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EXECUTIVE SUMMARY

The e commerce industry has been and is one of the fastest growing sectors in today's business world, given its ease of ability to match products with the relevant target audience globally, making it convenient for all parties included in transactions.

In order to understand the provided dataset, a summary of the features and measures will be highlighted next.

To begin with, the company offers diverse products to 3 customer segments named Consumer, Home Office and Corporate, through 3 main categories titled as Furniture, Office Supplies and Technology, further segregated to 17 subcategories through 7 markets named APAC, EMEA, Africa, Canada, EU, LATAM and US to span across a total of 147 countries.

Looking at logistics, the company utilizes 4 different shipping methods called First, Second, Same-day and Standard Class to meet the delivery expectations of customers according to their requested levels of urgency ordered by Critical, High, Medium and Low priority.

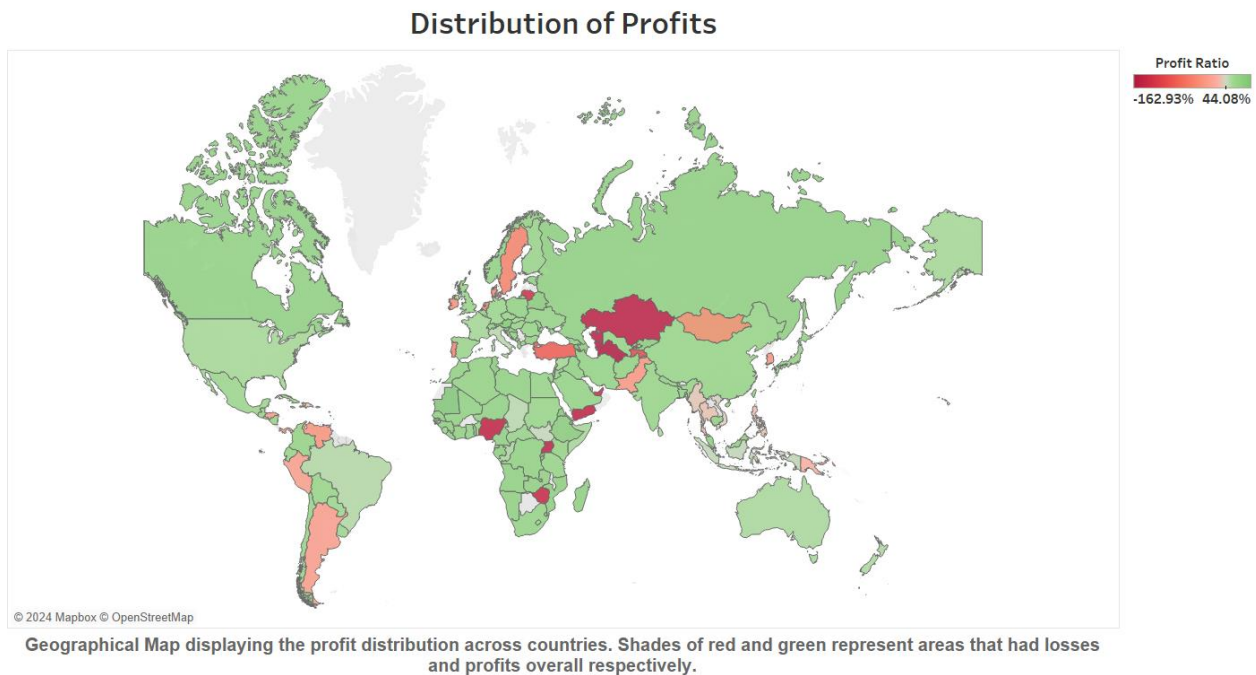
1. INTRODUCTION

After a thorough analysis on the dataset for the years 2019 through 2022, meaningful data visualizations have been put together to identify appropriate relationships and trends between variables accountable for the company's relative strengths, weaknesses and important areas of focus in performance.

This report comprises of five main analyses (Company, Product, Shipping, Customer & Country) including visualizations and suggestions for the senior management towards the end.

