

# **Business Analytics, Applied modelling and prediction**

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OF ECONOMICS AND  
POLITICAL SCIENCE ■

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## EXECUTIVE SUMMARY

This report delves into the analysis of an e-commerce company that operates globally, with sales tracked between 2020-2023. The analysis is divided into five sections as market overview, largest market's deep dive, customer analysis, product analysis, future forecasts.

The most profit driven country is United states of America, contributing 286.30K US dollars in profit to the company. Countries like China, India, UK have also generated significant amounts of profits. Furthermore, the report explores about the products sold, product categories, customers and predictive forecasts of sales. Clear visualizations are provided for each section of the analysis, at the end recommendations and conclusions provided to senior management of the company.

# INTRODUCTION

The report presents an analysis conducted on tableau, focusing on the company's sales, profit, product categories and customers. The e-commerce retail company distributes its products across 147 countries organized into 7 different markets with offerings categorized into three categories: technology, furniture and office supplies. The company offers a diverse product portfolio comprising 10292 items and they achieve consistent profitability across all product categories and geographic market regions. The total profit firm gained across all countries recorded as \$ 1,466,437 over the three years period.

Orders are prioritized by the company based on four rating levels: Critical, high, medium, and low. Based on the ratings, shipping is carried out to the customers. The shipping modes used for the customers are first class, second class, same day, standard class.

A comprehensive overview of the company's market space, including a breakdown of costs associated with daily operations. It further examines the potential causes for the outcomes. Additionally, it examines customer purchasing patterns and evaluates the company's ability to retain customer overtime. Finally the report investigates about the future forecasts on some important aspects.

# MARKET OVERVIEW



Figure 1. Distribution of profit across the world. The dark blue and red represent the area company made profit and loss.

The overall profit was analyzed to identify most profitable country, revealing that the United States of America generates the highest profit globally for the company. America generated profit around \$280.30K and 2,296,487 sales have taken place. Surprisingly, Turkey has resulted in a big loss for the company. Despite being one of the largest economies in the world with many strengths, it still failed to generate profit.

While some of the largest economies like Turkey and Argentina have failed to make profit for the company, many lower-middle-income countries in the Middle East and Africa such as Egypt, Morocco and Republic of Congo have delivered a decent amount of profit despite their smaller sizes.



Figure 2. Most profit driven countries

The above visual describing about the mostly profit driven 8 countries for the company. Although USA have made twice or thrice the amounts of other countries no wonder it is the third biggest country in the world. But surprisingly the world's first two biggest countries in the world Russia and Canada weren't even in the list. Despite the fact that UK, France and Germany are smaller comparing to other countries they have contributed a lot to the company in profits. As shown all of these countries have generated profits more than \$100K.

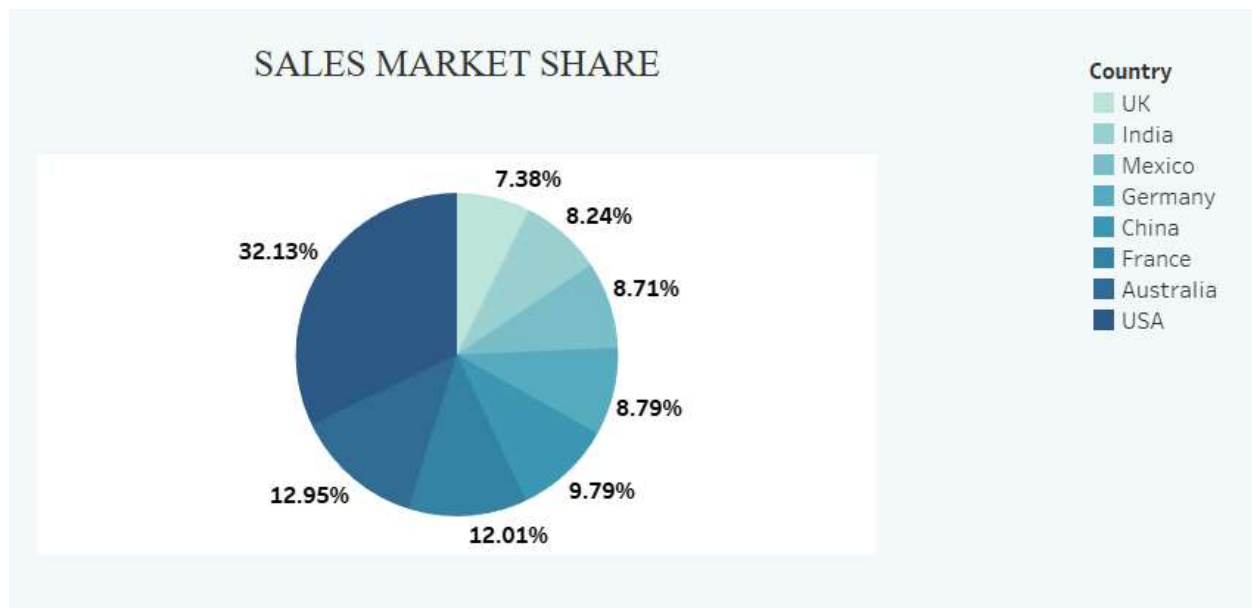


Figure 3. Sales market share of 8 most profitable countries

As these 8 countries are most profitable for the company these were shown as percentage of sales in pie chart to understand the market shares between these countries. The US have got 32.13% as higher share and UK have got 7.38% market share in sales.

