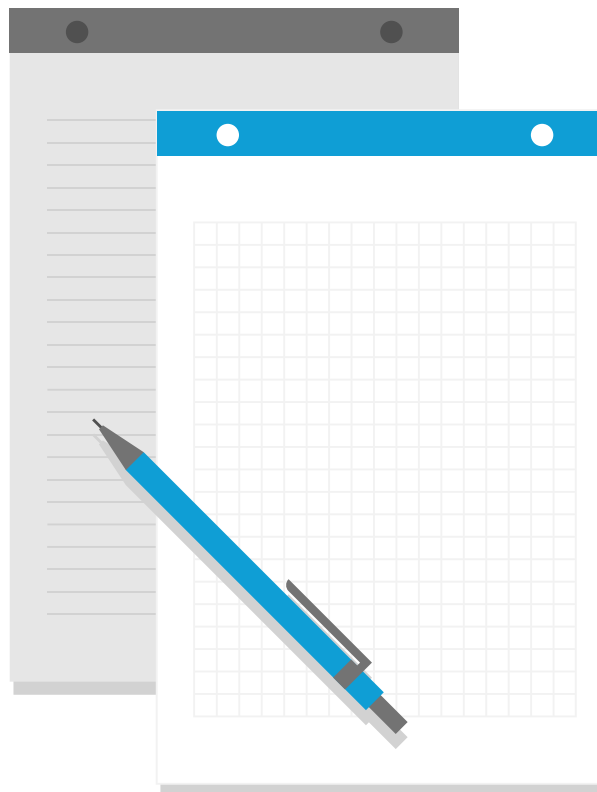


2014 – 2017 Supermarket Analysis Report

14/02/2024

Prepared for Supermarket Management Team



Prepared by Yasir Chowdhury (Albany Beck)

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Executive Summary

This report presents a comprehensive analysis of our supermarket's sales, profitability, areas of concern and operational efficiency from 2014 to 2017. The purpose of this analysis is to identify key trends, strengths, and areas for improvement within our operations, providing a strategic foundation for informed decision-making. Through a series of carefully curated dashboards and visualizations, we have distilled a vast array of data into actionable insights, aiming to highlight opportunities for growth, and optimize our product and category performance.

The analysis encompasses various facets of our business, from sales performance and profitability analysis to customer insights and satisfaction. By examining these areas, we intend to pinpoint the drivers behind our successes and challenges, enabling us to craft targeted strategies to bolster our competitive edge in the marketplace. The ultimate goal of this report is to equip our management team with the knowledge and tools necessary to make strategic decisions that will drive sustainable growth and profitability in the coming years.

Introduction

The retail landscape is characterized by its dynamic nature and intense competition, necessitating a thorough understanding of various business components to remain viable and profitable. This report has been prepared to scrutinize the sales and profitability of our supermarket across the United States over a crucial four-year period, from 2014 to 2017. The findings herein leverage a series of analytical dashboards, each providing a lens into the multifaceted dimensions of our business operations and market performance.

The scope of the data encompasses a detailed examination of sales figures, profitability margins, product returns, and other pertinent financial metrics. By dissecting these elements, we aim to construct a narrative that not only illustrates our current standing but also furnishes us with the insights necessary to chart a forward path. The geographical breadth of this analysis spans the entirety of the United States, offering a granular view of regional disparities and opportunities for localized strategy optimization.

Predicated on the objective to enhance our sales and operational efficiency, this report is designed to serve as a cornerstone for strategic planning. It endeavours to illuminate the areas where we excel and those that demand intervention, thus enabling us to allocate our resources with precision and foresight. The subsequent sections will present our findings and outline recommendations that are both actionable and aligned with our overarching goal of sustained growth and enhanced profitability.

Methodology

The foundation of this report is a comprehensive analysis of sales and returns data captured between 2014 and 2017. Leveraging Excel's robust capabilities, we methodically evaluated our supermarket's performance across multiple dimensions. The insights drawn are built upon two principal data tables, namely 'orders' and 'returns', meticulously pre-processed and cleansed prior to our analysis to ensure high data integrity.

Data Sources and Preparation

The data, sourced exclusively from the 'orders' and 'returns' tables within our operational databases, was provided in a cleansed Excel format. The preprocessing phase, which was outside the scope of our analysis task, involved standardizing entries, removing duplicates, and validating data consistency. Notably, in the 'returns' table, blank cells were interpreted as instances where no return occurred, eliminating the need for imputation of missing values.

Data Integration and Analysis

To construct a unified analytical framework, we merged the 'orders' and 'returns' tables using Excel's 'Merge Tables' feature, keyed on the 'Order ID' field. This allowed us to analyse the integrated dataset seamlessly, tracking the lifecycle of sales and subsequent returns.

We engaged pivot tables, numerical computations, and various functions within Excel to dissect the data. Key performance indicators (KPIs) such as total revenue, profit, and profit ratios were spotlighted and calculated using the sum and arithmetic functions across corresponding columns.

