

# SALES AND PROFITABILITY ANALYSIS

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## Report on Findings

Superstore X

## **Contents**

Introduction	3
Sales and Profitability	3
Analysis and Impact of Returned Orders	10
Conclusion	15

# Introduction

This report aims to provide the findings of the analysis of the Superstore X's data.

## Sales and Profitability Analysis

Main figures:

Total Sales	Total Profit	Profit / Sales
\$2,297,200	\$286,397	12%

Figure 1: Total Sales and Profit

- Based on the data, the profit/sales ratio stands at 12%.
- Further analysis of the sales figures reveals that 10 states that contribute to the sales the most are not necessarily the most profitable ones, as seen below:

States	Total Sales	Total Profit
California	457687	76381
New York	310876	74038
Texas	170188	-25729
Washington	138641	33402
Pennsylvania	116511	-15559
Florida	89473	-3399
Illinois	80166	-12607
Ohio	78258	-16971
Michigan	76269	24463
Virginia	70636	18597

Figure 2: Top 10 States for Total Sales

Figure 3: Top 10 States for Total Profits

States	Total Sales	Total Profit
California	457687	76381
New York	310876	74038
Washington	138641	33402
Michigan	76269	24463
Virginia	70636	18597
Indiana	53555	18382
Georgia	49095	16250
Kentucky	36591	11199
Minnesota	29863	10823
Delaware	27451	9977

- Bottom 10 States based on their total sales figures are found to be profitable, although at low levels:

States	Total Sales	Total Profit
North Dakota	919	230
West Virginia	1209	185
Maine	1270	454
South Dakota	1315	394
Wyoming	1603	100
District of Columbia	2865	1059
Kansas	2914	836
Idaho	4382	826
Iowa	4579	1183
New Mexico	4783	1157

Figure 4: Bottom 10 States for total sales

### Profitability (Gross Profit Margin)

States	Total Sales	Total Profit	Profitability
Ohio	78258	-16971	-0.22
Colorado	32108	-6527	-0.20
Tennessee	30661	-5341	-0.17
Illinois	80166	-12607	-0.16
Texas	170188	-25729	-0.15
North Carolina	55603	-7490	-0.13
Pennsylvania	116511	-15559	-0.13
Arizona	35282	-3427	-0.10
Oregon	17431	-1190	-0.07
Florida	89473	-3399	-0.04

Figure 5: Bottom 10 States for profitability

Figure 6: Top 10 States for profitability

States	Total Sales	Total Profit	Profitability
District of Columbia	2865	1059.589	0.37
Delaware	27451	9977	0.36
Minnesota	29863	10823	0.36
Maine	1270	454	0.36
Arkansas	11678	4008	0.34
Indiana	53555	18382	0.34
Georgia	49095	16250	0.33
Montana	5589	1833	0.33
Rhode Island	22627	7285	0.32
Michigan	76269	24463	0.32

- The above two charts reveal that high total sales figures do not necessarily attract high profits.
- To illustrate, Michigan has a GPM ratio over 32%, whilst Ohio, with a similar sales figure, incur more than 21% loss.

