Business Analytics Report

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Executive summary

- It was known that United States was the country with the most sales **($2,297,201)** and profit **($286,397)** which covered **18.17%** of the global sales and **19.52%** of the global profit.
- England was reported to be the most profitable **state** globally with a profit of **$99,908** which is a **20.6%** profit to sales ratio.
- All customers had made their **first** purchase in the year 2018.
- **40.3%** of the shipments were delivered late where the highest contribution being from **office supplies.**
- The product The product Canon imageCLASS 2200 Advanced Copier is the most profitable product sold and has been around for only 2 years.

1. Introduction

This in-depth analysis revolves around a retail company from the years 2018 to 2021, which includes information about products, customers, locations and etc.

The following assumptions were made for the analysis and are listed below.

- The 'customer ID' and 'Order ID' were used to represent unique customers and orders
- The following assumptions about shipment statuses were used;

Order Assumption	Days taken to ship(x)
Early	0<=x<1
On time	1<=x<=4
Late	x>4

Where early will be the order being shipped within 24 hours, On time taking between 1 and 4 days and Late being more than 4 days to be shipped.

- No information about inflation had been given in this dataset.

2. Analysis & key findings

2.1 Global analysis

147 out of the 195 Countries had been taken into account when data had been collected.

As mentioned earlier the **United States** is the country with the highest sales and profit and the **APAC market** has covered **28.36%** of the global sales which is the market with the highest sales. The **central region** is the most profitable region due to the United States being a part of it.

However, we see Canada having significantly lower sales than the United states being neighboring countries.
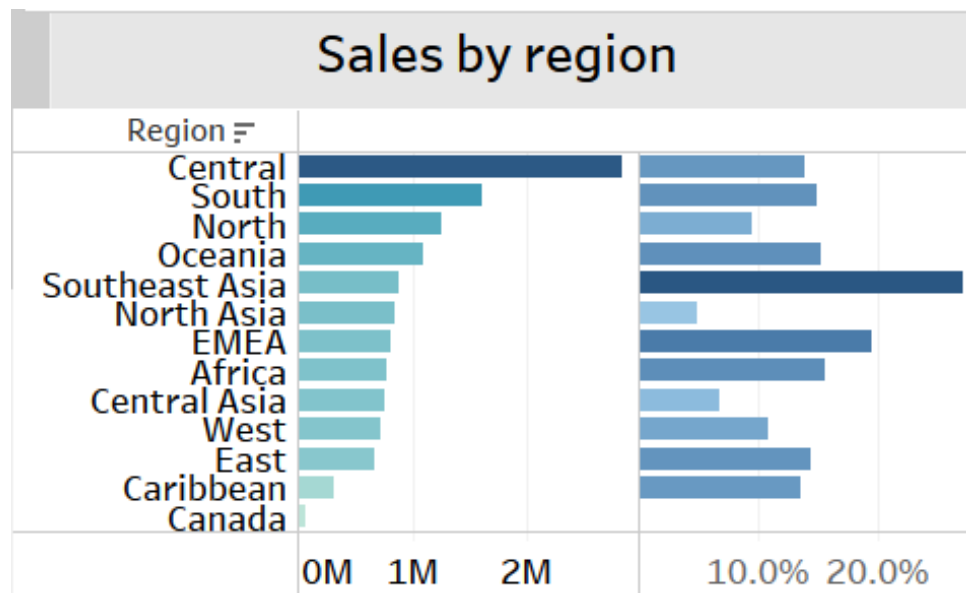