Analytical Focus

The crux of our analysis revolved around determining the total revenue and profit, with an emphasis on the profit ratio. These metrics were meticulously computed to reflect the overall financial health of the supermarket. Our analysis was designed to be iterative, focusing initially on a macroscopic overview of sales and profitability before delving into the nuanced areas highlighted for enhancement. Each dashboard is explained in a storytelling manner

Project Execution

Throughout the project, we utilized a host of Excel's data analysis features. This included, but was not limited to, data sorting and filtering, conditional formatting, and the creation of various charts and graphs to aid in the visualization of trends and patterns within the data. These visual aids serve to distil complex data into more digestible formats, facilitating strategic decision-making.

The dashboards were crafted to encapsulate the pivotal aspects of the analysis, each tailored to spotlight specific sectors of interest such as overall sales, areas of concern, and profit loss factors.

Concluding Methodology

The report is concluded with projections and recommendations based on 'what-if' analyses, substantiated by the data presented in tables and graphical representations. The methodological rigor applied throughout the project ensures that the findings are not only reliable but also actionable, providing a clear path forward for strategic improvements.

Findings and Analysis

Overall Sales Analysis



Overall Sales Analysis Dashboard (2014 - 2017)

Sales

\$2,116,696



Furniture Office Supplies Technology

Profit

\$263,164



Furniture Office Supplies Technology

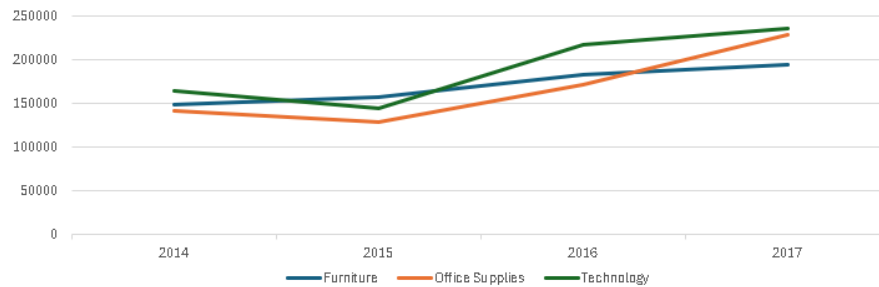
Profit Ratio

12.43%

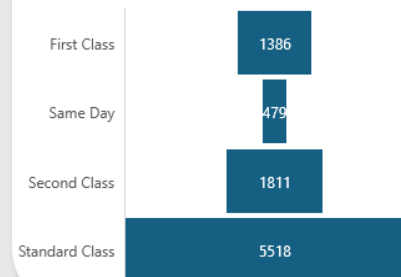


Sales Profit

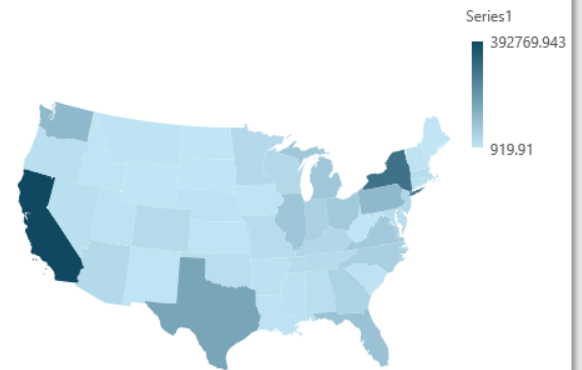
Sales Trend



Popular Shipping Modes



Sales by State



Powered by Bing
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Top 3 States

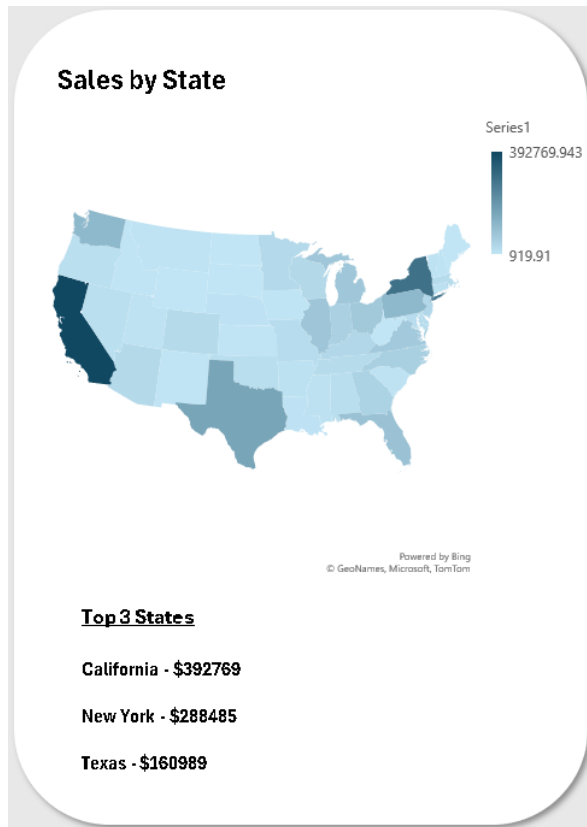
California - \$392769

New York - \$288485

Texas - \$160989

Our Overall Sales Analysis Dashboard allows us to view the performance of the company as a whole. This includes total revenue, profits, profit ratio, sales trend, and popular shipping modes. Our map will allow the team to identify the most popular states in terms of revenue. Different fields have been colour coded for a more appealing visual and easy understanding.