## LARGEST MARKET'S DEEPDIVE

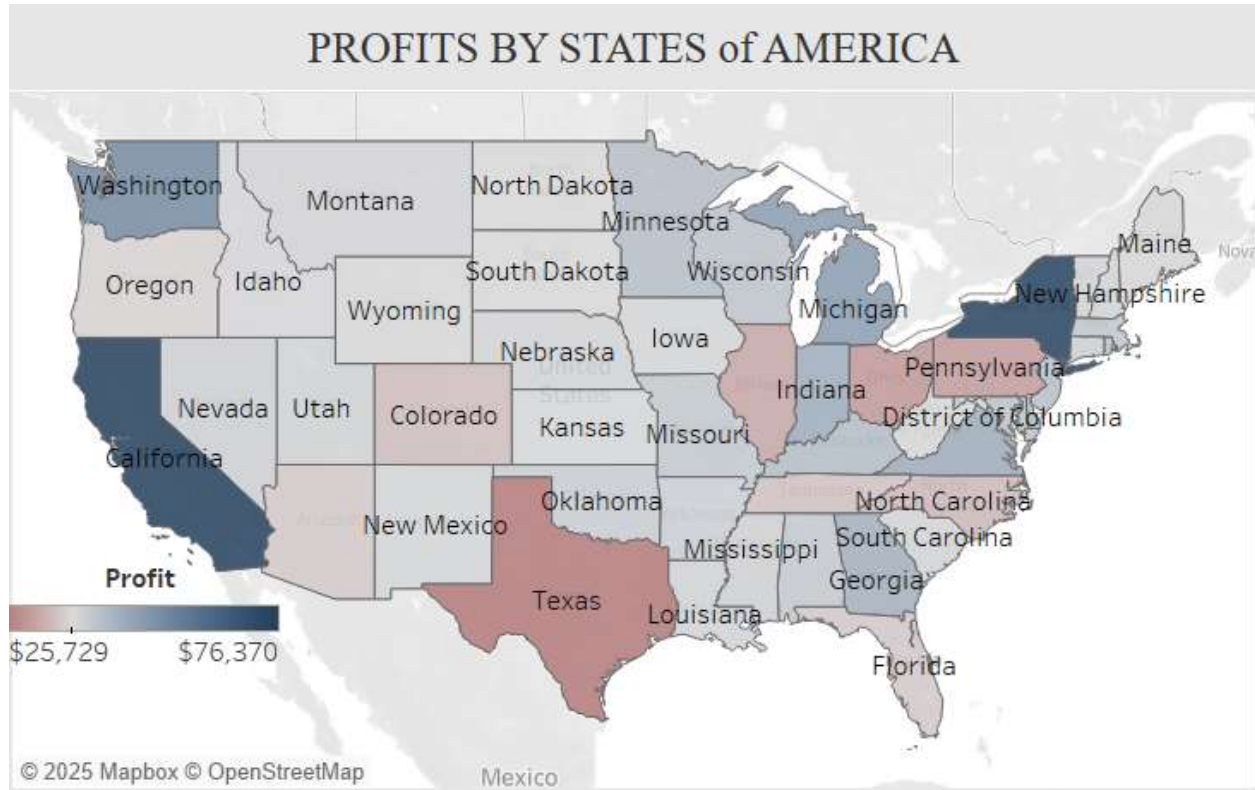


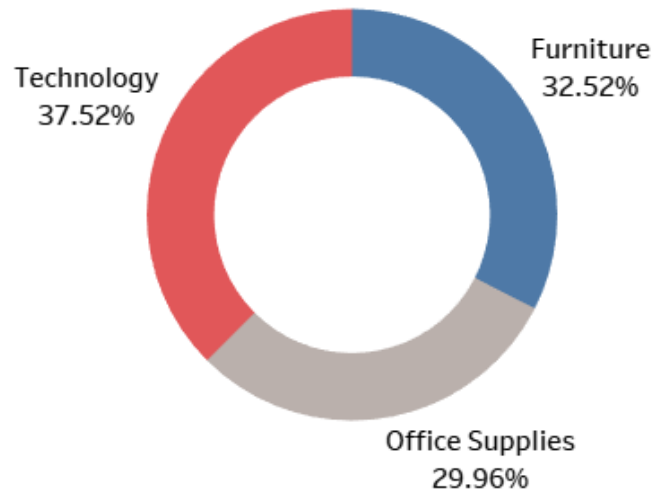
Figure 4. America's states by profits. Dark blue and red represents profits and losses.

The top profit generating country globally is the one with the highest overall revenue and a detailed analysis of key aspects is needed to identify the patterns in products sold, sales and shipping. Among all the states of USA, California has made highest profit at \$76K, followed by New York with \$74K marked in dark blue. Meanwhile the red highlighted areas showing a massive loss in profits.

Texas being one of the biggest states making losses is not expected, it has made loss of \$25.7K. Other states like Pennsylvania and Ohio also made significant losses. Furthermore, successfully sold products and unsuccessful elements analyzed as below.



## SALES BY CATEGORIES (USA)



*Figure 5.Sales by categories*

Traded products in America are visualized in a donut chart and drilled down further to determine the best-selling category. Looking at the graph technology products are sold the most and occupied US market by 37.52%.

