacting profitability. Orders with a high ratio were highlighted in red
- Products highlighted in blue are generating negative profits, indicating losses. These products are a priority for review and corrective action.
- Shipping durations exceeding 7 days were highlighted in yellow using conditional formatting, allowing quick identification of delayed shipments that may impact customer satisfaction and efficiency.
- Australia is the top-performing country with sales of ₹574,597.65.

DETAILED INSIGHTS

- Orders with high quantities over 10 and low profits below 0 were both highlighted in light blue, revealing potential pricing or discount issues. Sorting by profit helps pinpoint where profitability is affected.
- Shipping costs over 45% of sales were highlighted in red, showing where they hurt profits. Adjust shipping methods or rates to improve profitability.

Row Labels	hipping Cost	Sales	Profit
Furniture	36.88%	37.15%	29.60%
Office Supplies	19.08%	19.70%	20.62%
Technology	44.05%	43.16%	49.78%
Grand Total	100.00%	100.00%	100.00%
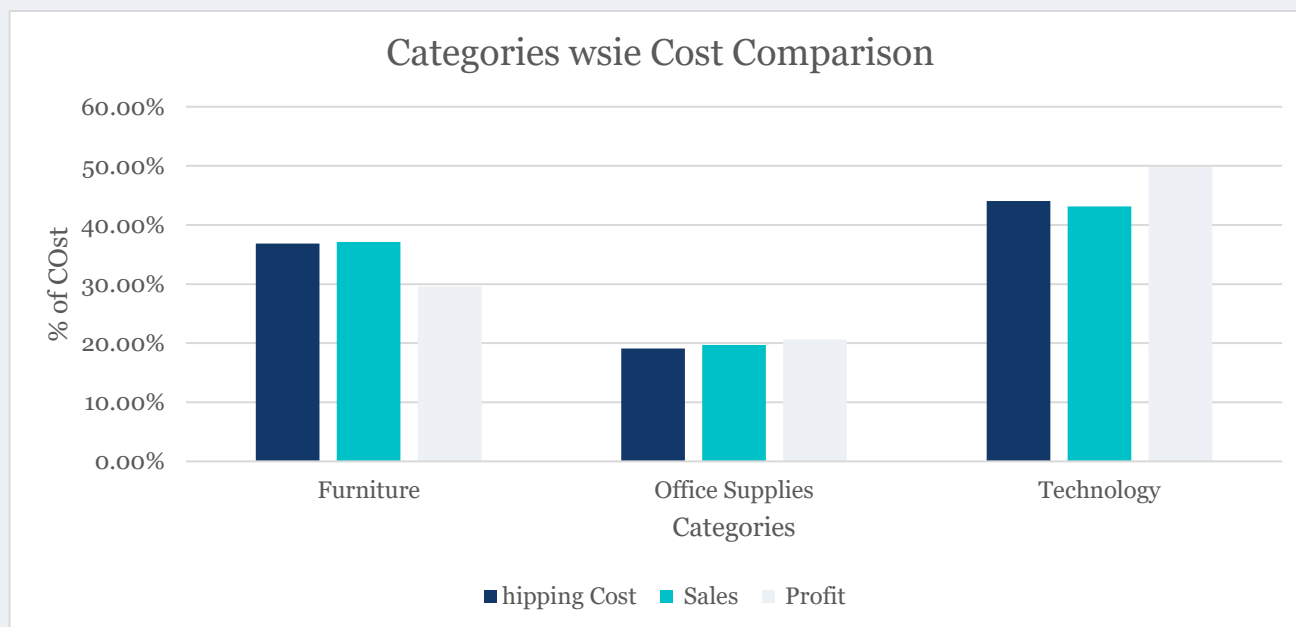
Insight: From here we can say that Technologies products contribute to almost 50% of our business.