A closer look at the map has been listed below:



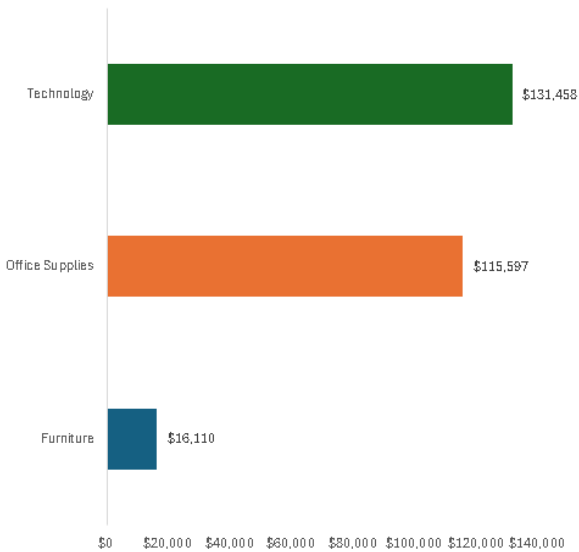
The KPI will allow the management team to review their targets and set new ones for the upcoming year.

Areas of Concern (Profit Loss Factors)

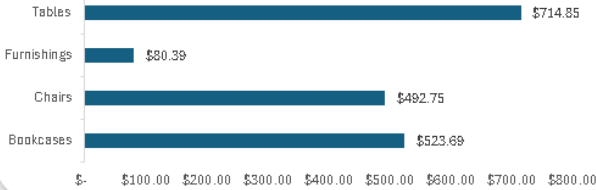


Areas of Concern (Profit Loss Factors)