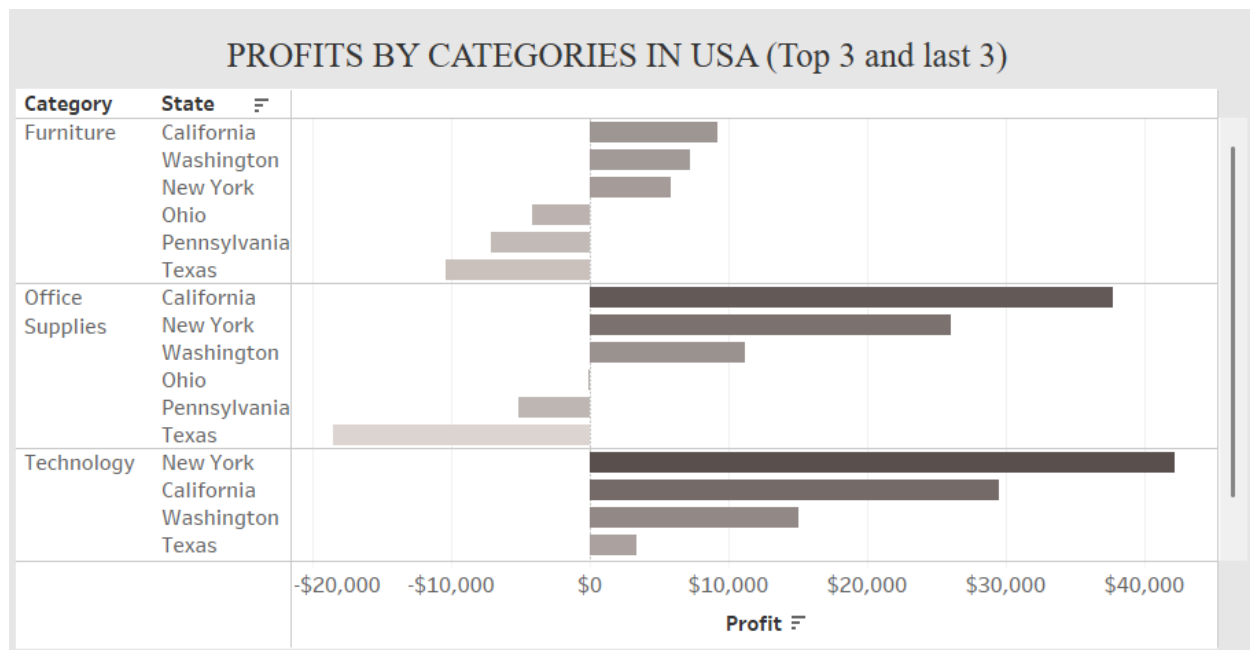
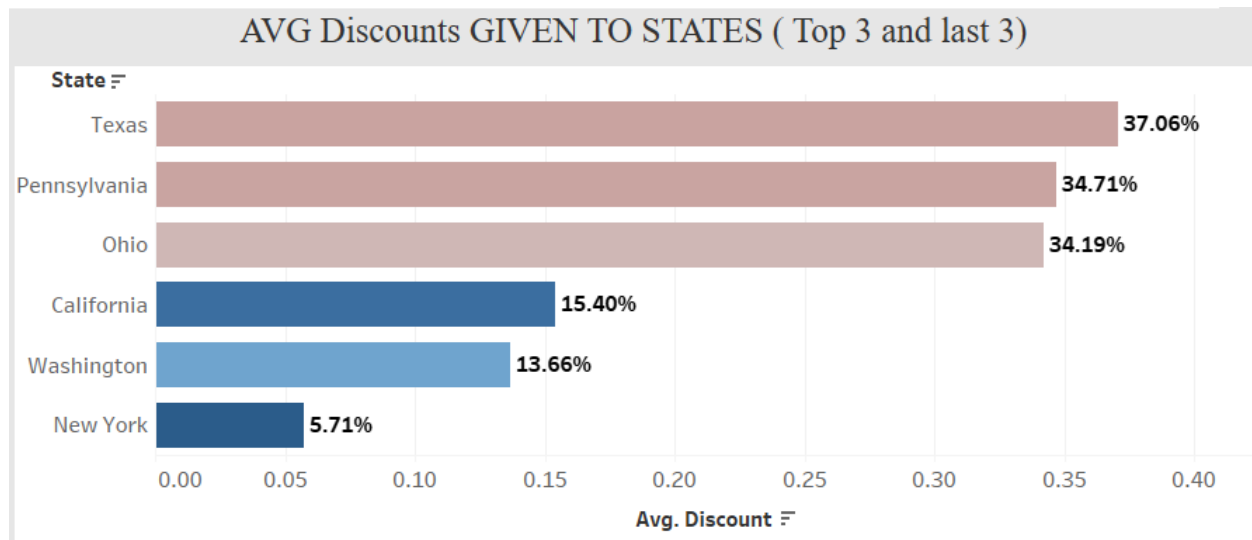


Figure 6.

The diagram highlights the categories traded by states, comparing their profits with the three most profitable states and the three states with the highest losses. California recorded the highest profits in both furniture and office supplies. However, with technology being a key product in today's market, New York led in profits for technology products. Surprisingly, Texas has generated profit in technology products, even though it has recorded the highest losses in other categories.

Looking at the diagram it's clear that out of all the most loss recorded states: Texas, Ohio, Pennsylvania, Texas is the only state that managed to generate significant amount of profit at least in one category.