The top 5 countries made a large contribution

Row Labels	Sum of Sales
Australia	574597.65
France	502109.99
China	423727.21
India	373743.19
Germany	363494.76
Grand Total	**2237672.8**
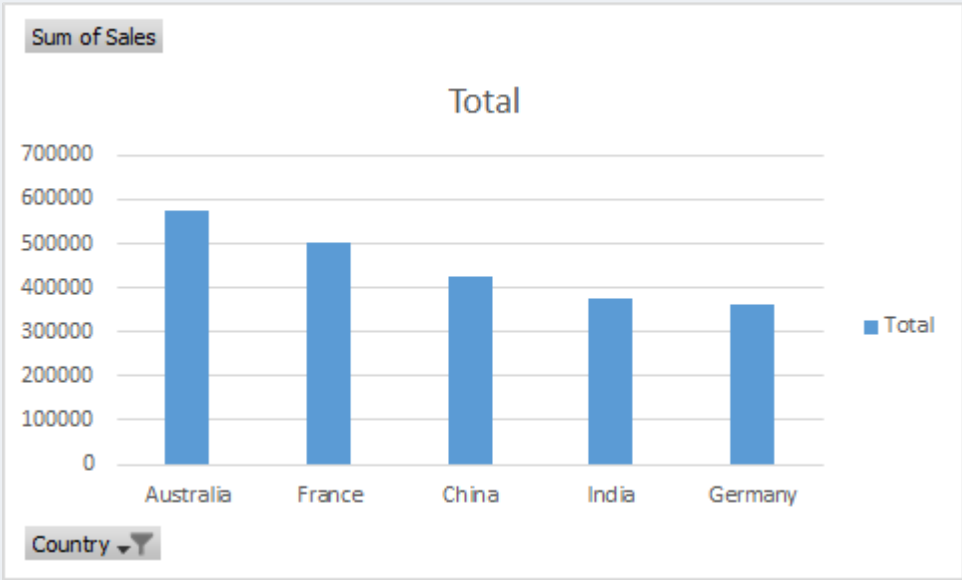
Insight: The top 5 countries made a large contribution to total sales, showing their key role in boosting business performance.

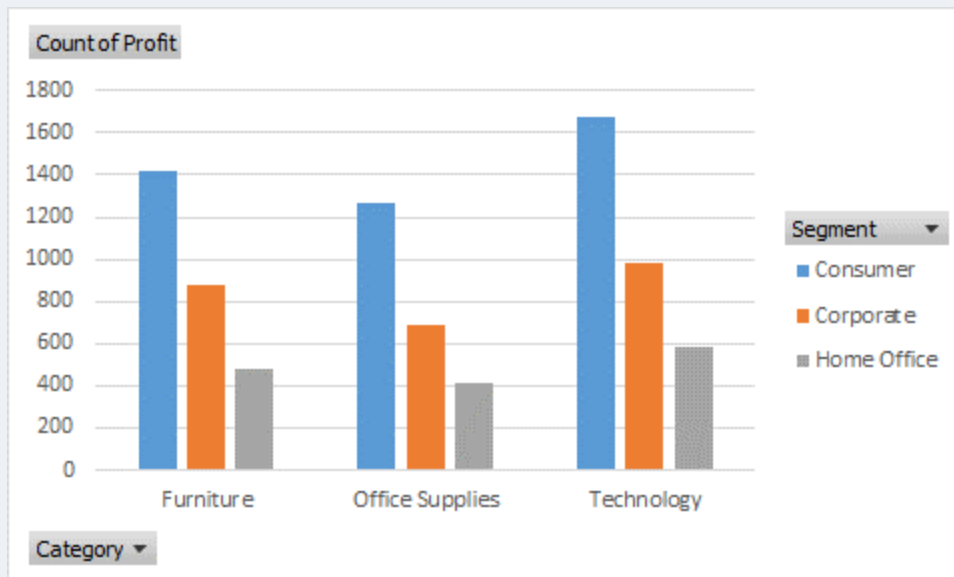# which product categories generate the highest sales