## PRODUCT CATEGORY PROFITABILITY ANALYSIS

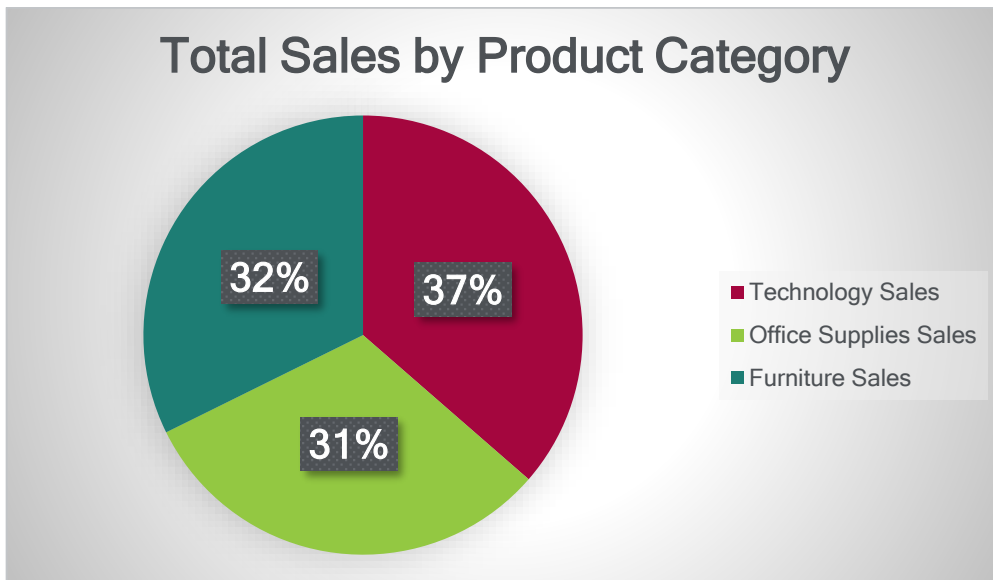


Figure 7: Total Sales by Product Category

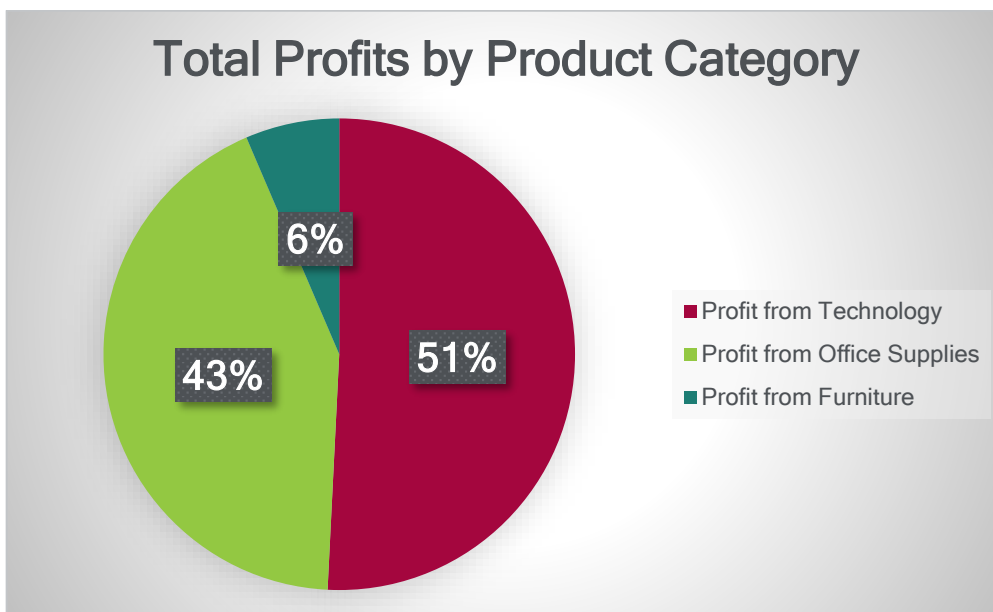


Figure 8: Total Profits by Product Category

- Sales of technology products return more than half of all profit.
- Furniture sales is barely profitable.

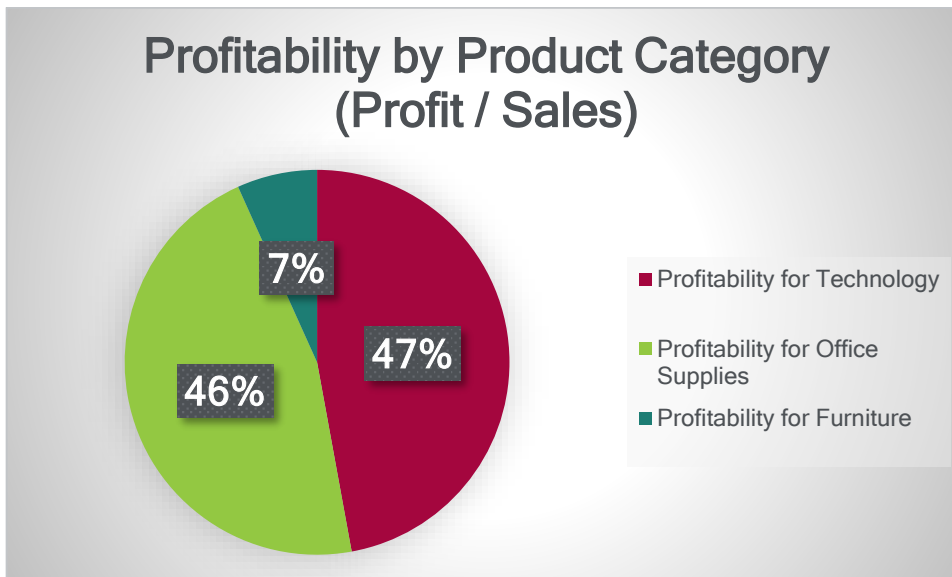


Figure 9: Profitability by Product Category

- Whilst the sales figures are nearly the same for Office Supplies and Furniture, GPM ratio for Office Supplies is at a high of 46% as opposed to Furniture, where this ratio is only 7%.

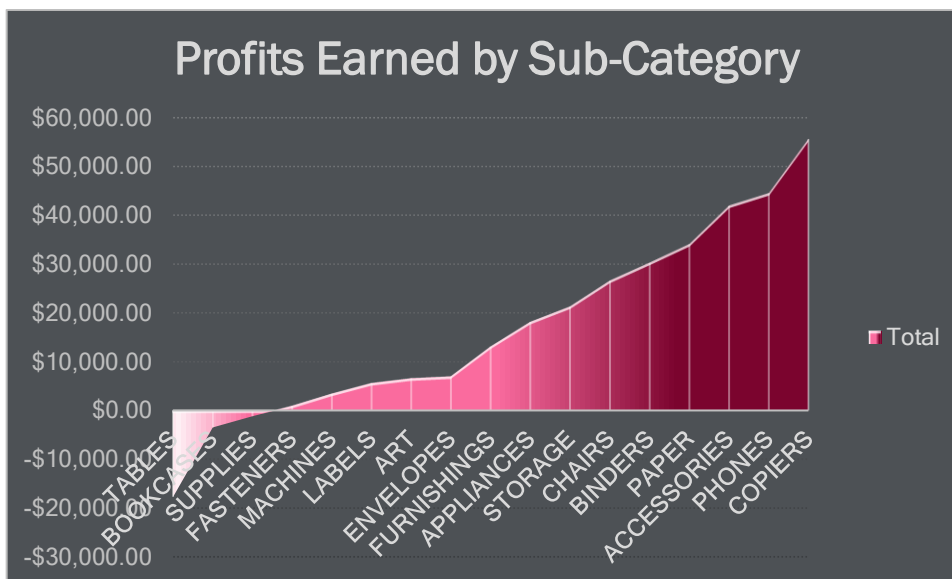


Figure 10: Profits Earned by Sub-Category

- Phones and copiers from technology category are the most profitable products, whilst tables and bookcases sub-categories from furniture are not profitable.