*Figure 7. Average discounts given to top 3 and last 3 states which made profit and losses.*

The visualization clearly shows that all states with losses have higher discount amounts, while all profitable states have discounts of 15% or less. Blue and red are respectively highlighting states generated profits and losses.

## CUSTOMER ANALYSIS



Figure 8.

The retail company's customer base has been analyzed to assess customer loyalty using data from 2020 – 2023. Customers from 2020 are considered new, and while existing customer loyalty is strong, with their numbers increasing annually, new customer acquisition has been declining. The company should focus on strategies to attract new customers.

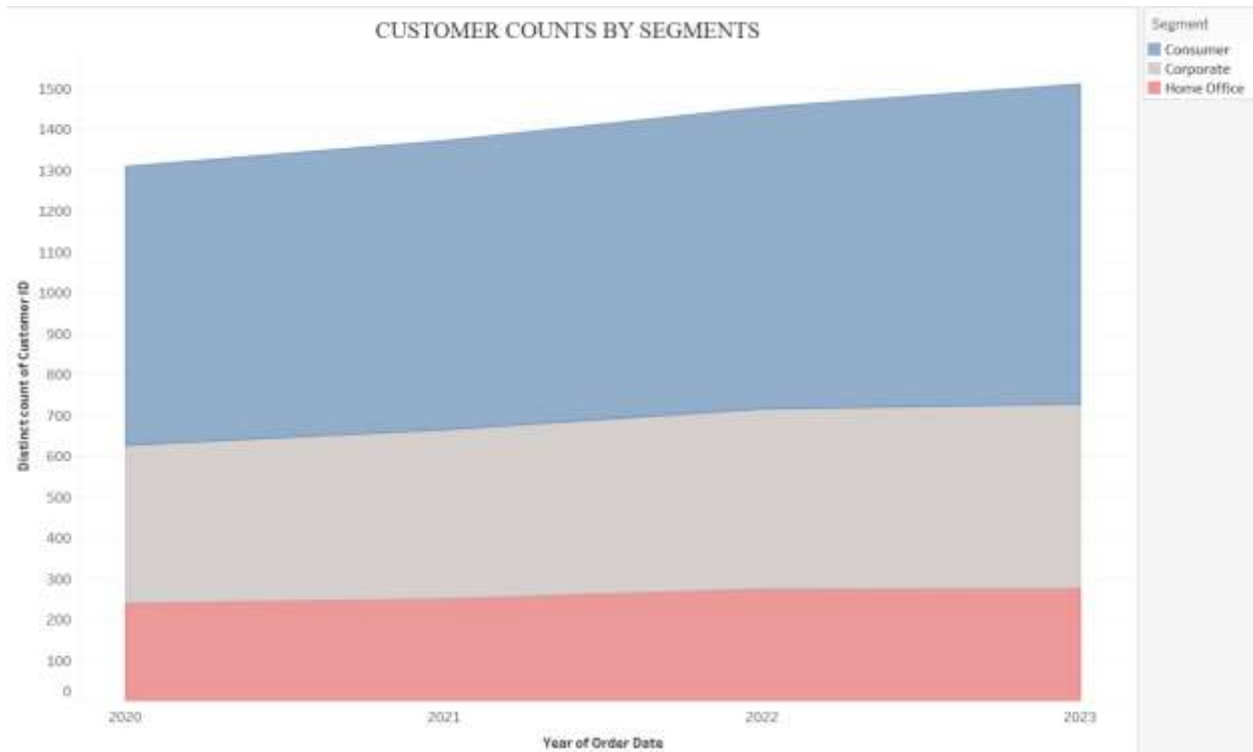


Figure 9.

Over the years, number of customers is analyzed breaking as segments. Home office segment have not gained much of customers, as the slope of the line is almost steep over the time period. Consumer segment has got highest new customers throughout the years.

Top 10 CUSTOMERS	
Customer Na..	
Tamara Chand	\$8,673
Raymond Buch	\$8,453
Sanjit Chand	\$8,205
Hunter Lopez	\$7,817
Bill Eplett	\$7,410
Harry Marie	\$6,958
Susan Pistek	\$6,484
Mike Gockenbach	\$6,459
Adrian Barton	\$6,417
Tom Ashbrook	\$6,312

Figure 10.

The top 10 customers who have driven the company's profit are displayed above, with Tamara Chand being the most loyal customer.