Row Labels	Sum of Sales
Technology	**2666883.46**
Accessories	314125.82
Copiers	990000.26
Machines	385632.01
Phones	977125.37
Furniture	**2279980.76**
Bookcases	961730.54
Chairs	780128.63
Furnishings	86969.93
Tables	451151.66
Office Supplies	**1315453.69**
Appliances	679600.8
Art	48381.92
Binders	68718.68
Envelopes	12722.36
Fasteners	2376.25
Labels	1659.13
Paper	25320.58
Storage	453006.16
Supplies	23667.81
Grand Total	**6262317.91**
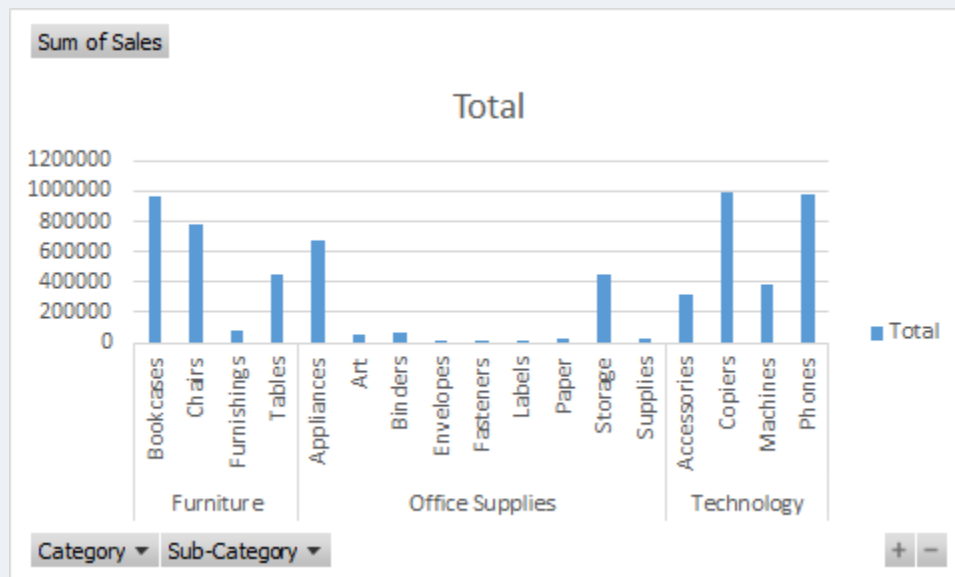
Insight: Identify which product categories (Technology, Furniture) and sub-categories (Phones, Tables, Bookcases) generate the highest sales

# product categories and customer segments generate the most or least profit

Sum of Sales				
	Consumer	Corporate	Home Office	Grand Total
Technology	1377874.73	804384.2	484624.53	2666883.46
Furniture	1189912.84	700327.17	389740.75	2279980.76
Office Supplies	685987.99	383026.31	246439.39	1315453.69
Grand Total	**3253775.56**	**1887737.68**	**1120804.67**	**6262317.91**

Insight: Determine which product categories and customer segments (Corporate, Consumer, Home Office) generate the most or least profit.

Order priorities have higher return rates

Count of Order ID		
	Yes	Grand Total
Critical	1011	1011
High	3021	3021
Low	448	448
Medium	3896	3896
Grand Total	8376	8376

Count of Order ID

Yes
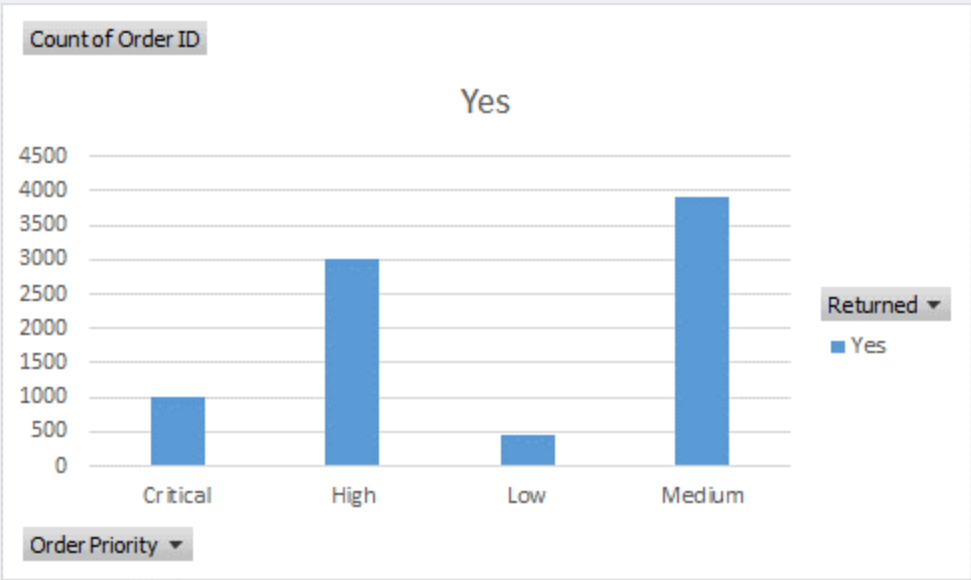
Insight: Discover if certain order priorities (High, Medium, Low) have higher return rates.