### Correlation Analysis for 10 States with Lowest Profitability Ratio:

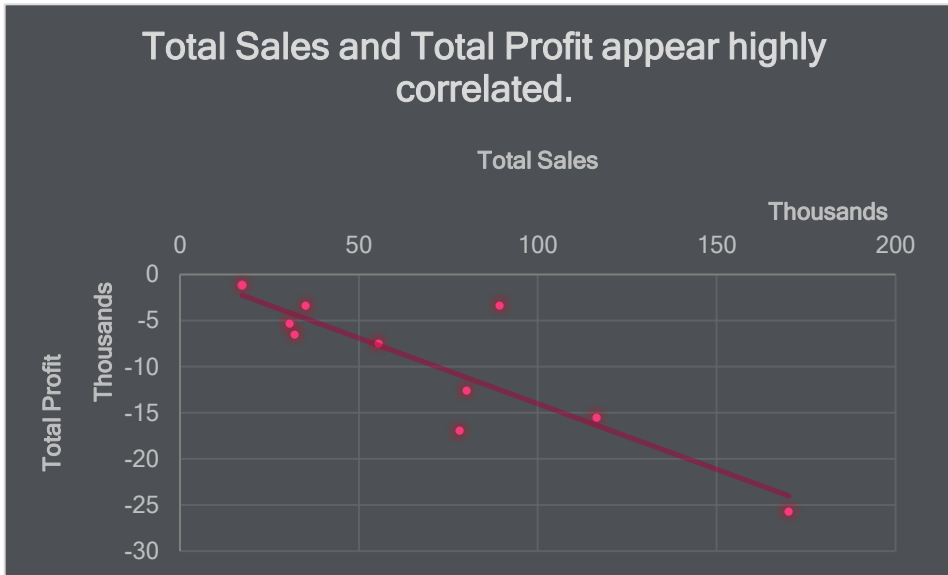


Figure 11: Top 10 States for profitability

- The above analysis further highlights the need to analyse the states with lowest profitability.
- The reason is that the negative correlation between sales and profit reveals that although some of the low-performing states have higher sales figures than others, they are incurring loss at similar or even higher levels.
- State-specific analysis can be done in a more detailed way and actions can be taken accordingly to boost the company's 12% GPM ratio.



## Discount / Sales correlation

Correlation coefficient: 0.028

Discounts and the amount paid by customers have no correlation, as seen below:

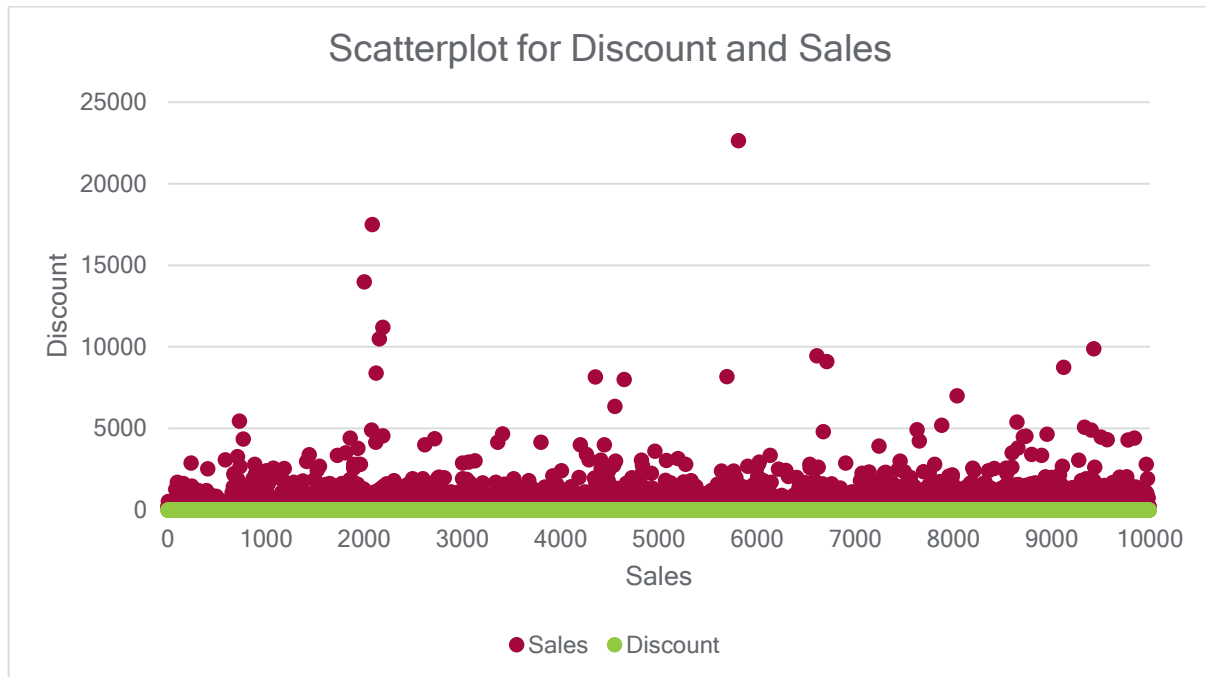


Figure 12: Discount/Sales Scatterplot

This could be interpreted as:

- Higher discounts do not necessarily attract higher sales.
- Higher sales do not necessarily attract higher discounts.