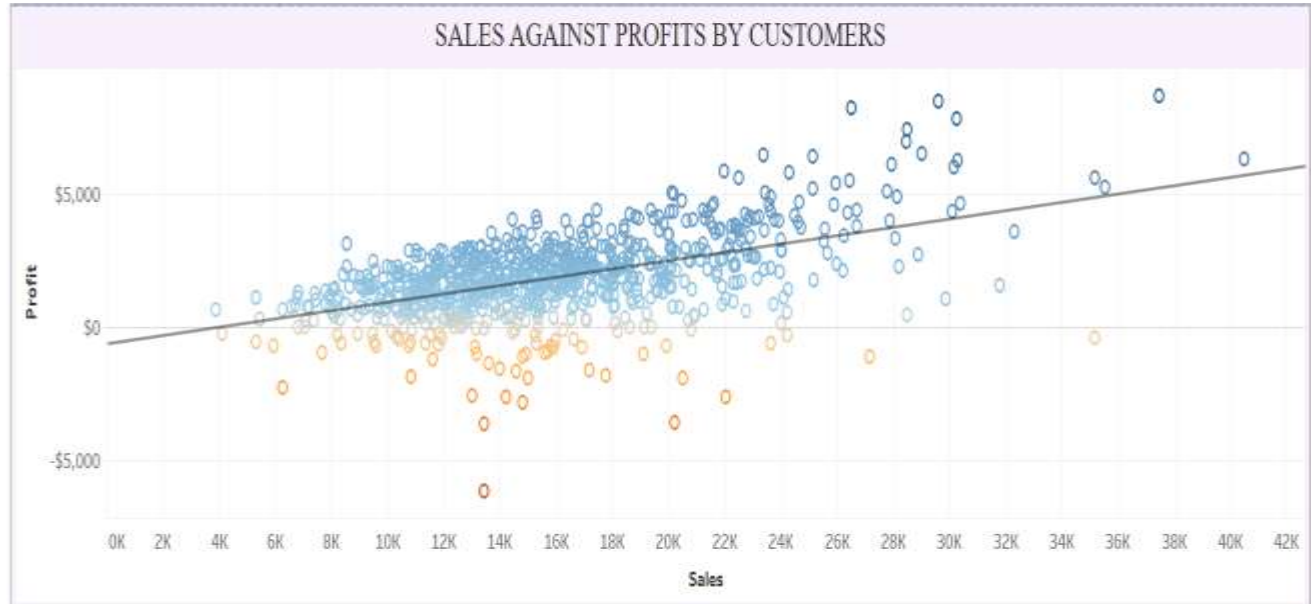


Figure 11.

Sales and profits are plotted into a scatterplot to analyze how different customers have contributed to the company's profitability or losses. Looking at the scatterplot it's clear that most customers are being profitable, as the majority of data points are positioned above '0' profit line.

# PRODUCT ANALYSIS

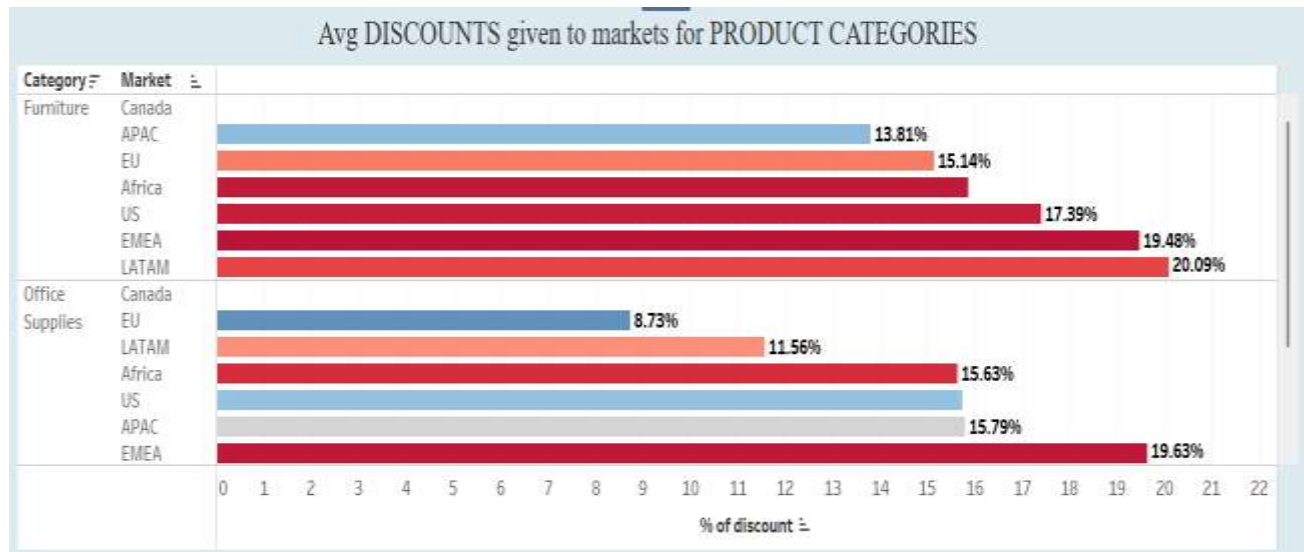


Figure 12.

This graph displays the average discounts offered to different markets for products categories: Furniture, office supplies and technology, blue and red bars are respectively representing profits ranging from 2K – 206K. Furniture products have average discounts ranging from 13.81% to 21% across the markets. Among these, only the APAC market has generated a good amount of profit despite the discount rate.

The EMEA market has received an overall discount of 19% across all three product categories, indicating a consistent discounting strategy. Office products in EU market stands out with almost \$160K in profit despite a low discount rate of 8.7%, which is impressive. Technology products have driven significant profits across most markets, even with applied discounts, highlighting their strong demand and profitability.

Interestingly, the Canada market, despite its large economy, has received 0% discounts across all product categories. This lack of discounts appears to have driven losses, as the market has achieved 4-figured profits in all products. The absence of discounts in Canada is likely a key factor behind it's underperformance.