Regional Sales Performance by Market

| Count of Order ID	Africa	Asia Pacific	Europe	LATAM	USCA	Grand Total
Western Europe			1242			1242
Central America				948		948
Oceania		732				732
Southeastern Asia		613				613
Southern Asia		569				569
Eastern Asia		550				550
South America				495		495
Northern Europe			444			444
Southern Europe			434			434
Western US					314	314
Eastern US					286	286
Caribbean				268		268
Western Asia		243				243
Eastern Europe			239			239
Central US					223	223
North Africa	157					157
Southern US					157	157
Western Africa	127					127
Central Africa	108					108
Eastern Africa	96					96
Southern Africa	77					77
Canada					40	40
Central Asia		14				14
Grand Total	**565**	**2721**	**2359**	**1711**	**1020**	**8376**
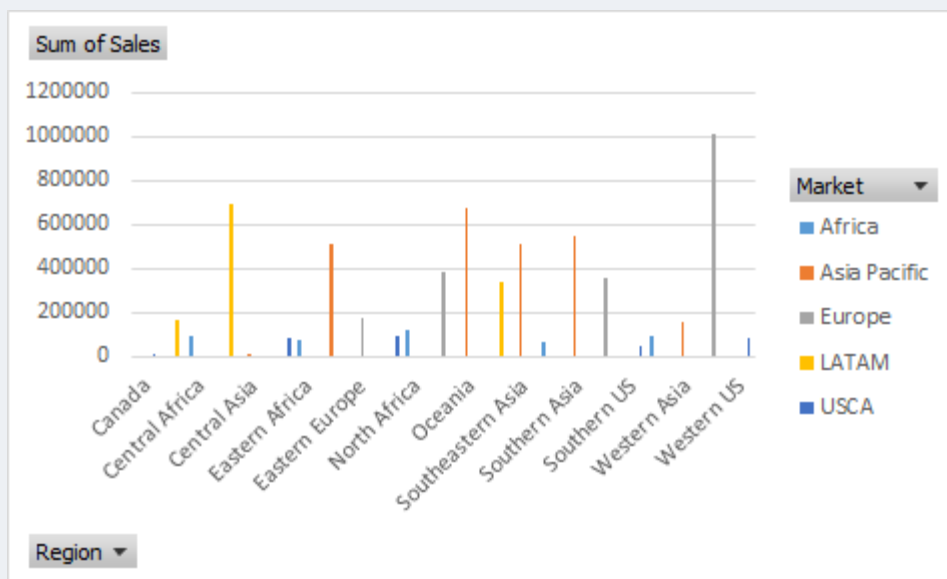
Insight: Analyze sales performance across different regions (Europe, Asia Pacific, LATAM) and markets.