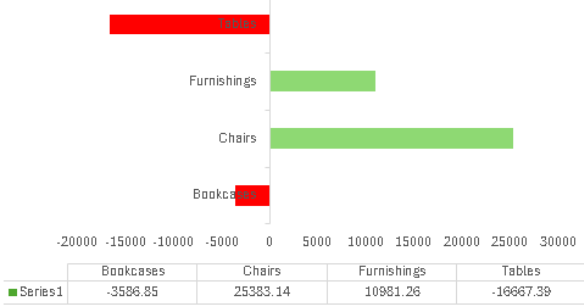
Total Profit by Category



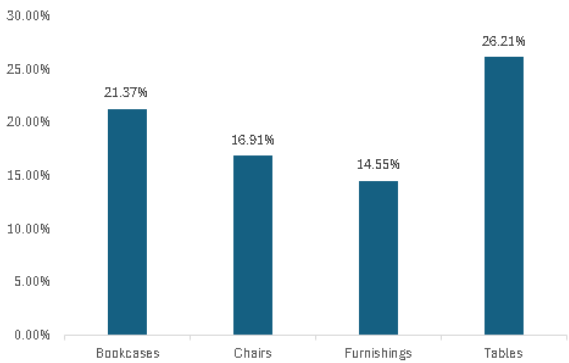
Average Total Cost per Sale



Total Profit by Subcategory



Average discount Rate

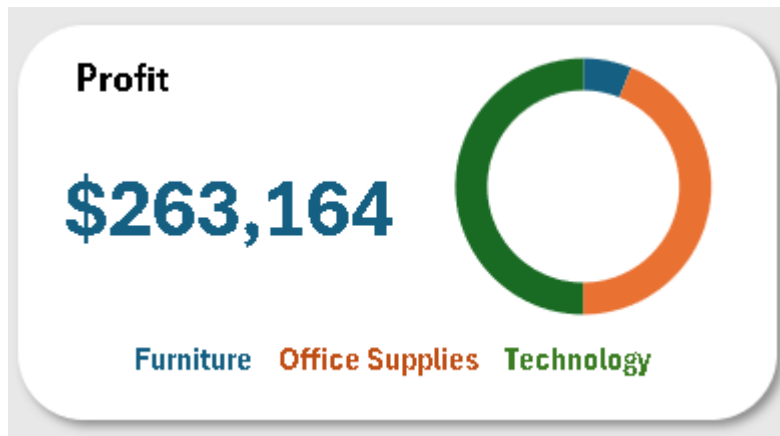


Discount Ratio

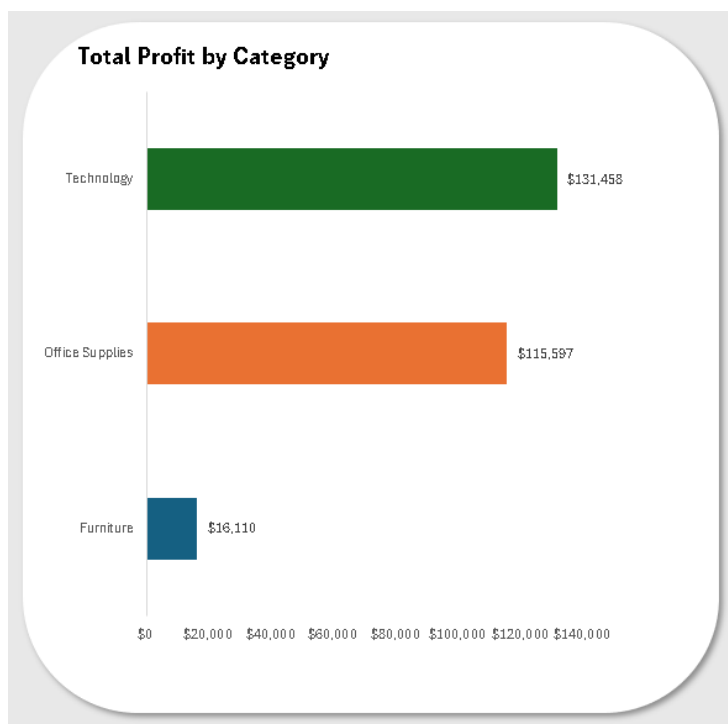
Sub-Categories	Sale Count	Sale count with Discount	Ratio (%)
Bookcases	212	154	72.64%
Chairs	564	435	77.13%
Furnishings	885	374	42.26%
Tables	289	223	77.16%

After analysing the overall price, we have dived into the major concerns within the company

Derived from the data, our graphs allow us to see all the major concerns in one dashboard. This will allow us to analyse and make decisions from a further back view. We will also explain each graph separately for a deeper understanding and explain the relationship between each visual.

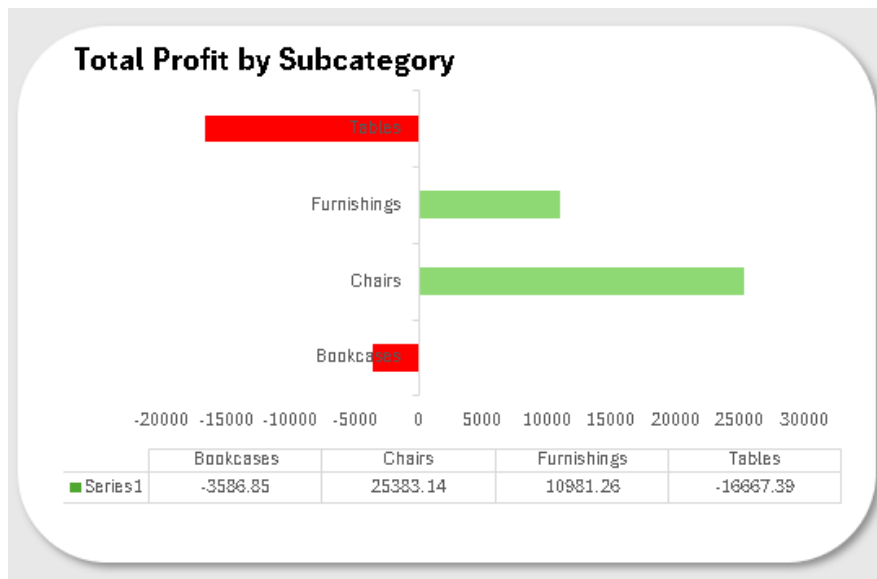


From the overall analysis we can already see that our profit is not evenly distributed, and furniture has had a significant hit during the past three years. This has caused us to dive deeper into this problem and see what the real cause is. Understanding the real cause will allow us to suggest productive and effective solutions.



This uneven distribution is viewed from another graph in the second dashboard. It is helpful to have this visual side by side with related visuals.

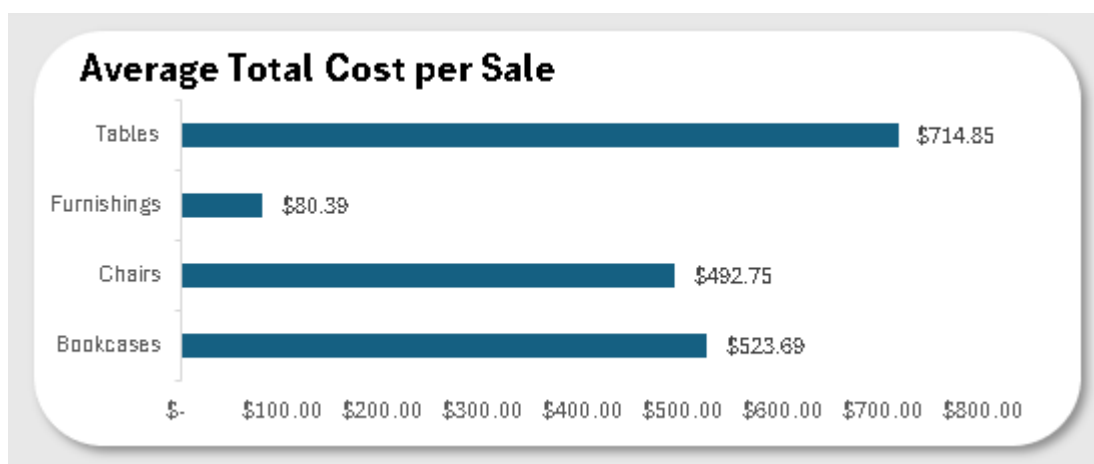
To understand why we have suffered from such a low profit margin of only \$16,110, we have further investigated into the subcategories within the furniture category.