Figure 1

From **Figure 1** we can see that Canada is the only region with a 0% discount on sale thus this may be one of the reasons for its abnormally low sales. However, this may not be the only reason for the low sales since discount and sales don't seem to have a very clear correlation when analyzing this figure. Factors such as poor marketing strategies, inefficiency etc.
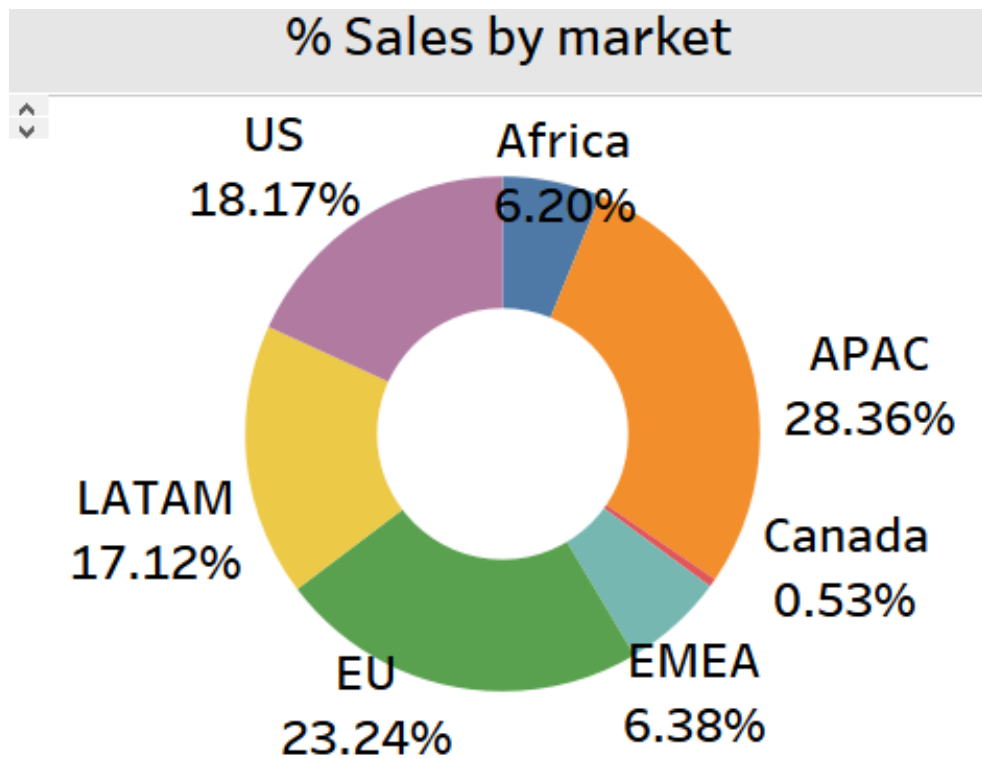
% Sales by market

US 18.17%
Africa 6.20%
APAC 28.36%
Canada 0.53%
EMEA 6.38%
EU 23.24%
LATAM 17.12%

Figure 2

We see Canada, Africa and EMEA contributing the lowest sales in each market totaling a **13.11%** contribution. Canadas reason maybe the 0% discount offered however Africa and EMEA provide relatively good discount rates.

2.2 United States analysis

California is the state with the highest sales acquiring **19.92%** of the total sales of the US, followed by New York, Texas and Washington.
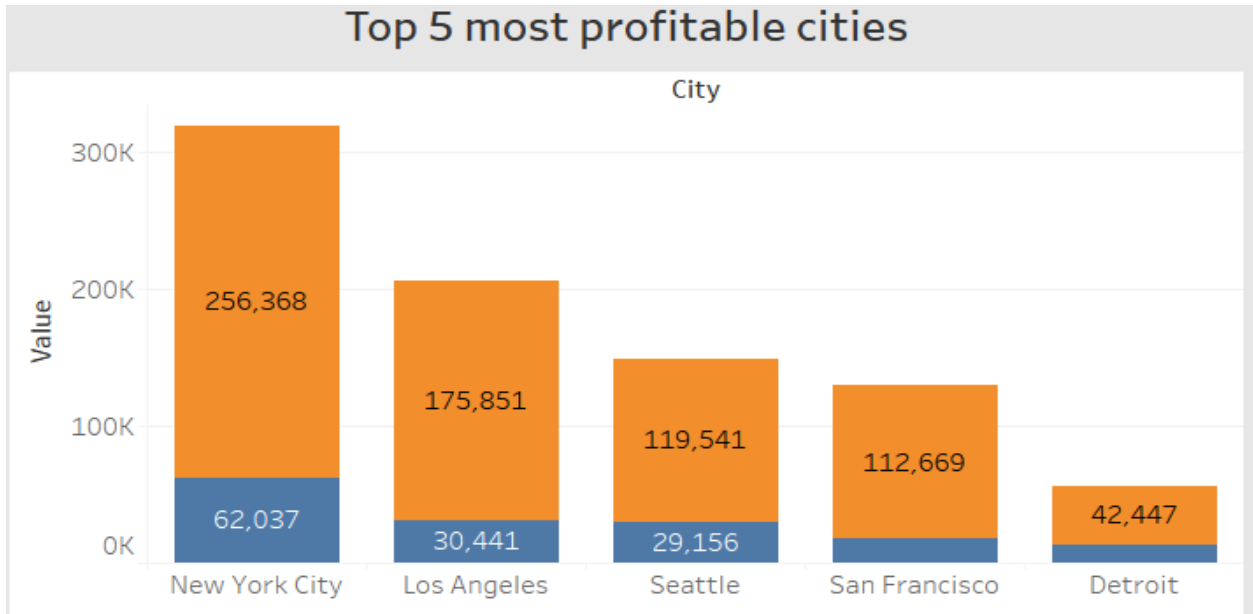