Discount Impact on Sales and Profit

Row Labels	Count of Profit	Sum of Sales
0.0	4543	3524021.68
0.0	235	177635.45
0.1	98	96134.24
0.1	1105	986787.65
0.2	200	180456.82
0.2	163	150590.27
0.2	774	358575.49
0.2	13	8176.44
0.3	66	54806.23
0.3	64	35240.71
0.3	62	66295.58
0.4	65	63163.87
0.4	24	15419.04
0.4	378	225116.54
0.4	34	17451.76
0.5	16	7045.15
0.5	32	25185.55
0.5	208	135405.43
0.6	6	4486.63
0.6	9	7191.39
0.6	151	74755.16
0.6	4	1823.83
0.7	6	4756.68
0.7	103	39526.44
0.8	16	1714.74
0.9	1	555.14
Grand Total	**8376**	**6262317.91**
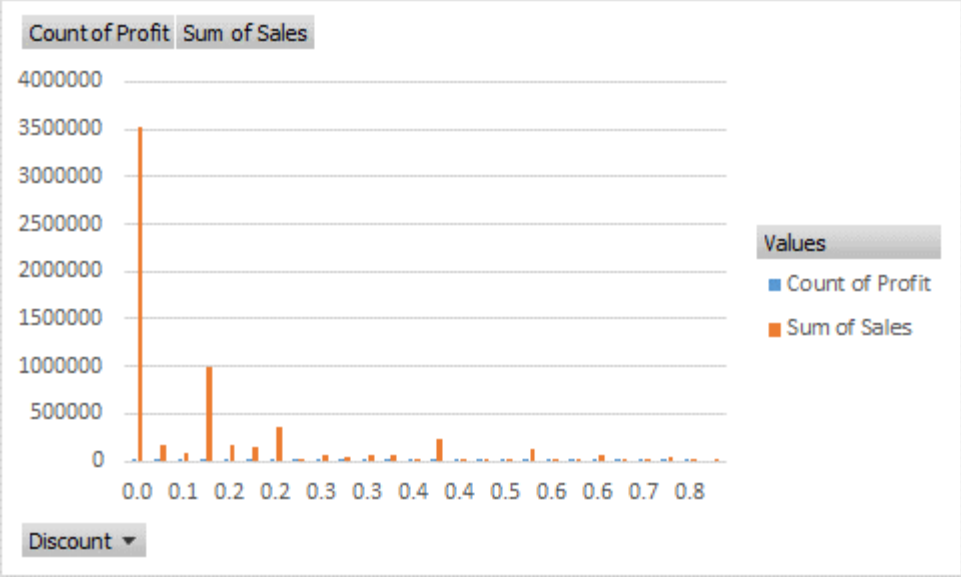
Insight: Analyze how discounts (0.3, 0.5, 0.6, etc.) affect sales and profit.

Returned Products Impact on Overall Sales

Sum of Sales				
	Furniture	**Office Supplies**	**Technology**	**Grand Total**
Yes	2279980.76	1315453.69	2666883.46	6262317.91
Grand Total	**2279980.76**	**1315453.69**	**2666883.46**	**6262317.91**
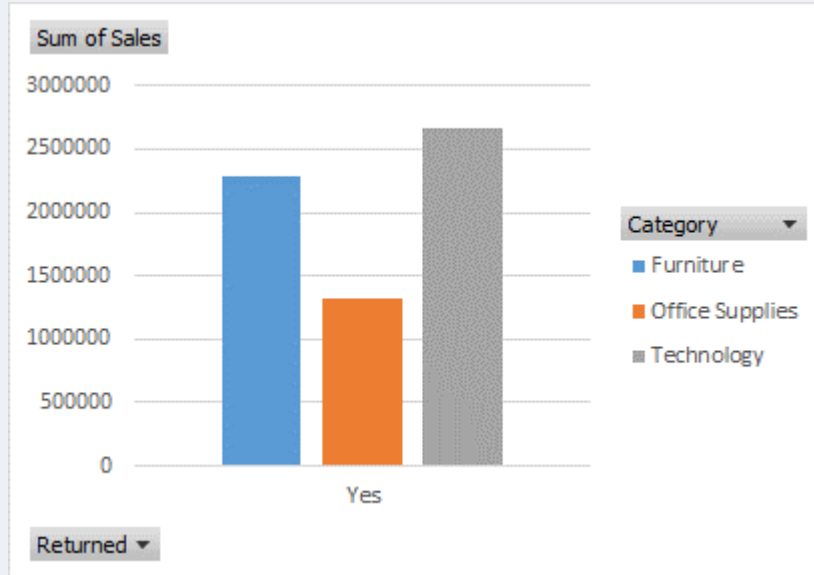
Insight: See how many orders were returned and which products or categories are being returned the most.