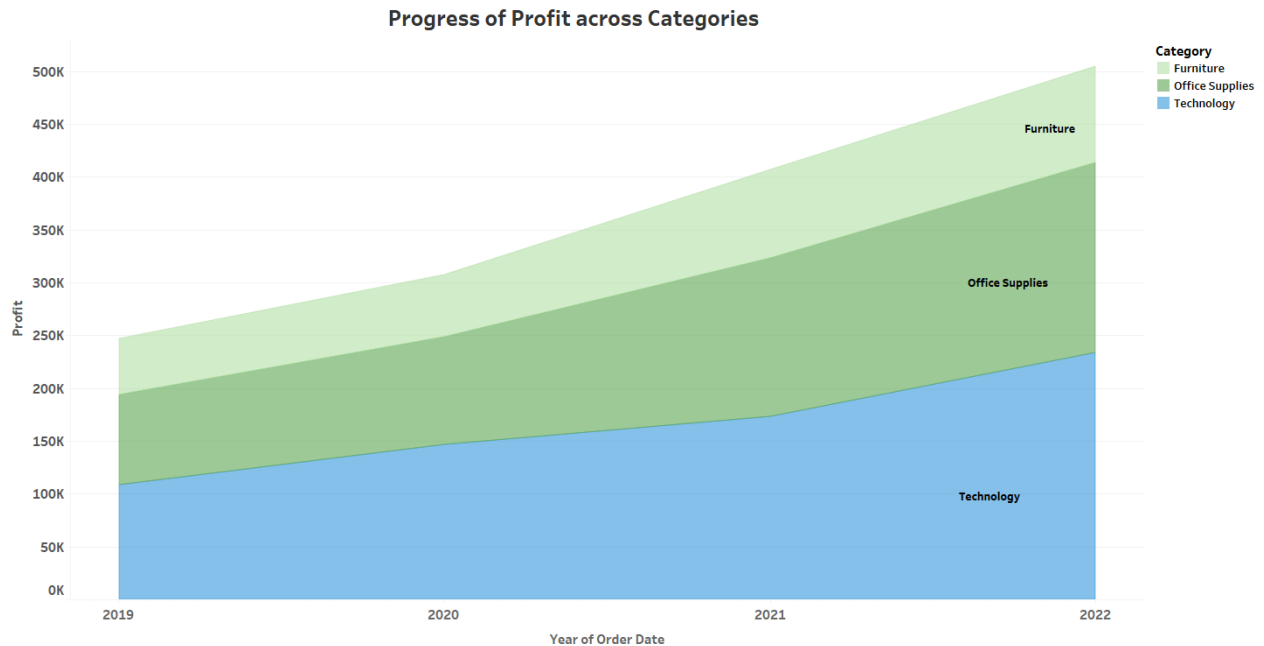
2. ANALYSIS

2.1 COMPANY OVERVIEW



In order to get a global perspective of the company's performance, profit ratio was considered to assess profits generated relative to sales by each country. Low-income countries such as (Tajikistan, Yemen, Uganda, Zimbabwe, and Nigeria) have led to extreme losses. It is surprising that some of the middle and high-income countries such as Kazakhstan, Turkmenistan, UAE, and Lithuania have contributed to large losses with profit ratios as low as -162.9%, indicated by dark red zones. Shades of light green represent reasonably profitable countries overall, indicating favorable opportunities for growth.

Profits generated across each category have increased annually. The profits since the start have approximately doubled, from \$247.2K to \$504.4K.



An area chart representing the growth of profit over the years for the 3 main categories.

The technology sector dominates, and demand continues to increase rapidly. The rate of increase in profits for furniture has decreased. Profits generated across each category have increased annually. The profits since the start have approximately doubled.

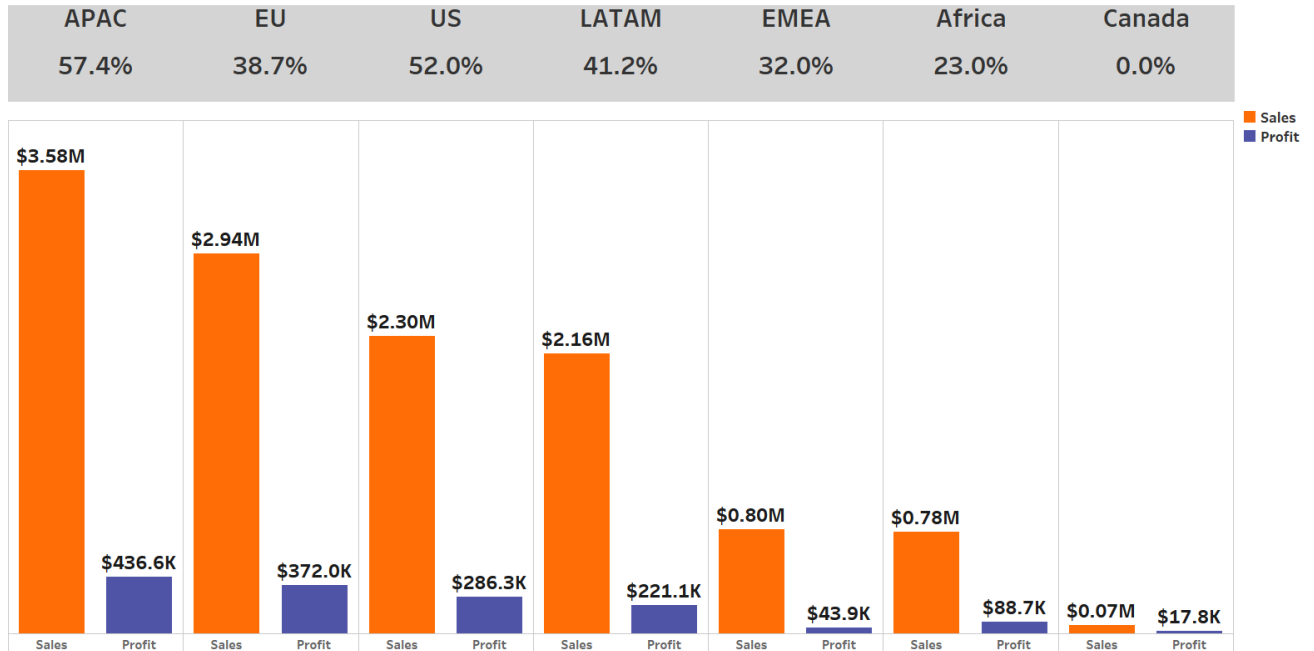
APAC is the most profitable market, with \$436.6K in profits, and has generated the highest sales, a little over \$3.58 million, where Canada is at the other extreme.