For certain states, where the sales are aimed to be boosted, proportionate discounts can be applied and then in a later analysis, it could be checked whether this correlation increased.

## Profit/Sales Correlation

- Profit and sales have a correlation coefficient of 0.48, which is relatively high as expected.
- Whether this figure satisfies the company's goals can also be investigated and further actions can be taken to increase the dependency between sales and profit, in line with business goals.

## IMPACT OF RETURNED ORDERS

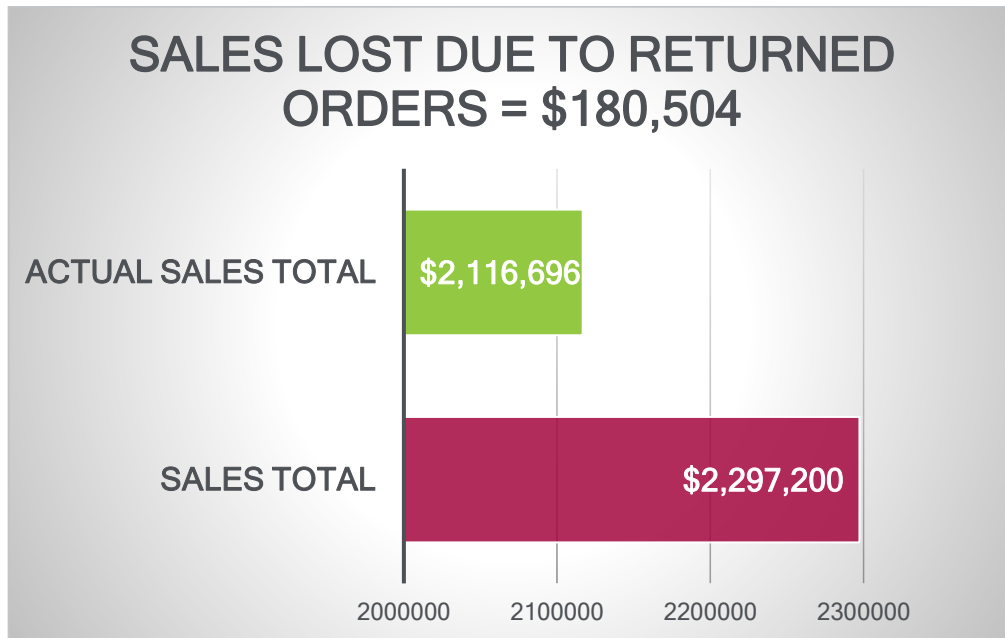