Profitability by Ship Mode

Row Labels	Sum of Profit
Standard Class	58.03%
Second Class	19.20%
First Class	16.71%
Same Day	6.06%
Grand Total	**100.00%**
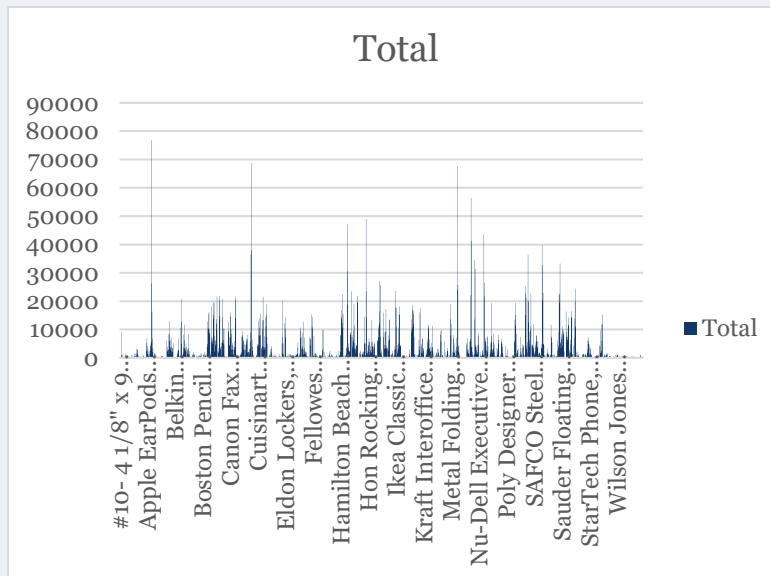
Insight: Analyze which shipping modes (Standard Class, First Class, Second Class) are most profitable.

High Discount vs. Low Discount Sales and Profit

Row Labels	Sum of Sales	Sum of Profit
0.0	3524021.68	924272.11
0.0	177635.45	41776.13
0.1	96134.24	17293.1
0.1	986787.65	185562.07
0.2	180456.82	23060.15
0.2	150590.27	20914.78
0.2	358575.49	36410.07
0.2	8176.44	-424.1
0.3	54806.23	1474.04
0.3	35240.71	46.3
0.3	66295.58	-5335.05
0.4	63163.87	-6523.91
0.4	15419.04	-1866
0.4	225116.54	-48291.73
0.4	17451.76	-6277.1
0.5	7045.15	-2511.73
0.5	25185.55	-7561.92
0.5	135405.43	-46999.86
0.6	4486.63	-2147.73
0.6	7191.39	-3226.07
0.6	74755.16	-43160.04
0.6	1823.83	-2143.45
0.7	4756.68	-2730.65
0.7	39526.44	-31850.49
0.8	1714.74	-969.52
0.9	555.14	0
Grand Total	**6262317.91**	**1038789.4**

Total
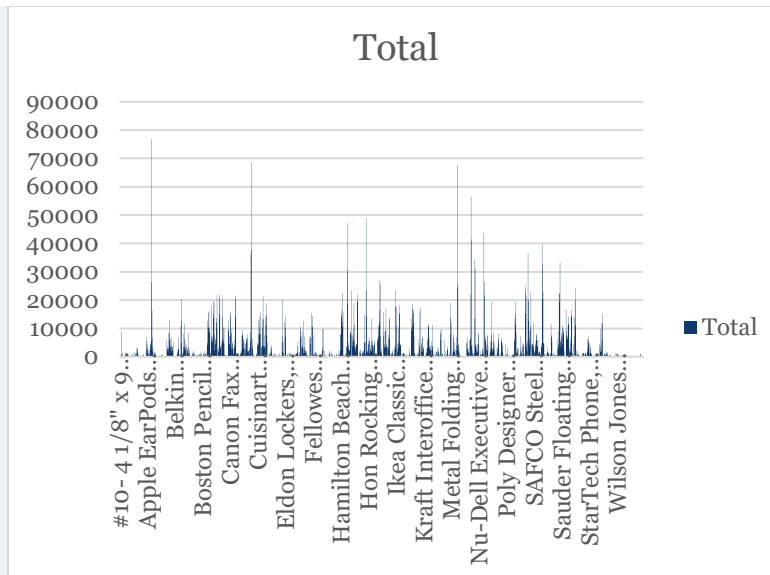
Insight: Determine how higher discount rates affect sales and profit.