The African market has double the profit margins compared to the EMEA market, despite having a similar number of customers, which can be attributed to the low-income countries within the EMEA market.

The numbers above the chart highlighting the proportion of discounted transactions within each market, indicate a clear correlation.

Market Overview

Proportion of discounted transactions



Sales are lower in markets that provide discounts, less frequently.

The noticeably high rate of frequent discounts given (32%) to the (23%) by the African market, seems to diminish the profit margins.

The "Canadian" market has the lowest profits, which is evident looking at the fact that no discounts are provided.

2.2 PRODUCT ANALYSIS

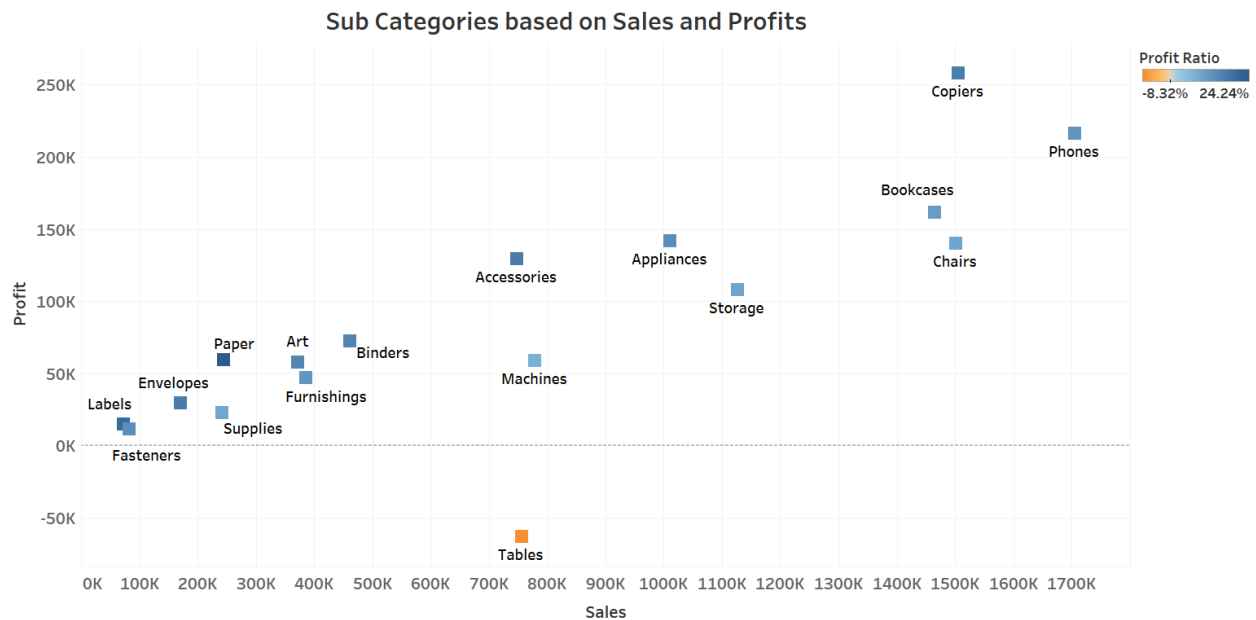


Figure shows the performance of each of the 17 subcategories with respect to the sales and profits generated.

Copiers are the most profitable, having the second-highest sales, followed by phones. Labels and Fasteners have limited sales but are profitable, while others have performed reasonably well, except for "Tables." The only subcategory that has generated losses overall of over \$60K after yielding approximately \$756K in retail, which is a significant downfall to the company's overall performance.

Below lists the top 10 profitable products, according to sales generated where bars get darker shades of blue with higher quantities. The top 9 have good profit margins after reasonable discounts. However, the 10th product, "Samsung Smart Phone, Cordless," has made a loss, which can be stated "insignificant," but can impact with greater sales.