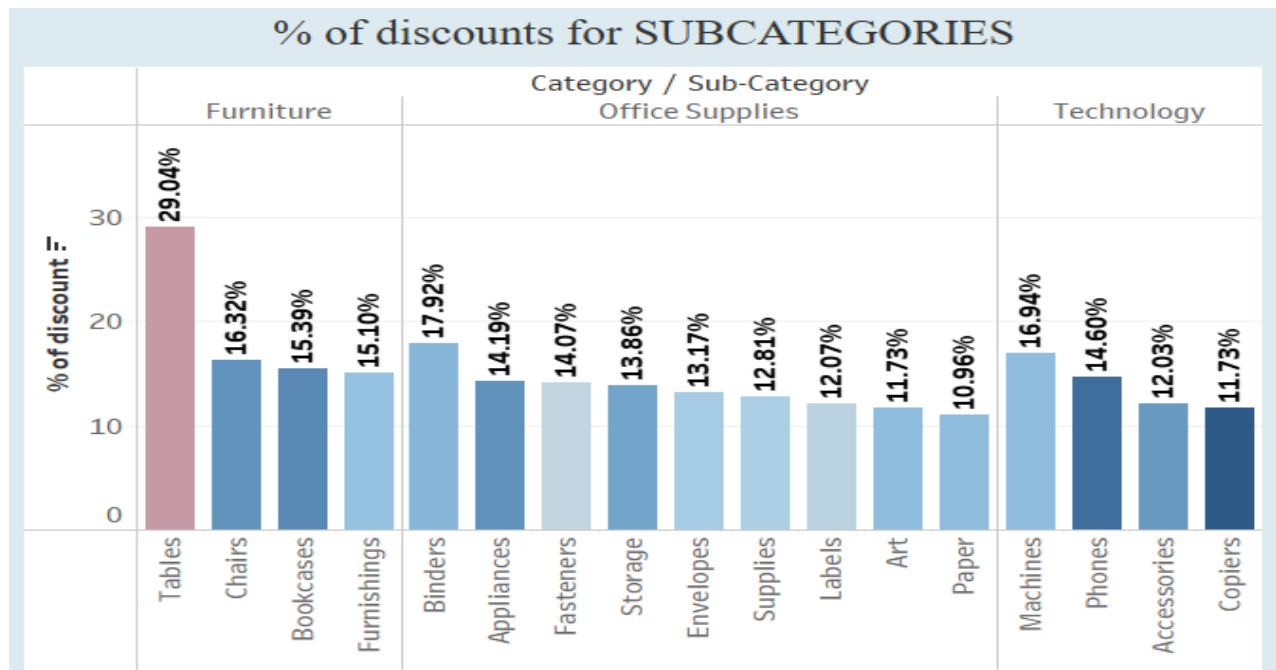


Figure 13.

The details of how much discount rates offered across various subcategories within three main categories shown in the above visualization. Discounts vary significantly across subcategories, ranging from 10.9% to 30%, the highest discount 30% is offered in the furniture category for tables and it has generated a big loss of \$62K. The office supplies category shows moderate discounts, with the highest being 17.92% for binders. Offering almost 18% discount for products like binders is a decision that the company should consider once again. The technology products have the lowest discount rates while highest on profits.



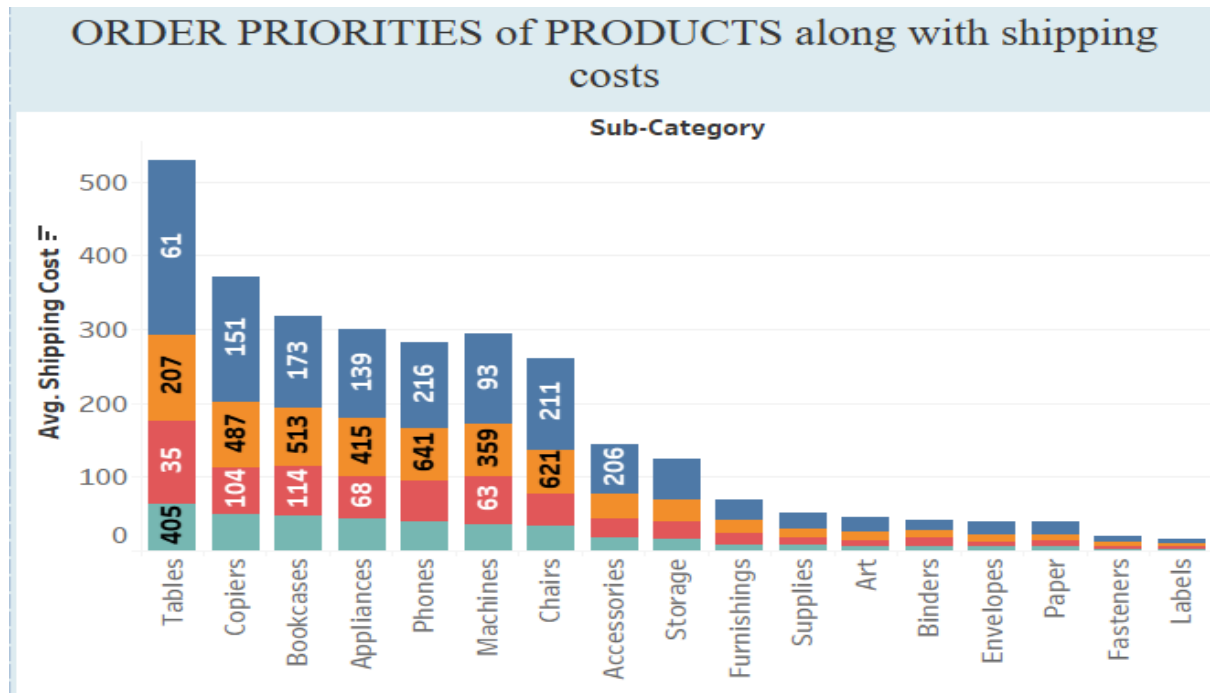


Figure 14.