We can already identify from the bright colours, that Tables and Bookcases are in loss, and have not made overall profit these past three years. This graph has allowed us to understand that these two sub-categories will be the area of focus rather than the other two which are doing well.

We have suggested two potential reasons why this may be the case. We must also consider the fact that there are always factors outside the scope of data. Hence we stated, 'potential reasons.'

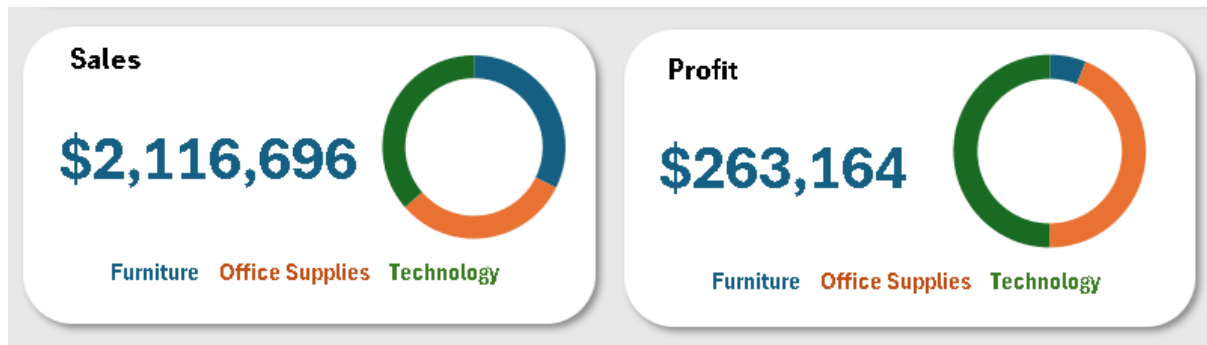
The first being a high average total cost. This total cost is better referred as overall reduction in revenue since discounts have been applied. We have added discounts within the total costs. Discounts will be discussed later



Tables and bookcases have the highest average cost within the furniture category. This may have a connection with the previous visuals. A high cost is detrimental to profit gains for the

company. It is suggested to look into where the total cost is being distributed. We do not have this data, however, manufacturing cost, shipping costs, marketing costs, discounts, and all other categories of costs will need to be looked into. Recommendations, however, will be discussed in the next heading.

From our previous dashboard, we know that revenue is evenly distributed but profit is not, this indicates a huge sum of revenue is lost and this must be investigated deeper. Hence we believe that total costs MAY be a main factor.



The coloured donuts charts are used to compare the distributions between total revenue and total profits

Another major problem which we have identified is the high discount rates. We have calculated the average discount rate for each sub-category and presented them in the visual listed below



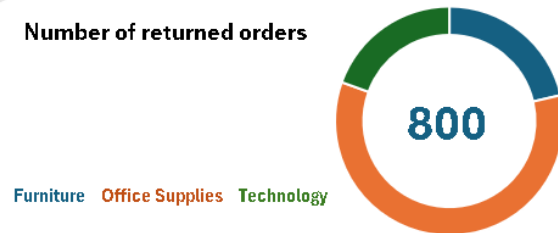
There are two things to consider here. We can see that bookcases and tables have the highest average discount rates. This MAY be connected with the profits that they are gaining, but it could also be a solution to gain more profit and keep the total cost the same. We also provided the percentage of sales which have discounts. By knowing these percentages, the management team may take action and reduce the amount of discounts applies