Top 10 Profitable Products by Sales

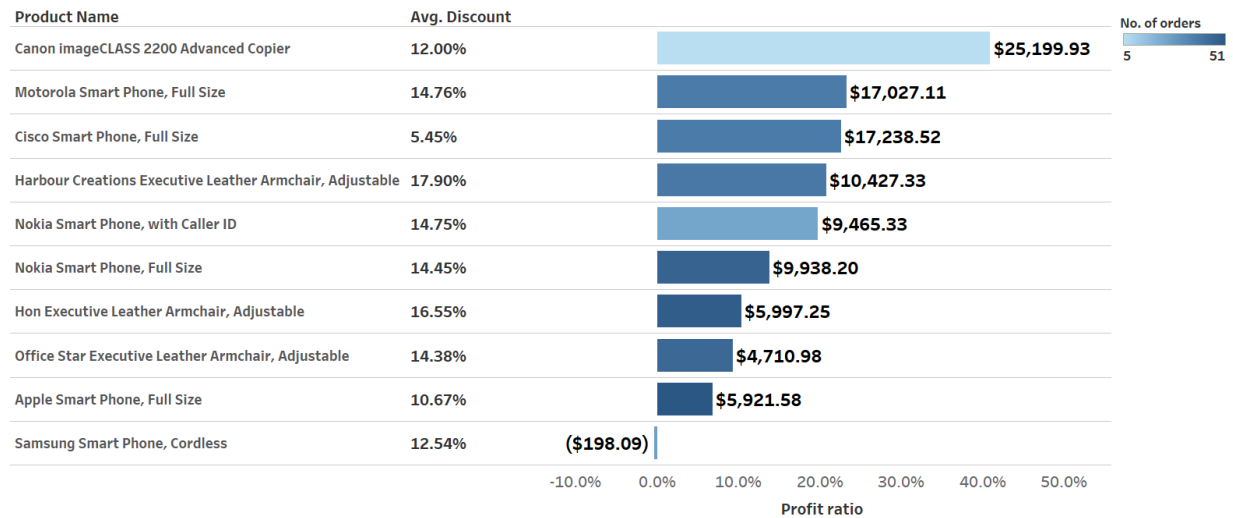
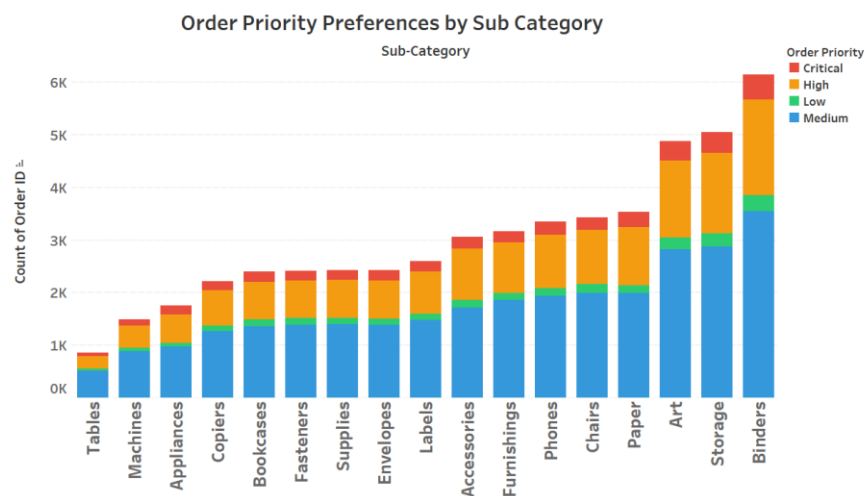


Figure shows the top 10 profitable products by Sales with the average discounts provided and the profits generated are marked at the end of each bar.

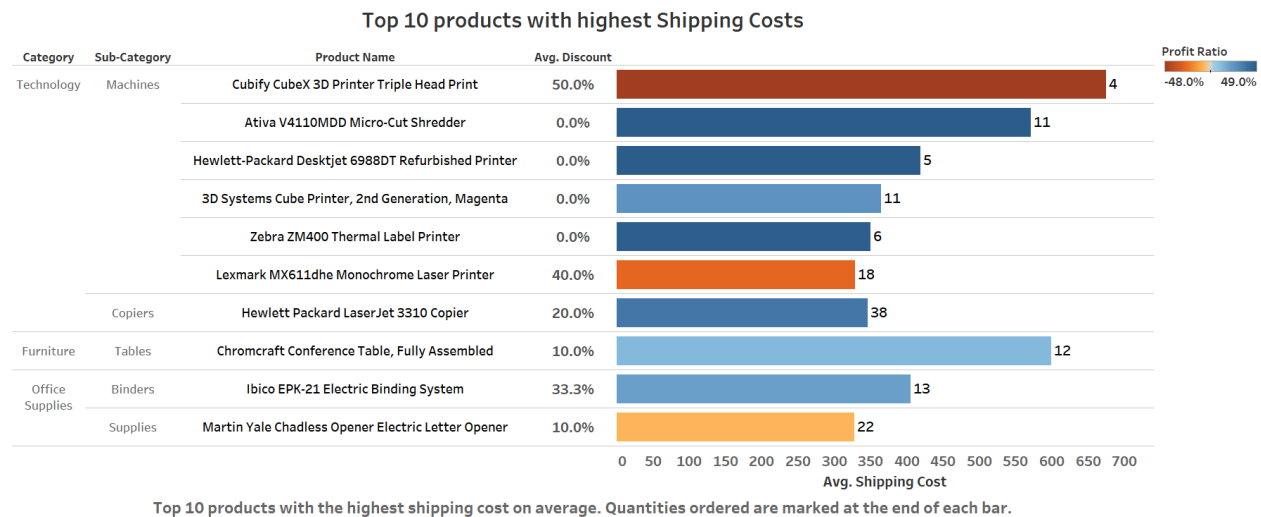
Looking at the quantities ordered, it is apparent that more than half of the orders are requested with "Medium-priority" indicated by the blue portion of every bar followed by "High-priority" (Orange). Considering the rational behavior of customers, it is reasonable that a very small fraction has "Critical" and "Low" priorities.



A stacked bar chart displaying customers' level of urgency to have products delivered by the counts under each of the 17 subcategories.