This visualization provides insights into order priority of the products associated with shipping costs. The graph includes wide range of products. Tables and copiers have the highest shipping costs varying from \$50 – \$240, while labels have the lowest shipping cost. Looking at the customer counts most of the customers preferred medium priority for their orders.

## COMPANY FORECASTS

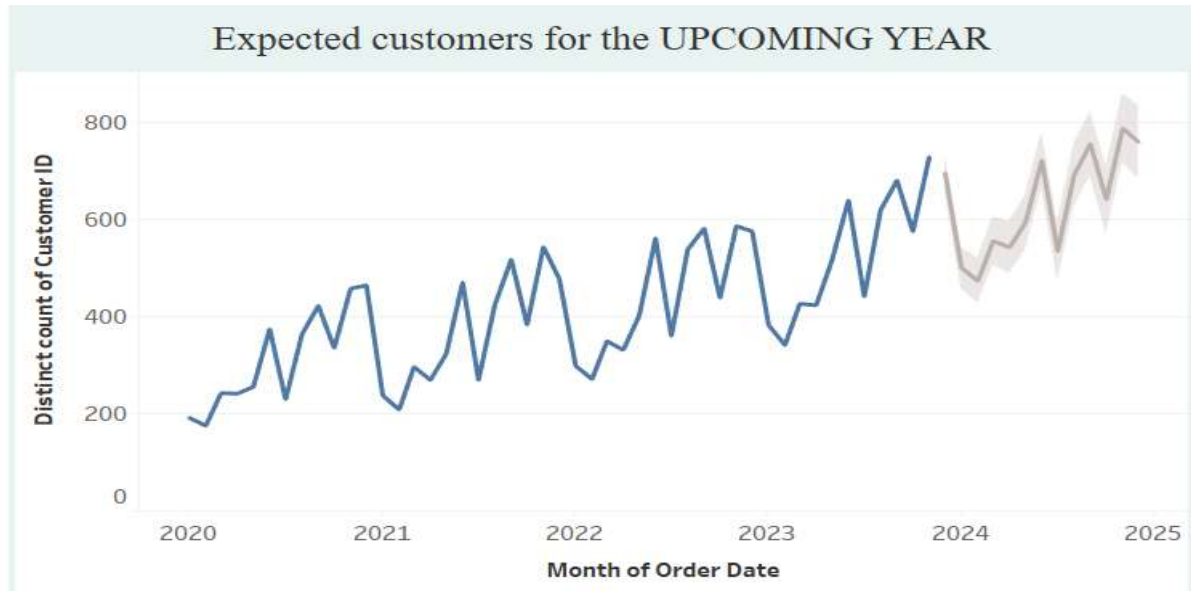


Figure 15.

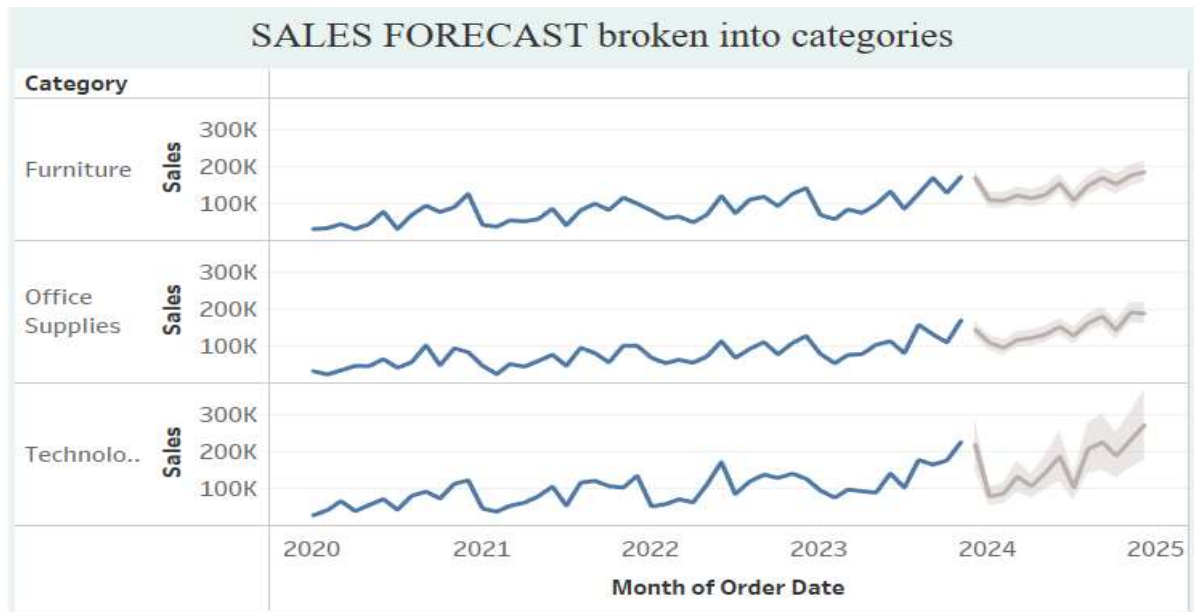


Figure 16.