Loss of Profit Through Returns

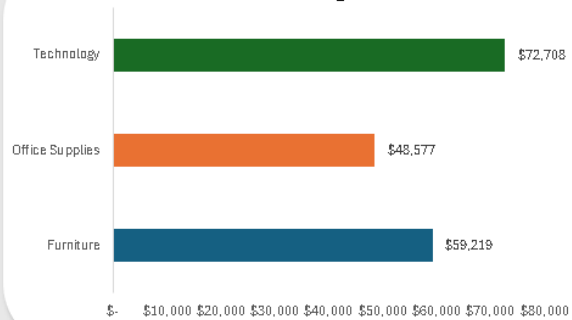


Loss of Profit through Returns

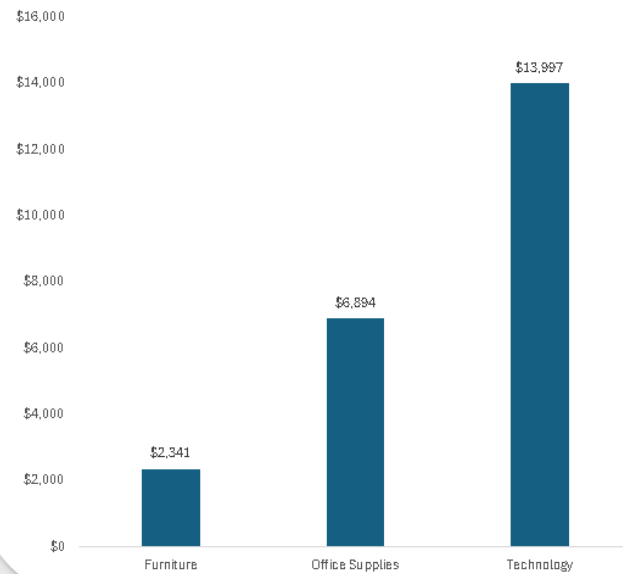
Number of returned orders



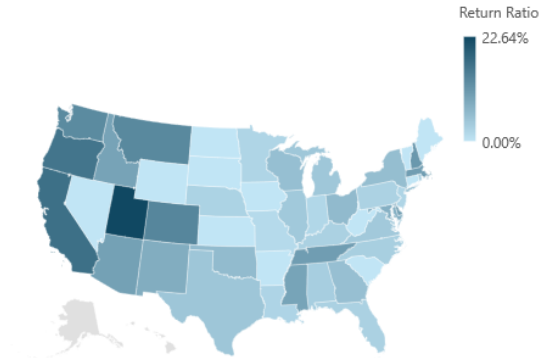
Total Loss of Revenue Through Returns



Total Loss of Profit Through Returns



Returns Percentage Map



Powered by Bing
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Top 3 States

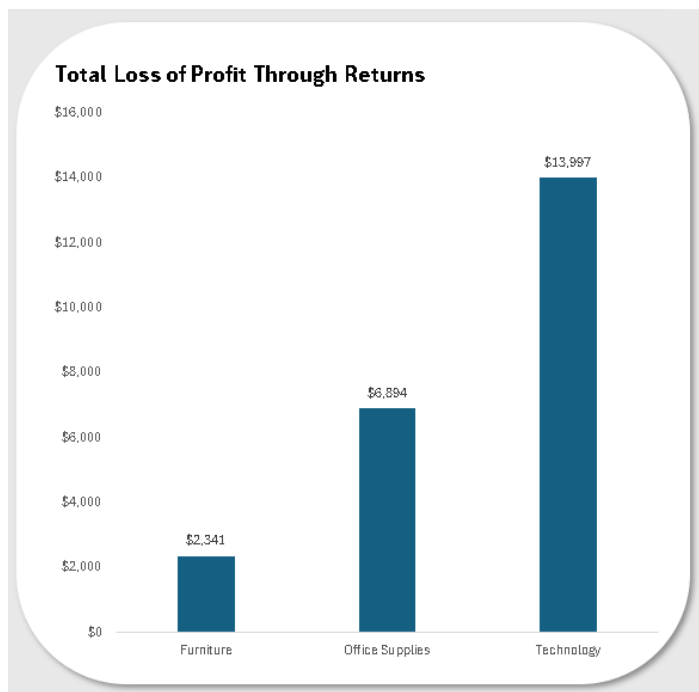
Utah - 22.64%

California - 16.89%

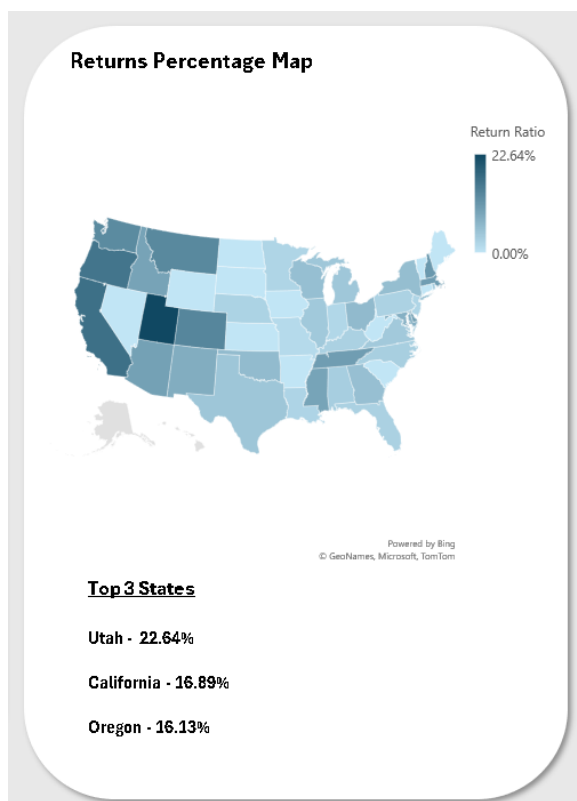
Oregon - 16.13%

Another problem which we have given attention to is the loss of profits through returns. Although the loss is not major, it is still a way for the company to receive some extra profits.

Our main concern is technology, this has the highest returns and highest effect on both profit and revenue. This dashboard allows the management to realise there is potential loss in profit and that action is needed. We do suggest the team to create a target for the following year.



The returns map allows us to understand the percentage of the sales which are returned in each state. The top three states are listed so the team can investigate why this may be the case.



Recommendations

We should consider the fact that there are always factors outside the data, so the approach we will take is to also include assumptions that may not be backed by the data.