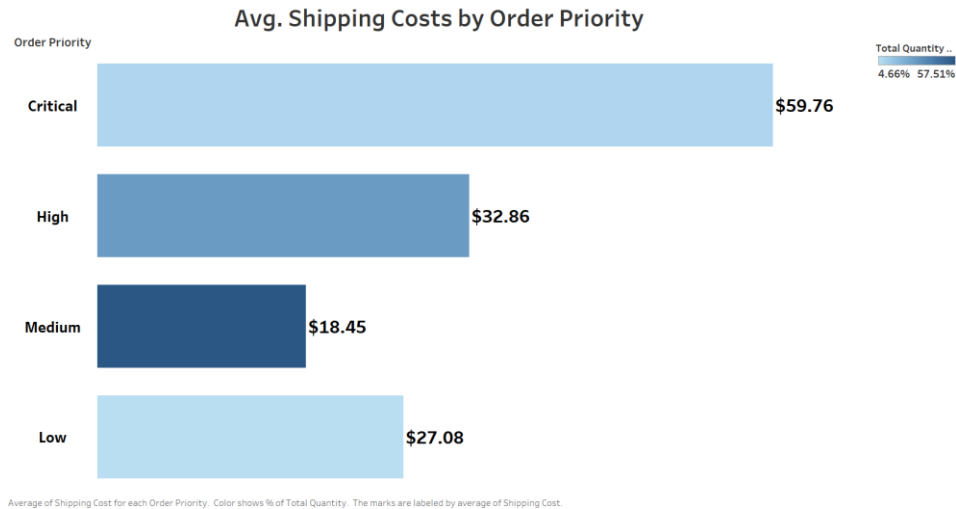
2.3 SHIPPING ANALYSIS

The subcategory “Machines” occupies the top 7 positions, followed by a few products under “copiers, chairs, tables, binders and Suppliers”.

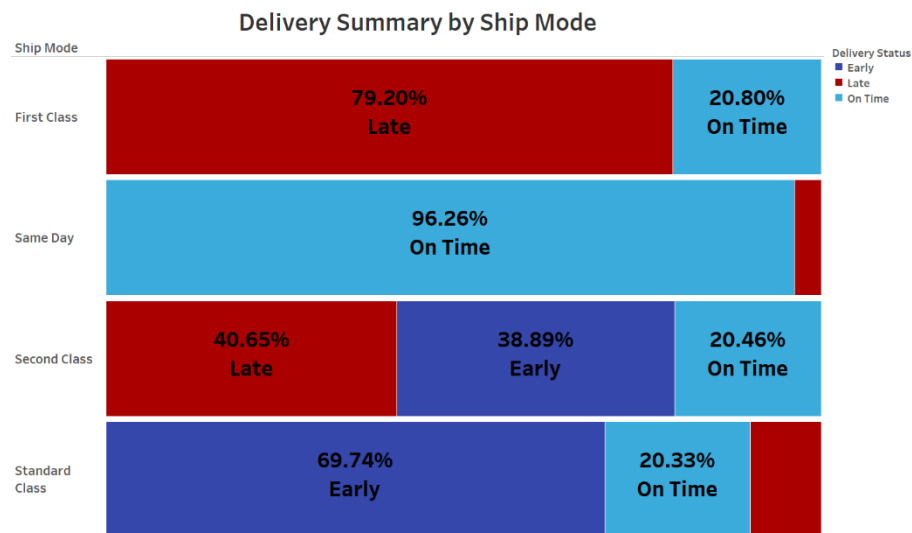


Quantities ordered were marked at the end of each bar to assess the impact of shipping costs on profits made, it could be concluded that extreme discounts of 40% and 50% have resulted in, “Lexmark Monochrome Laser Printer”, “Cubify Cubex 3D Printer” in making losses. Thus, the impact of shipping costs on the profits is at a minimum compared to that impact of the discounts. “Martin Yale Electric Letter Opener” is loss making after a 10% discount, indicating that shipping cost is high.

Shown below are shipping costs in relation to order priority. It is assessed that average cost for “low priority is higher than that for “medium priority”, while other shipping costs follow expectations, which could be due to high demand in medium priority. Low priority costs exceed reasonable thresholds.



Standard assumptions were considered to analyze performance of delivery, concluding that it takes only a maximum of 0, 1, 3 or 6 days to ship on “First, same-day, second, and standard classes” respectively.



“Same-day and Standard” have provided a satisfactory service while the other two have executed poorly, especially the “First class” due to 80% of orders getting shipped late.