Based on the three-year data analysis, forecasts indicate that the company's customer count is expected to dip slightly at the start of 2024 but will gradually rise, with an overall increase of 30 customers by the end of the year. Additionally, sales across various categories are projected to grow significantly by the end of 2024.

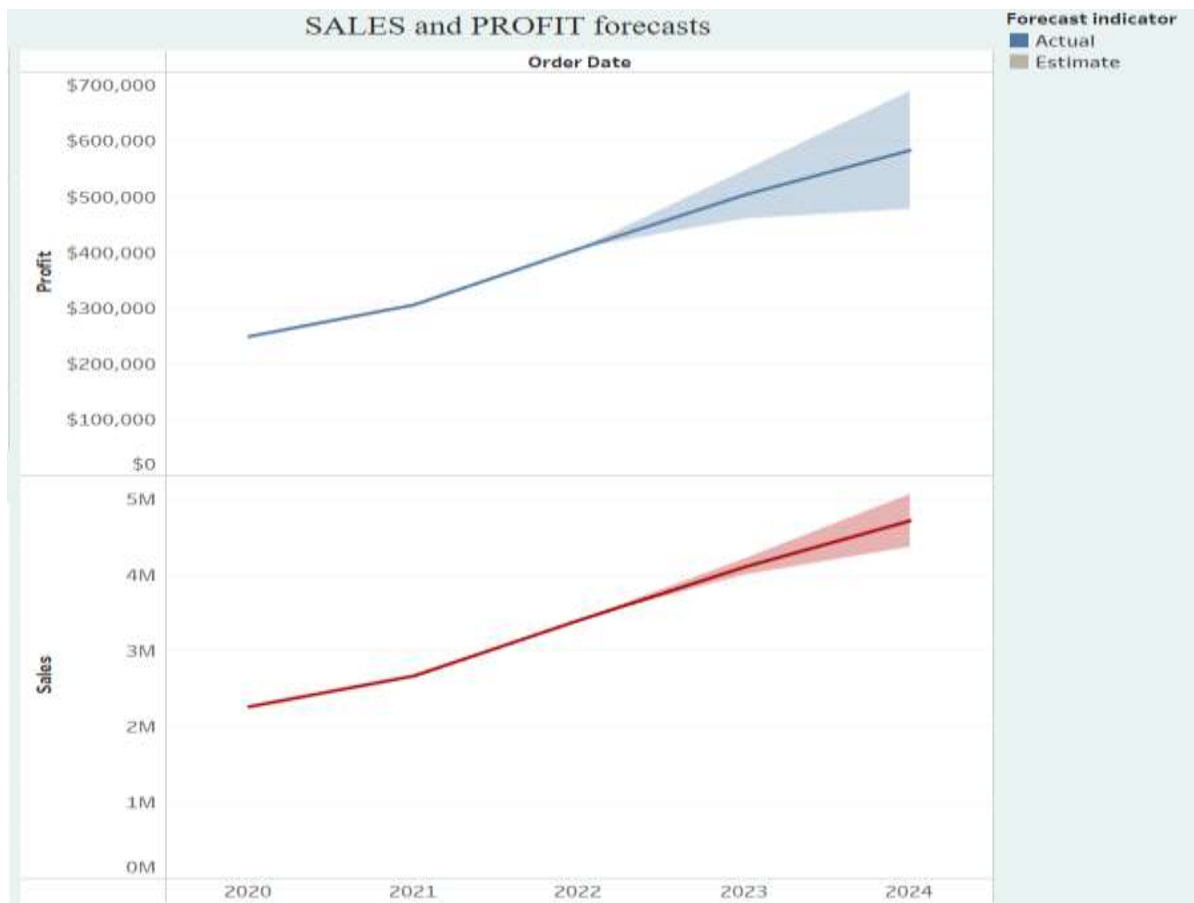


Figure 17.

According to forecasts, the surge in sales across different categories, along with an expected increase in customers, is likely to drive higher sales and profits for the company.

## RECOMMENDATIONS AND CONCLUSIONS

Overall, the retail company is performing well. However, a deeper analysis reveals opportunities for improvement that can shape the company's future.

- While analyzing the USA, Texas is a loss-making state but has high potential. Reducing the discounts in office and furniture categories could boost profitability, as tech products perform well with 20% discount. Introducing diverse marketing strategies and seasonal promotions for slow-moving items can help increase sales.
- Canada has high potential but generates relatively low profits. With profit ratio around 25% indicating growth potential, its 0% discount strategy has resulted in minimal profits, by introducing better offers and discounts could help improve profitability.
- Technology product have shown strong profitability across markets, even with discounts. This category should be prioritized for growth and profitability.
- Recruiting a better marketing team to target low-sales markets could expand the company's reach and boost sales.
- Optimizing the shipping strategy for high- cost subcategories by negotiating improved rates with logistics providers for bulky or expensive-to-ship items such as tables and machines.
- Considering offering slower, cost-effective shipping options for non-urgent orders.
- Instead of giving high discount rates for smaller products like binders introducing free or discounted shipping promotions to boost sales.
- Evaluating discount strategy to determine whether the high discounts offered products are generating enough sales volume.
- Monitor and optimize the supply chain strategy.