Our first problem is the loss of profits. Why are we losing such a significant amount of revenue? What is it being spent on? If we had the data for this, we could add additional visuals and explore which cost factor is taking up most of the costs, or which cost factor is being unnecessarily spent on. However, due to our limited data, we suggest the management team to explore each part of the process of creating and selling the product, and see what improvements could be made. The management team, if not already, should log the costs of each product separately, so in the future we can use data to identify where the money is being spent on. After logging the different costs, the team should then ask themselves whether this amount of investment is necessary and if there is a more efficient and cost-effective method. Listed below are the steps to achieve this recommendation.

Step 1: Comprehensive Cost Documentation

Initiate a protocol for detailed documentation of all fixed and variable costs associated with each sale. This includes direct costs like materials and labour, as well as indirect costs such as utilities, marketing, and administrative expenses.

Step 2: Rigorous Cost Evaluation

Conduct a thorough review of each documented cost. This step involves assessing every expense for its contribution to the production and sale of the product. The goal is to identify any areas of overspending or inefficiencies that can be streamlined.

Step 3: Critical Analysis of Expense Justification

Evaluate the necessity and efficiency of each cost component. Determine if the current level of expenditure is essential for maintaining the quality and competitiveness of the product in the market. Consider if there are more economical alternatives that could achieve the same objectives.

Step 4: Investigation of Cost Reduction Strategies

Explore and identify potential cost-effective methods or alternatives that could lead to significant savings without compromising on quality or customer satisfaction. This may involve researching new suppliers, technology, or processes that offer better value.

Step 5: Pilot Testing of New Cost-saving Measures

Implement the identified cost-saving strategies on a small scale to test their effectiveness and impact on product quality and customer satisfaction. Monitor performance closely to ensure that these changes lead to improved profitability without negative consequences.

In terms of the high loss due to returns, we should investigate why customers are returning their products. There could be many factors for this. The list below can help understand why returns could be high.

1. **Product Quality Issues:** Defects, damages, or failures to meet advertised standards can lead to dissatisfaction and returns. Quality control measures may need to be reassessed.
2. **Mismatched Product Expectations:** If the product received does not match what was advertised or what customers expected based on the product description and images, returns are likely. This could be due to misleading or unclear product information.
3. **Complexity or Usability Issues:** Products that are difficult to set up, use, or integrate with existing systems can frustrate customers, prompting returns.
4. **Size or Fit Problems:** Especially relevant for clothing and accessories, incorrect sizing or fit can result in a high number of returns. This can be exacerbated by inconsistent sizing charts or unclear guidance.
5. **Delayed Shipping:** Late deliveries can cause customers to return items, especially if they were intended for specific occasions or deadlines that were missed.
6. **Competitive Offerings:** Discovering a better price or a more appealing product elsewhere can lead customers to return items. Monitoring competitors and ensuring competitive pricing and value propositions can help minimize this.
7. **Faulty Product Descriptions or Images:** If the product's online representation does not accurately reflect its real-life appearance and functionality, customers may feel deceived and initiate returns.
8. **Packaging Issues:** Inadequate packaging can lead to damaged goods during shipping, resulting in returns. Improving packaging can protect products better.

This list can be used as a reference point to find the root cause for such high returns.

Conclusion

In this report, our goal was to conduct a comprehensive analysis of the company's sales performance and profitability, identifying key areas for enhancement. Through the development of a detailed sales and profitability dashboard, coupled with insightful explanations, we have pinpointed two critical areas requiring immediate attention: the significant profit losses within the furniture category and the substantial financial impact of returns in the technology department. Supported by rigorous statistical analysis, these findings have laid the groundwork for a set of targeted recommendations and potential strategies for improvement.

Addressing the issues of profit loss in the furniture category and managing the high rate of returns in the technology department are not just about improving numbers on a balance sheet; they are essential steps towards strengthening the company's market position, enhancing customer satisfaction, and building a more resilient and profitable operation. By implementing the suggested solutions, the company can not only reverse these negative trends but also set a foundation for sustained growth and success.

In conclusion, the insights garnered from this analysis are not merely diagnostic but are pivotal in charting a strategic course forward. As we turn these challenges into opportunities for optimization and innovation, we are not just reacting to market forces but proactively shaping a future where our company stands as a leader in efficiency, customer satisfaction, and profitability. This report is not the end of our journey but a beginning, signalling a commitment to continuous improvement and excellence.

Appendices

This section will include all the statistical data tables which are too detailed to explain within the report. We have included this just in case the team want to view the exact numbers.