Top 10 Best Sales and Profit by Product

Row Labels	Sum of Sales	Count of Profit
Apple Smart Phone, Full Size	76814.06	42
Cisco Smart Phone, Full Size	68615.82	34
Cisco Smart Phone, with Caller ID	38002.63	22
Harbour Creations Executive Leather Armchair, Adjustable	47173.15	35
Hon Executive Leather Armchair, Adjustable	48969.94	37
Motorola Smart Phone, Full Size	67642.01	32
Nokia Smart Phone, Full Size	56460.42	37
Nokia Smart Phone, with Caller ID	41335.37	20
Office Star Executive Leather Armchair, Adjustable	43700.5	36
Samsung Smart Phone, Cordless	39792.66	22
Grand Total	**528506.56**	**317**
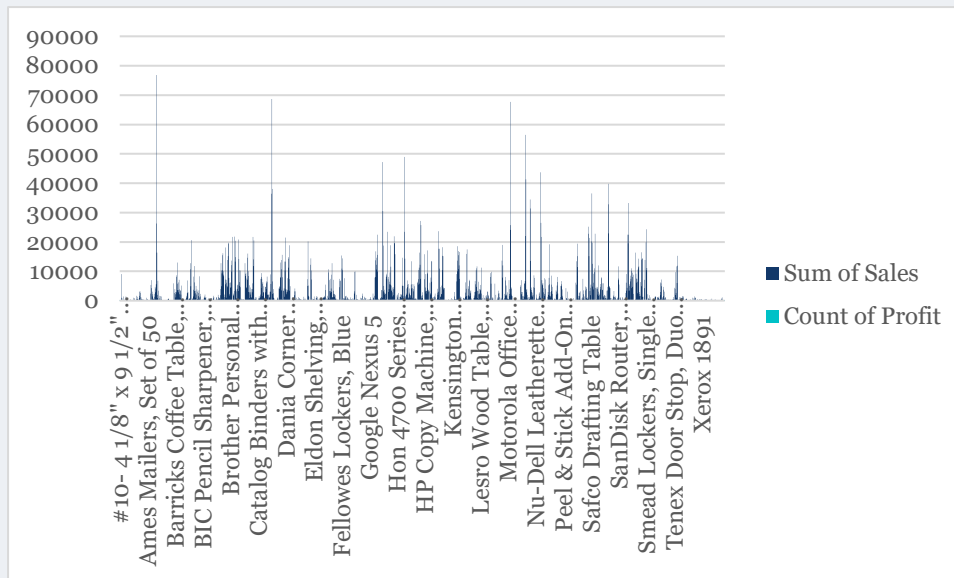
Insight: Identify the best performing products in terms of sales and profitability.

Top 10 Worst Sales and Profit by Product

Row Labels	Sum of Sales	Sum of Profit
OFF-AP-3558	2.6	0.29
OFF-AR-3485	3.44	0.56
OFF-AR-5458	3.01	0.34
OFF-BI-4353	3.44	-2.53
OFF-BI-4884	2.86	-2.29
OFF-BI-5670	2.91	-2.03
OFF-BI-6391	1.8	-2.88
OFF-BI-6634	1.25	-1.93
OFF-FA-6192	3.49	0.57
OFF-SU-4977	3.33	0.42
Grand Total	**28.13**	**-9.48**

Insight: Identify the Worst performing products in terms of sales and profitability.

Average Shipping Duration by Region

Row Labels	Average of Shipping Duration
Canada	-3.225
Caribbean	6.518656716
Central Africa	0.481481481
Central America	7.255274262
Central Asia	-7.357142857
Central US	22.8161435
Eastern Africa	5.552083333
Eastern Asia	3.892727273
Eastern Europe	4.313807531
Eastern US	8.762237762
North Africa	0.898089172
Northern Europe	0.653153153
Oceania	10.17076503
South America	-1.458585859
Southeastern Asia	2.518760196
Southern Africa	7.220779221
Southern Asia	4.854130053
Southern Europe	0.216589862
Southern US	6.197452229
Western Africa	5.748031496
Western Asia	9.345679012
Western Europe	5.584541063
Western US	9.060509554
Grand Total	**5.445200573**