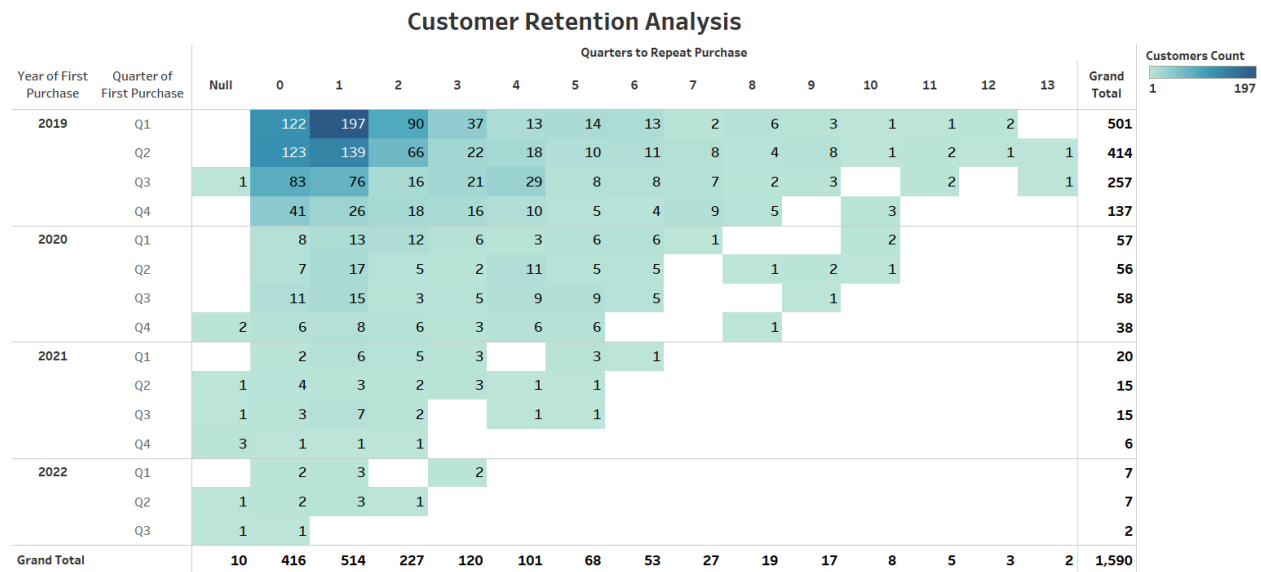
Shipping Cost Breakdown by Delivery Status and Priority

Delivery Status	Order Priority	Avg. Shipping Cost	Quantity	Status
Early	Critical	\$52.8	3,418	Early
	High	\$30.0	30,874	
	Medium	\$16.9	54,438	
Late	Critical	\$60.5	4,678	Late
	High	\$36.1	13,538	
	Low	\$26.6	4,054	
	Medium	\$21.8	23,790	
On Time	Critical	\$63.7	5,330	On Time
	High	\$37.5	9,529	
	Low	\$27.5	4,243	
	Medium	\$18.7	24,197	

Table shows how delivery performance affects average shipping cost based on the requested order priority.

Average shipping cost is significantly lower when orders are shipped early under each Priority, but it is unusual that shipping costs for every priority except "Medium" are higher when shipped "On-time" compared to "Late" shipments, which is worth investigating.

2.4 CUSTOMER ANALYSIS

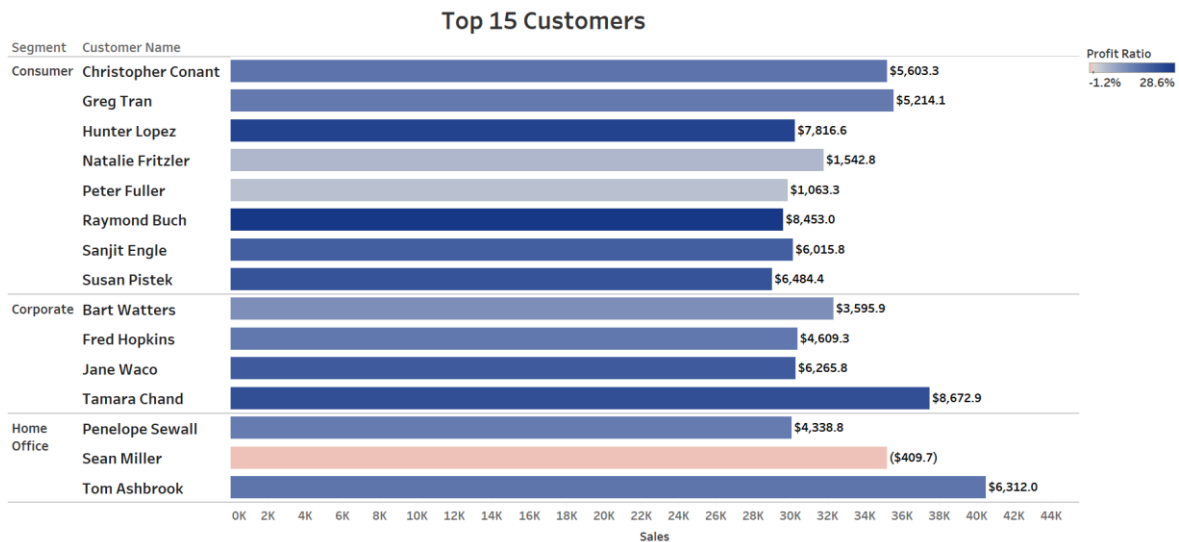
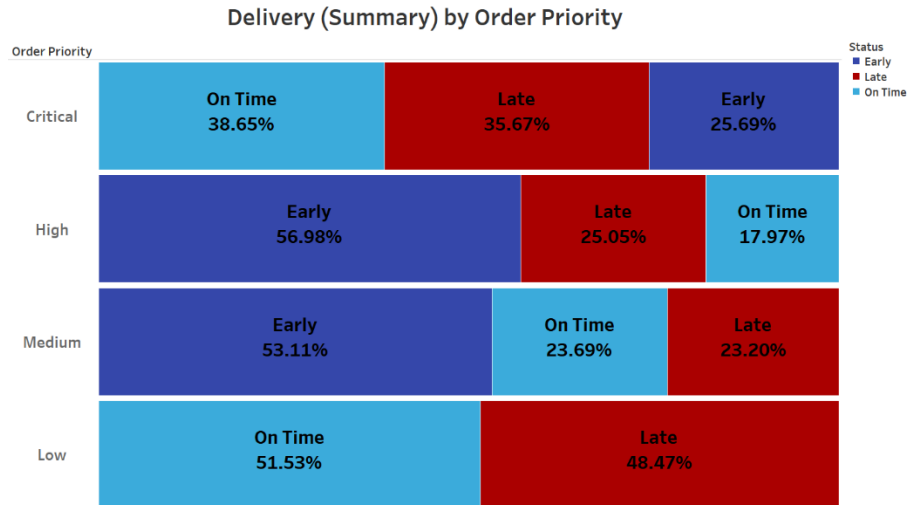


Cohort Chart to identify performance in terms of customer retention and realization.