Figure 13: Sales Lost due to Returned Orders

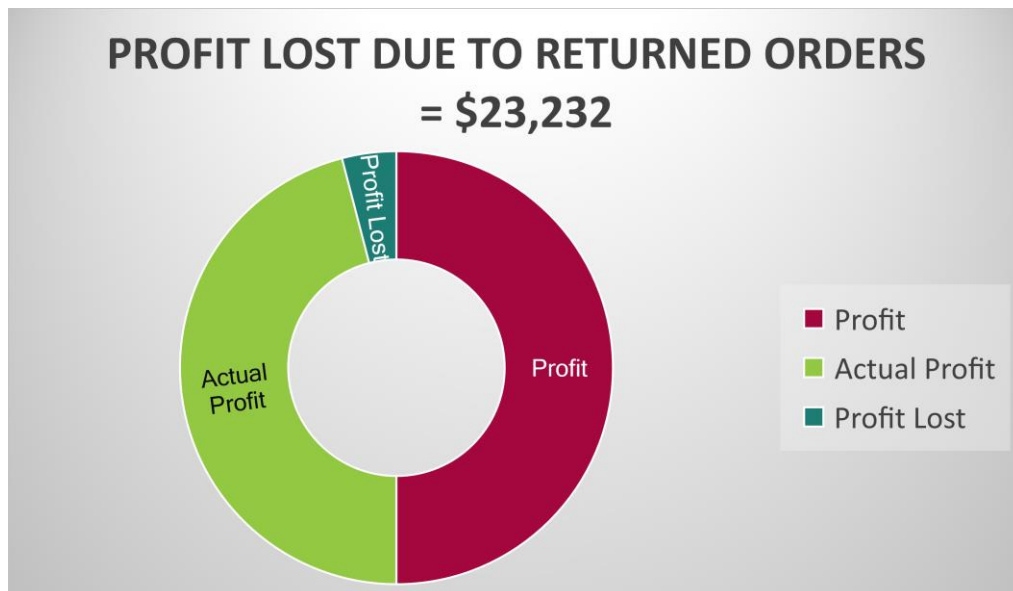


Figure 14: Sales Lost Due to Returned Orders

## PROFIT LOST FROM RETURNS BY CUSTOMER SEGMENT

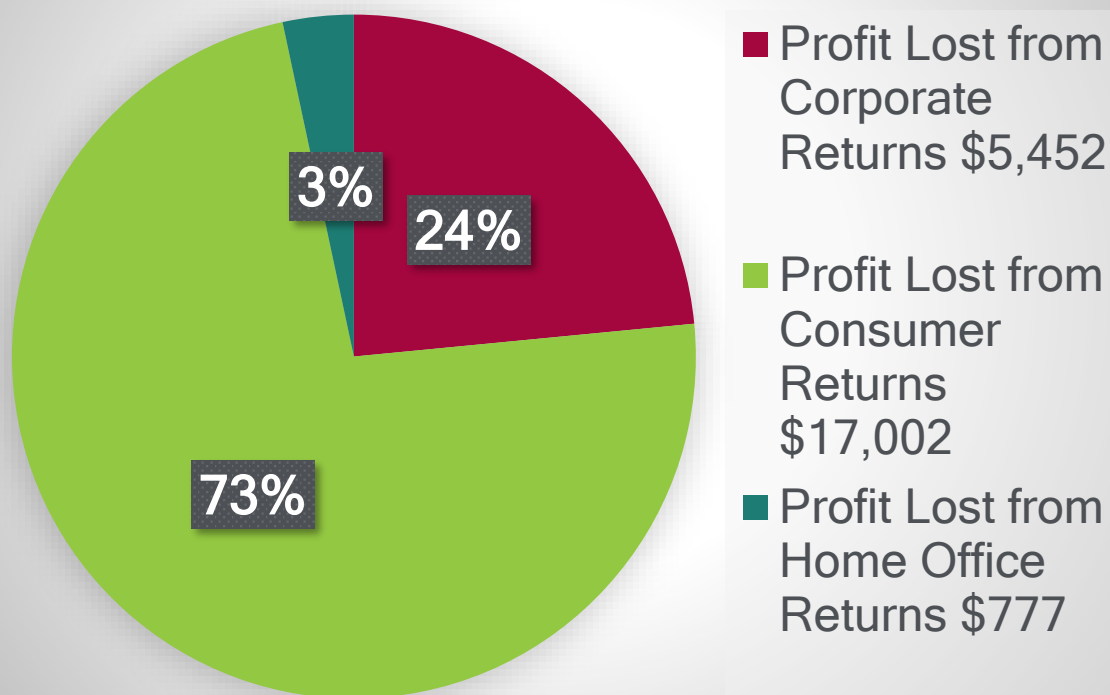


Figure 15: Profit Lost from Returns by Customer Segment

## ACTUAL PROFIT BY CUSTOMER SEGMENT

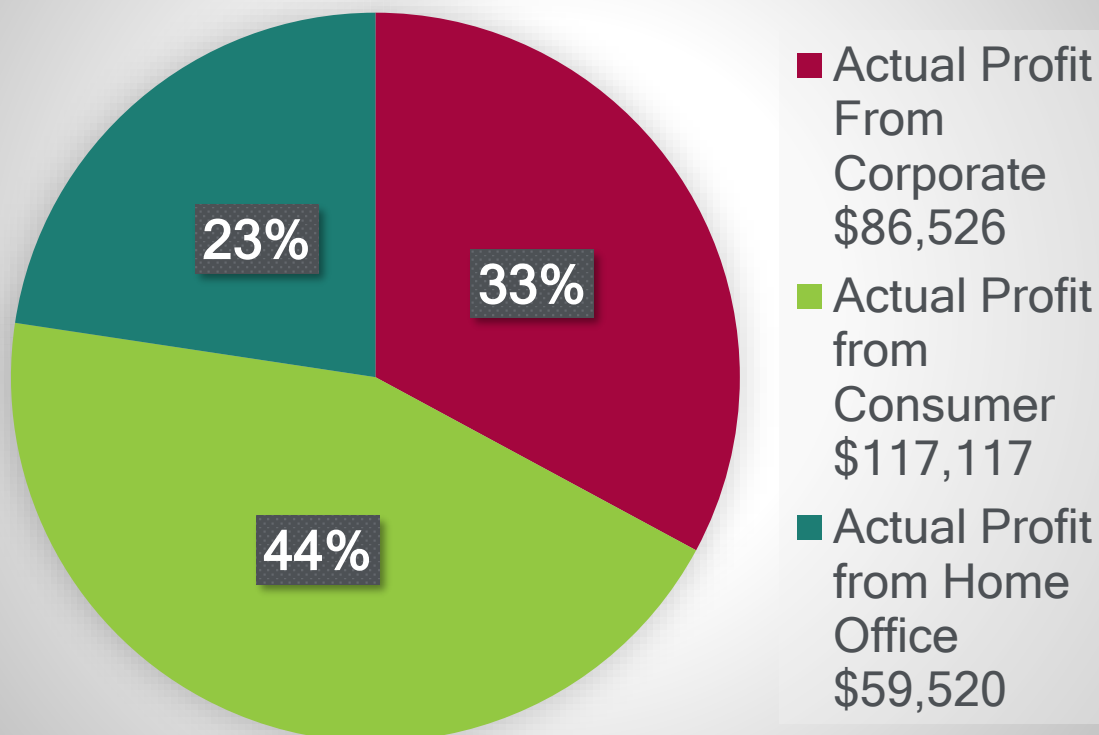


Figure 16: Actual Profit by Customer Segment (taking into account the profit lost due to returns)

- 73% of the lost profit is due to returns from Consumer segment, which, however, also brings in the most profit (44%).