Overall Analysis Data

Row Labels	Sum of Sales	Sum of Profit
2014	455027.9501	49073.297
2015	430871.615	57196.5737
2016	573083.826	79182.7886
2017	657713.1913	77712.0009
Grand Total	2116696.582	263164.6602

Sum of Sales	Column Labels			
Row Labels	Furniture	Office Sup	Technology	Grand Total
2014	148495.9531	141388.97	165143.03	455027.9501
2015	156742.281	129069.66	145059.68	430871.615
2016	183589.455	171883.38	217610.99	573083.826
2017	193952.9313	228128.09	235632.17	657713.1913
Grand Total	682780.6204	670470.1	763445.9	2116696.582

Row Labels	Sum of Sales
Furniture	682780.6204
Office Supplies	670470.103
Technology	763445.859
Grand Total	2116696.582

Row Labels	Sum of Profit
Furniture	16110.1541
Office Supplies	115596.9048
Technology	131457.6013
Grand Total	263164.6602

Row Labels	Count of Sales
First Class	1386
Same Day	479
Second Class	1811
Standard Class	5518
Grand Total	9194

Row Labels	Sum of Sales
Alabama	19329.71
Arizona	29266.228
Arkansas	11678.13
California	392769.943
Colorado	26675.812
Connecticut	13384.357
Delaware	25111.346
District of Columb	2865.02
Florida	87833.148
Georgia	46329.22
Idaho	3381.29
Illinois	78211.812
Indiana	52891.15
Iowa	4579.76
Kansas	2914.31
Kentucky	35698.66
Louisiana	7551.41
Maine	1270.53
Maryland	22905.563
Massachusetts	24458.179
Michigan	74698.102
Minnesota	29820.15
Mississippi	10667.84
Missouri	22179.23
Montana	5545.692
Nebraska	7430.43
Nevada	16729.102
New Hampshire	6567.974
New Jersey	35528.342
New Mexico	4180.406
New York	288485.153
North Carolina	53343.579
North Dakota	919.91
Ohio	71582.115
Oklahoma	19502.72
Oregon	15729.026
Pennsylvania	112750.267
Rhode Island	22028.056
South Carolina	8481.71
South Dakota	1315.56
Tennessee	26359.991
Texas	160989.3174
Utah	8520.636
Vermont	8929.37
Virginia	67139.41
Washington	113573.496
West Virginia	1209.824
Wisconsin	31780.46
Wyoming	1603.136
Grand Total	2116696.582

Areas of Concern Data

Row Labels	Sum of Profit
Bookcases	-3586.8569
Chairs	25383.1435
Furnishings	10981.2662
Tables	-16667.3987
Grand Total	16110.1541

Row Labels	Average of Discount
Bookcases	0.213679245
Chairs	0.169148936
Furnishings	0.145536723
Tables	0.262110727
Grand Total	0.177051282

Row Labels	Average of Total Costs
Bookcases	523.6896807
Chairs	492.7504566
Furnishings	80.39135345
Tables	714.8465353
Grand Total	341.8822904

Row Labels	Count of Sales	Sum of Sal.	Sum of Profit
Furniture	171	59219.175	2341.1187
Office Supplies	473	48576.929	6893.896
Technology	156	72708.174	13997.3468
Grand Total	800	180504.3	23232.3615

Returns.Column1 (blank)	.Y
Category Furniture	.Y
Discount Applied Yes	.Y

Row Labels	Count of Row ID
Bookcases	154
Chairs	435
Furnishings	374
Tables	223
Grand Total	1186

Tech Returns

Row Labels	Sum of Sales
Furniture	59219.1749
Office Supplies	48576.929
Technology	72708.174
Grand Total	180504.2779

Row Labels	Sum of Sales	Sum of Profit
2016	226364.18	39773.992
2017	271730.811	50684.257
Grand Total	498094.991	90458.25

State	Returns.no	Sale.No	Return Ratio
Alabama	2	61	3.28%
Arizona	22	224	9.82%
Arkansas		60	0.00%
California	338	2001	16.89%
Colorado	25	182	13.74%
Connecticut		82	0.00%
Delaware	10	96	10.42%
District of Columbia		10	0.00%
Florida	11	383	2.87%
Georgia	10	184	5.43%
Idaho	2	21	9.52%
Illinois	20	492	4.07%
Indiana	3	149	2.01%
Iowa		30	0.00%
Kansas		24	0.00%
Kentucky	4	139	2.88%
Louisiana	1	42	2.38%
Maine		8	0.00%
Maryland	8	105	7.62%
Massachusetts	14	135	10.37%
Michigan	11	255	4.31%
Minnesota	2	89	2.25%
Mississippi	5	53	9.43%
Missouri	1	66	1.52%
Montana	2	15	13.33%
Nebraska	1	38	2.63%
Nevada		39	0.00%
New Hampshire	3	27	11.11%
New Jersey	3	130	2.31%
New Mexico	3	37	8.11%
New York	64	1128	5.67%
North Carolina	8	249	3.21%
North Dakota		7	0.00%
Ohio	29	469	6.18%
Oklahoma	4	66	6.06%
Oregon	20	124	16.13%
Pennsylvania	16	587	2.73%
Rhode Island	2	56	3.57%
South Carolina		42	0.00%
South Dakota		12	0.00%
Tennessee	19	183	10.38%
Texas	44	985	4.47%
Utah	12	53	22.64%
Vermont		11	0.00%
Virginia	9	224	4.02%
Washington	66	506	13.04%
West Virginia		4	0.00%
Wisconsin	6	110	5.45%
Wyoming		1	0.00%