Example: from the 501 new customers acquired in 2019 first quarter, 122 repeated a purchase in the same quarter, 197 in the second quarter and so on.

The column labeled "Null" shows that only 10 of the customers haven't made a second purchase, which is good, but most of them are from the recent 2 years, indicating that the company is losing newly acquired customers. Most purchases were repeated during the first quarter of 2019, indicated by the darker zones. It can be noted from the row totals that more than 80% of the customers are from 2019, so it is evident that the number of new customers has declined drastically over time, but have retained existing customers well since sales have increased over the years.

The performance for delivery was analyzed again by Order-priority, where the same assumptions were considered. It is apparent that the portion of "Late" shipments lead to poor customer experience when orders are especially under "Critical" and "High" priorities, causing them to switch to competitors.

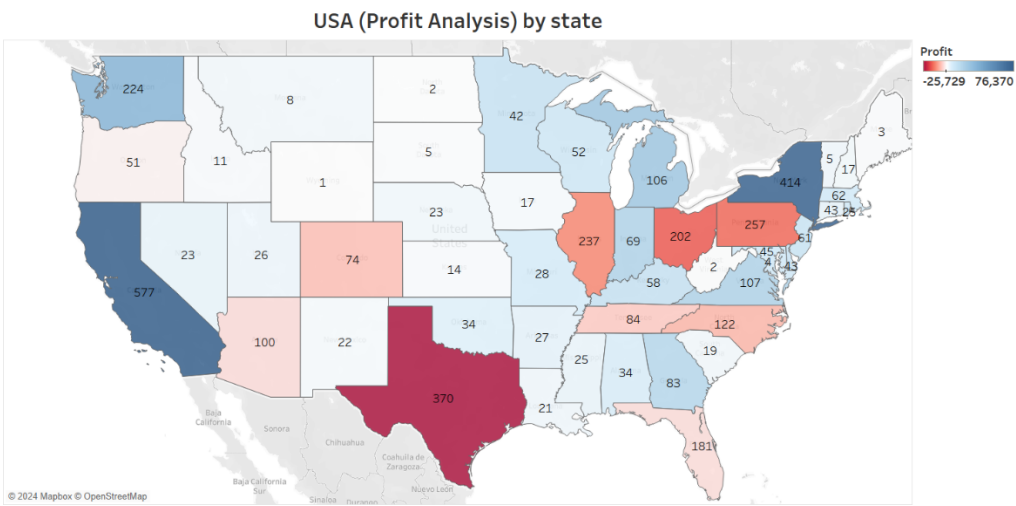


Eight of the top 15 customers represent the "Consumer Segment", followed by the "Corporate Segment" and a few from the "Home-Office" segment. Tamara Chand is the most profitable contributor from the "Corporate Segment," with a profit of \$8673, with the majority of purchases made on "Copiers."

A loss of \$410 can be seen, regardless of a sales figure over \$35K due to the 5th highest customer, Sean Miller's major purchases on Machines.

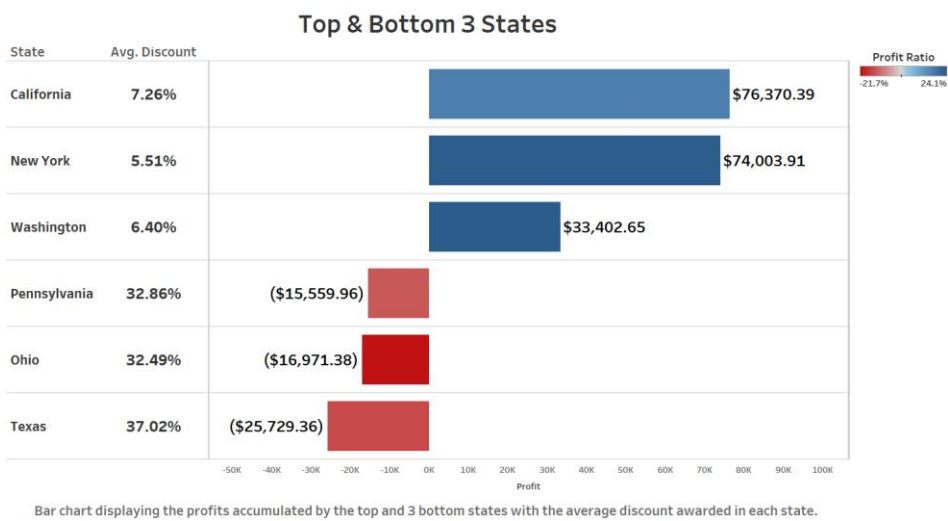
2.5 COUNTRY ANALYSIS

The top performing country, US has accumulated approximately \$2.3 million in sales, yielding a total profit of around \$290K and a profit ratio of 12.5%.