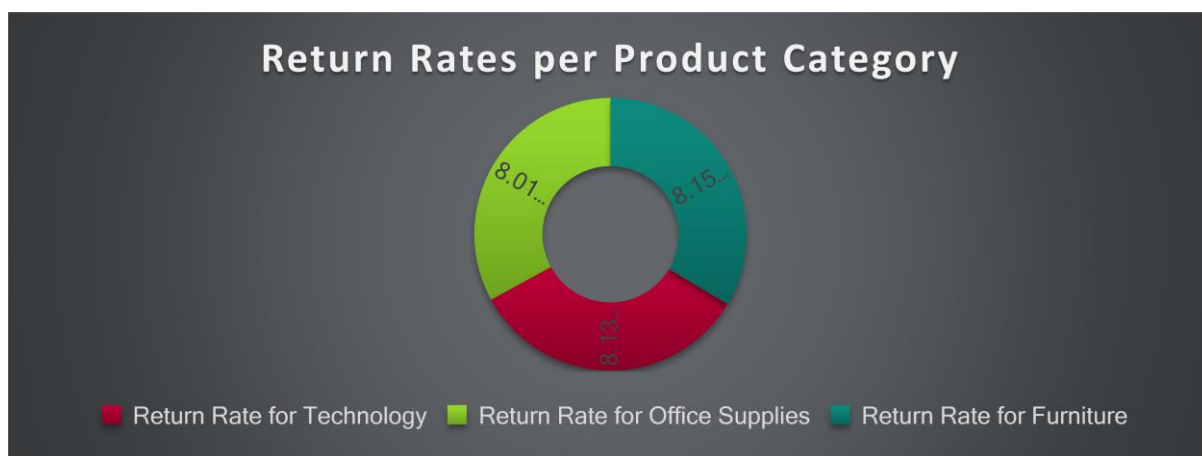


Figure 17: Return Rates per Product Category

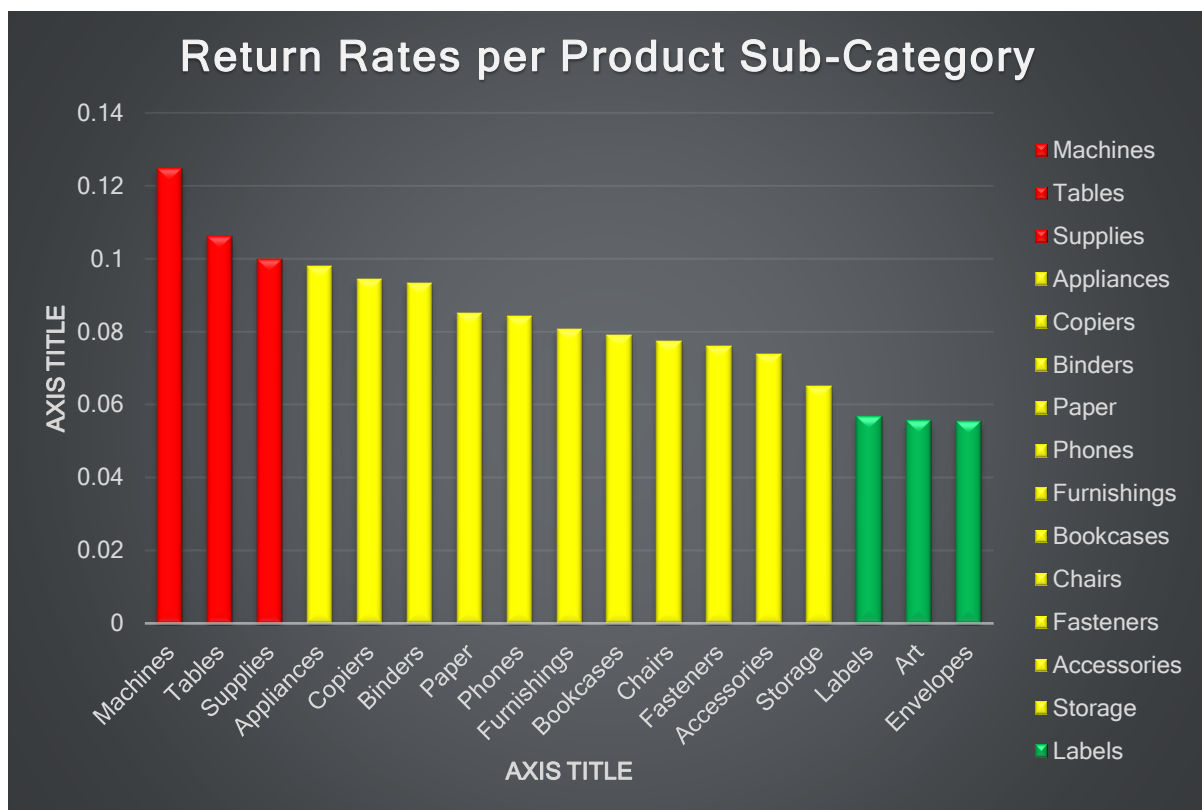


Figure 18: Return Rates per Product Sub-Category

Out of 1851 distinct products, 647 of them have been returned in varying degrees. Top 50 most returned items based on their return rate (returned/total number of sales) are listed below. For more, please refer to the spreadsheet.