Total
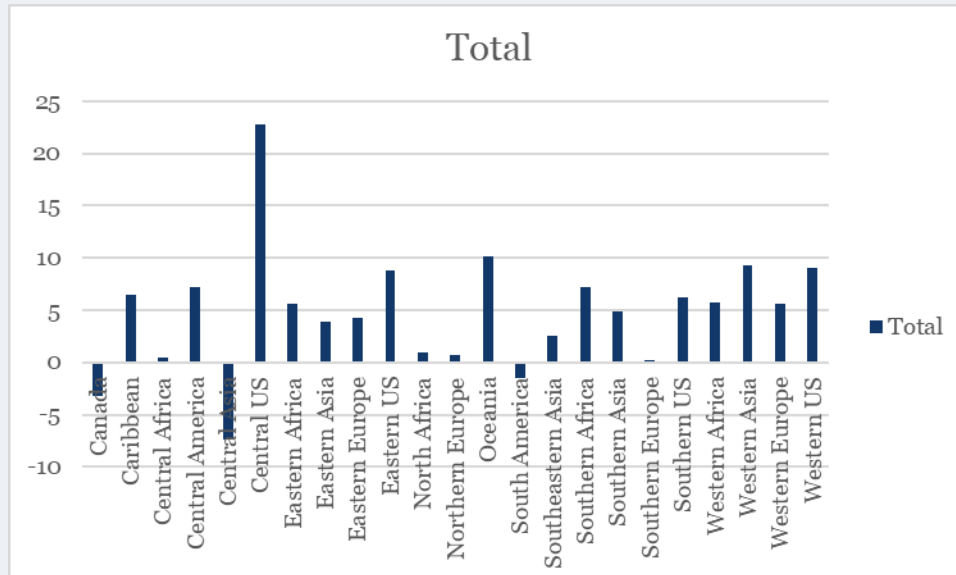
Insight: See how long it takes to ship products in different regions.

ACTION STEPS

- As business is heavily relied on technology product it is recommended to look for diversification opportunities to have minimum impact of recession on business.

- Analyze the costs of products with high sales but no profit to find ways to cut expenses without reducing quality.

- Adjust prices or create bundles for products that are consistently unprofitable to increase their profit margins.

- Review products with very low sales that lose money and consider discontinuing them.

- Focus marketing efforts on products with good sales and profit to boost their visibility and grow sales.

- Manage inventory by adjusting stock based on past sales and better forecasting demand.

- Negotiate better deals with suppliers or find cheaper alternatives for products that are losing money.

- Improve upselling and cross-selling for low-margin products by offering premium services or related products.

- Regularly audit all product lines to spot trends and quickly fix underperforming items.

- Use dynamic pricing to maximize profit on high-volume orders while staying competitive.

- Reevaluate discount and promotion strategies, especially where aggressive pricing is hurting profit.

- Expand and market products in the Technology and Furniture categories, as they perform well across different regions.

- Invest in logistics improvements in successful regions like Asia Pacific and Europe to reduce costs and speed up delivery.

- Create regional strategies, especially in growing markets like Latin America and Africa, to attract new customers.

- Use data analytics to understand customer preferences in different regions and tailor products and marketing.

- Set up a feedback system for high-priority orders to measure satisfaction and find areas for improvement.

- Investigate unusual shipping problems in Canada, Central Asia, and South America to fix data or logistical issues.

- Focus on improving shipping times in slow regions like Central US, Oceania, and Western Asia.

- Study shipping practices in Southern and Northern Europe and apply their successful methods in other regions.

- Improve logistics in North America to balance shipping times between Eastern US, Western US, and Canada.

- Upgrade shipping infrastructure in Africa to reduce delivery time differences between regions.

- Simplify shipping processes in Asia, particularly in Western and Central Asia, by adopting successful practices from Southeastern Asia.

- Fix inconsistencies in European shipping by standardizing practices across the continent.

- Develop strategies to reduce shipping times in the Caribbean and Central America.

- Review global shipping partnerships and routes to reduce the average shipping duration.

- Invest in local warehouses or partners in regions with slow shipping to speed up deliveries and cut costs.

- Use advanced tracking systems to monitor shipments in real-time and prevent delays.

- Regularly analyze shipping data to spot trends and adjust resources and strategies as needed.

- Explore new transportation methods or routes in regions with difficult geography or infrastructure.

- Set specific shipping goals for each region and measure performance to continuously improve.

- Encourage a mindset of continuous improvement and innovation in all areas of the business, from products to logistics.