The highlighted states (Texas, Ohio, Pennsylvania, and Illinois) in red are accountable for the majority of losses and some despite having a large customer base. States in white are at a breakeven point, while dark blue regions represent the most profitable states (California, New York, Washington, etc.)

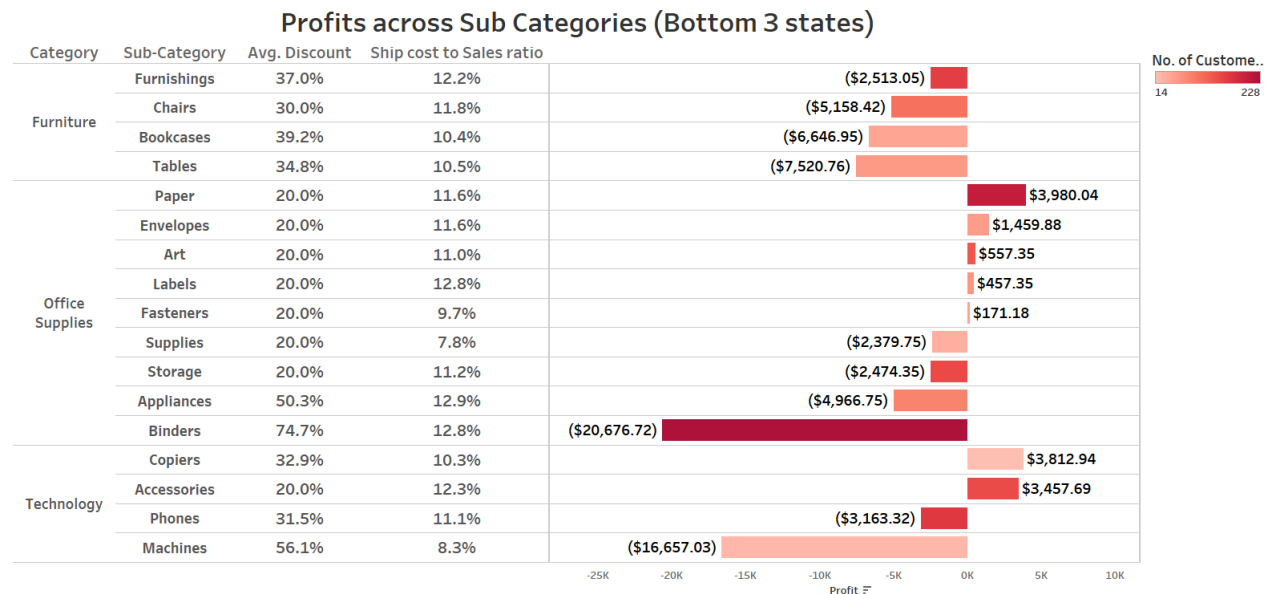
Maine, North and South Dakota, Wyoming, etc. have a very low number of customers.



New York is the most profitable, followed by California, which has the largest customer base as shown above.

Shipping costs are responsible for 10-11% of sales, as shown by the ship cost to sales column, which is reasonable.

In conclusion, extreme discounts have contributed majorly towards losses in comparison to the top 3 states, which have given discounts ranging from none to 20%. Most of the profitable subcategories were given 20% off on average, although Copiers have managed to make profits regardless of a high average discount (32.9%). Binders have made the highest loss, being bought by the highest number of customers at 75% discounts on average, followed by Machines showing a similar pattern.



The 2 major costs, average discounts and shipping costs' effect on profit generated examined for the bottom 3 states.

3. RECOMMENDATIONS

- Canada can provide discounts, giveaways to engage new customers and thus increase market reach due to the presence of a high profit ratio which amplifies sales.
- Countries within the EMEA market can increase profit ratio by reducing the proportion of discounted orders.
- Due to the presence of high demand in the technology sector, discussion with producer to expand product offerings.
- Discuss product localization with producers, to ensure they are affordable for low economic countries with losses.
- Stated that to cut down losses or delist from the site, the costs and selling prices for tables should be revaluated.
- Price increase for, Labels, Fasteners, and other loss-making products to increase profitability.
- Reduction in Shipping costs for Samsung Smart Phone Cordless since it is only the 10th profitable product in terms of discounts.
- Employing Skilled Web Designers to redesign the site which would result in the promotion of complementary products and bundles on the shopping cart page.
- Alternative shipping methods, negotiation with distributors to lower prices for “low priority” shipping costs.
- Optimization of loading times from inventory to reduce costs through early shipments with the use of data science teams.
- Price increase for medium priority for higher profit margins and limit price reductions for bulk orders.
- Investigate further what holds on-time shipments back from being cheaper than late shipment costs.
- Customers made aware of delays to increase customer satisfaction.
- Reach wider customer base using influencers/celebrities for product promotion.
- Referral Programs, Subscription service and loyalty cards for repeat purchase from new or existing customers.

4. CONCLUSION

The company should mainly prioritize on new customer acquisition and logistics optimization. Entering the Canadian market could potentially boost performance levels to new heights. It is also important to reduce extreme discount rates and invest it on other strategies.

Overall, insights from this analysis exhibits positive performance showing significant growth trends in sales, profitability and potential for the company.