Product Name	Return Rate Per Product	Total Count Sold Per Item	Total Returned
Acco Glide Clips	1	5	5
Avery 500	1	8	8
Bush Saratoga Collection 5-Shelf Bookcase, Hanover Cherry, *Special Order	1	1	1
Canon Color ImageCLASS MF8580Cdw Wireless Laser All-In-One Printer, Copier, Scanner	1	3	3
Cisco SPA 501G IP Phone	1	3	3
Hewlett-Packard Deskjet F4180 All-in-One Color Ink-jet - Printer / copier / scanner	1	2	2
Okidata B401 Printer	1	3	3
Zebra GK420t Direct Thermal/Thermal Transfer Printer	1	6	6
DAX Clear Channel Poster Frame	0.8	10	8
Ricoh - Ink Collector Unit for GX3000 Series Printers	0.785714286	14	11
Global Italian Leather Office Chair	0.75	8	6
Xerox 1882	0.75	12	9
Logitech Wireless Touch Keyboard K400	0.733333333	15	11
Electrix Fluorescent Magnifier Lamps & Weighted Base	0.727272727	11	8
Southworth Structures Collection	0.7	10	7
Kensington 6 Outlet MasterPiece HOMEOFFICE Power Control Center	0.666666667	9	6
Newell 329	0.625	8	5
Panasonic KX T7731-B Digital phone	0.625	8	5
Belkin F9M820V08 8 Outlet Surge	0.6	15	9
Newell 308	0.6	5	3
Acme Design Line 8" Stainless Steel Bent Scissors w/Champagne Handles, 3-1/8" Cut	0.571428571	7	4
Shocksock Galaxy S4 Armband	0.571428571	7	4
Barricks 18" x 48" Non-Folding Utility Table with Bottom Storage Shelf	0.5625	16	9
Cisco 9971 IP Video Phone Charcoal	0.5625	16	9
Xerox 198	0.5625	16	9
Belkin QODE FastFit Bluetooth Keyboard	0.555555556	9	5
DYMO CardScan Personal V9 Business Card Scanner	0.545454545	11	6
iHome FM Clock Radio with Lightning Dock	0.538461538	13	7
Plantronics CS 50-USB - headset - Convertible, Monaural	0.538461538	13	7
Wirebound Service Call Books, 5 1/2" x 4"	0.538461538	13	7
Advantus SlideClip Paper Clips	0.533333333	15	8
Sanyo 2.5 Cubic Foot Mid-Size Office Refrigerators	0.529411765	17	9
TOPS "Important Message" Pads, Canary, 4-1/4 x 5-1/2, 50 Sheets per Pad	0.529411765	17	9
Adams "While You Were Out" Message Pads	0.5	24	12
Eldon Advantage Foldable Chair Mats for Low Pile Carpets	0.5	10	5
Faber Castell Col-Erase Pencils	0.5	8	4
GBC Recycled Grain Textured Covers	0.5	20	10
GBC Wire Binding Strips	0.5	14	7
GE 30522EE2	0.5	10	5
Imation Bio 2GB USB Flash Drive Imation Corp	0.5	16	8
KeyTronic KT800P2 - Keyboard - Black	0.5	6	3
Logitech Wireless Boombox Speaker - portable - wireless, wired	0.5	4	2
Novimex High-Tech Fabric Mesh Task Chair	0.5	16	8
Novimex Turbo Task Chair	0.5	22	11
Samsung Galaxy Note 2	0.5	14	7
Turquoise Lead Holder with Pocket Clip	0.5	6	3
Xerox 1934	0.5	20	10
Xerox 1955	0.5	10	5
GBC Plasticlear Binding Covers	0.47826087	23	11
Wilson Jones Hanging View Binder, White, 1"	0.47826087	23	11

## NUMBER OF ORDERS BY STATE

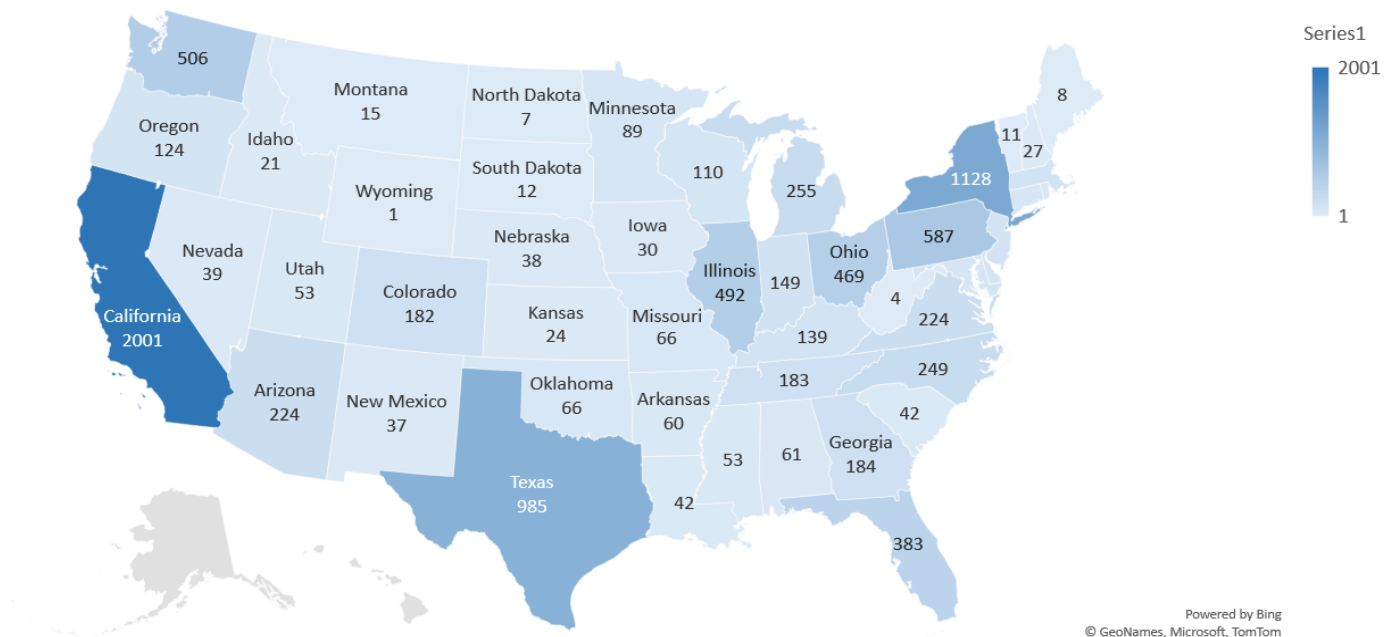


Figure 19

## RETURN RATES BY STATE

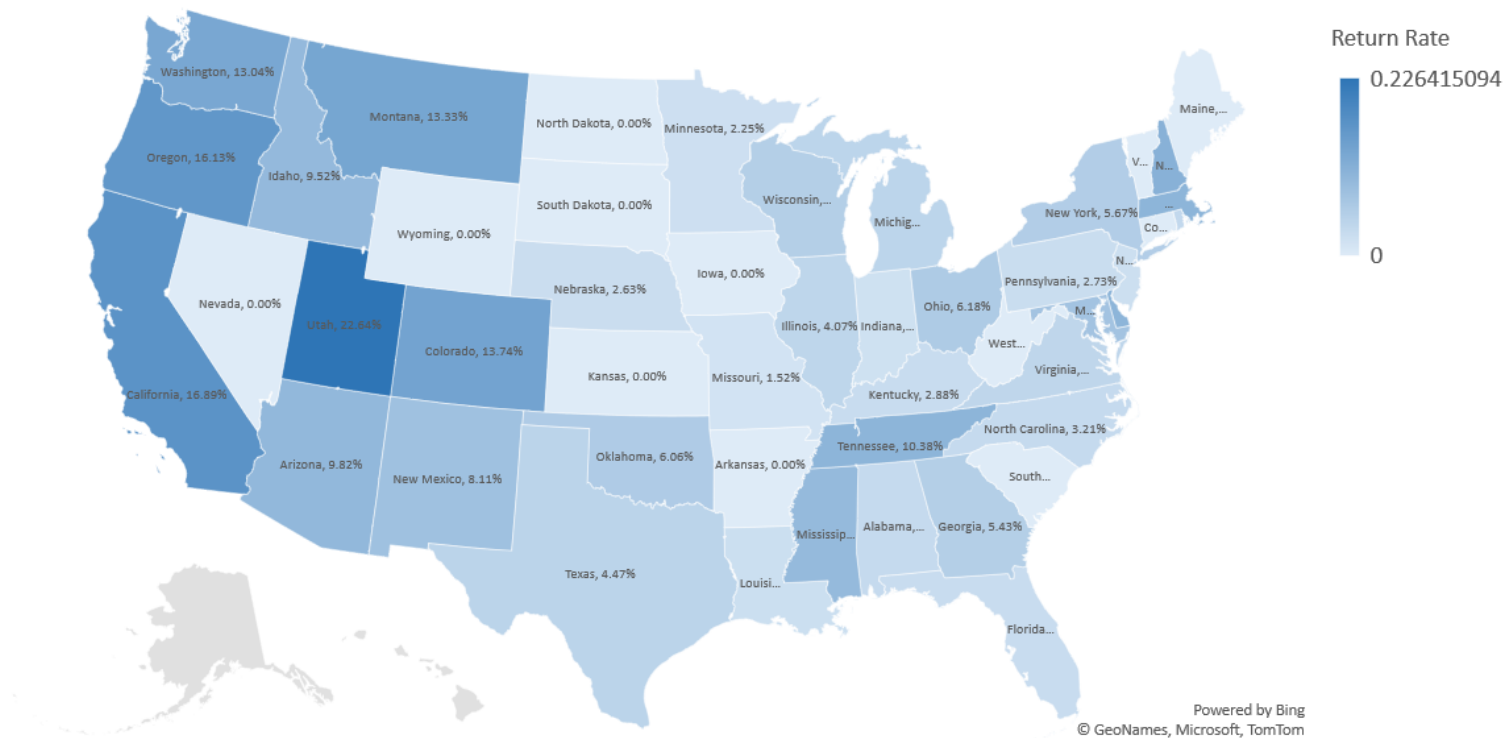


Figure 20

- Some states like Utah have high return rates at low total order numbers, which could be analysed further to get more insights about the reasons and find out ways to improve.

## CONCLUSION

The report has provided some important insights from the analysis of superstore X's data. Relevant teams and stakeholders can make use of the findings from the data to improve operations and boost profitability as well as to plan the future.