Figure 3

With reference to figure 3, We see that **New York city** is the most profitable city. This may be due to better marketing, economies of scale and higher efficiency.
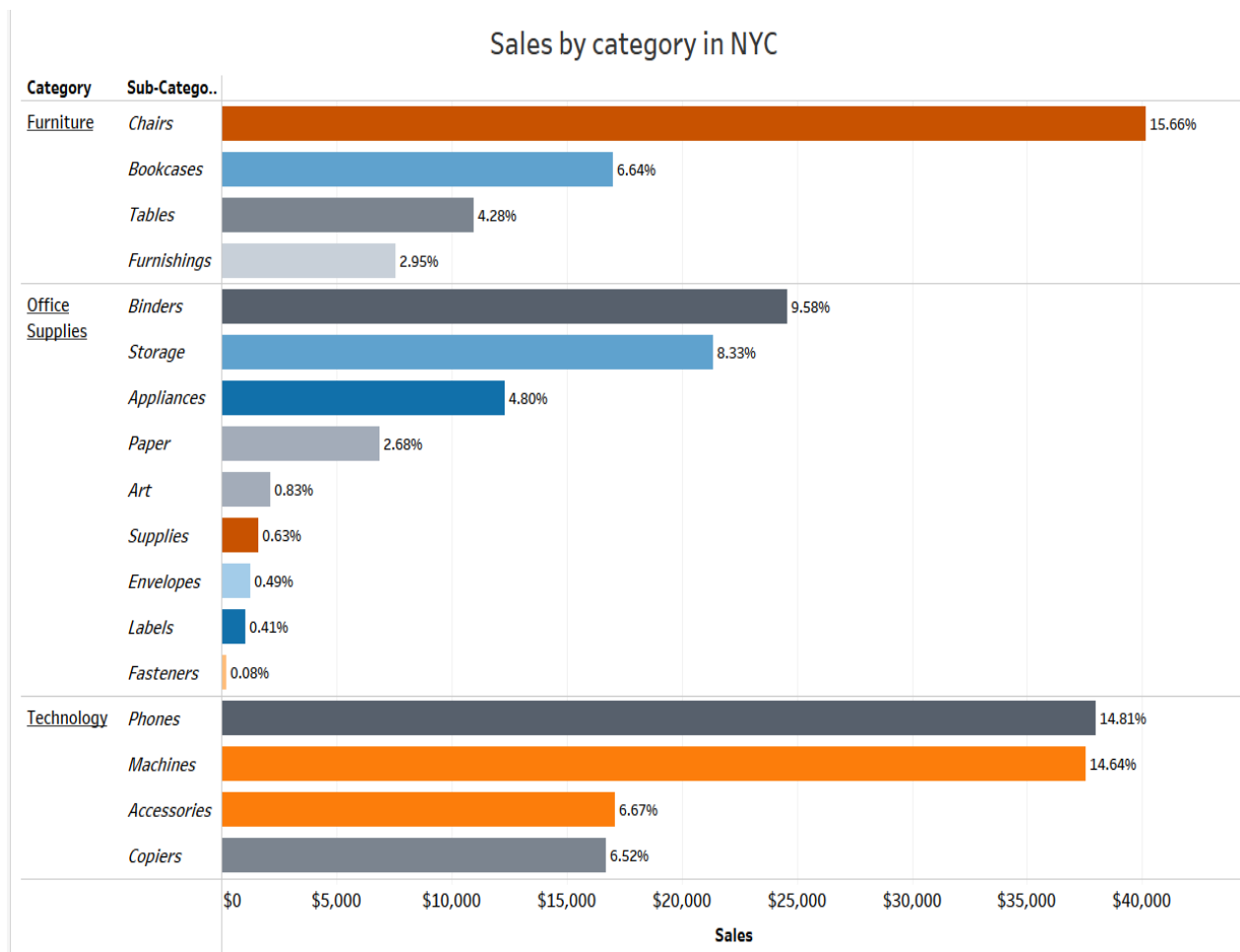
Sales by category in NYC

Category	Sub-Catego..	Sales	Percentage
Furniture	*Chairs*		15.66%
	Bookcases		6.64%
	Tables		4.28%
	Furnishings		2.95%
Office Supplies	*Binders*		9.58%
	Storage		8.33%
	Appliances		4.80%
	Paper		2.68%
	Art		0.83%
	Supplies		0.63%
	Envelopes		0.49%
	Labels		0.41%
	Fasteners		0.08%
Technology	*Phones*		14.81%
	Machines		14.64%
	Accessories		6.67%
	Copiers		6.52%

Sales axis: $0, $5,000, $10,000, $15,000, $20,000, $25,000, $30,000, $35,000, $40,000

Sales

Figure 4

Further analyzing into New York City We see that the **Technology** category covers the highest amount of sales with a percentage of **42.64**% followed by Furniture and Office Supplies. However, **Chairs** are the most sold item in NYC. This can be due to higher discounts offered for chairs or chairs being offered for a lower price due to economies of scale etc.
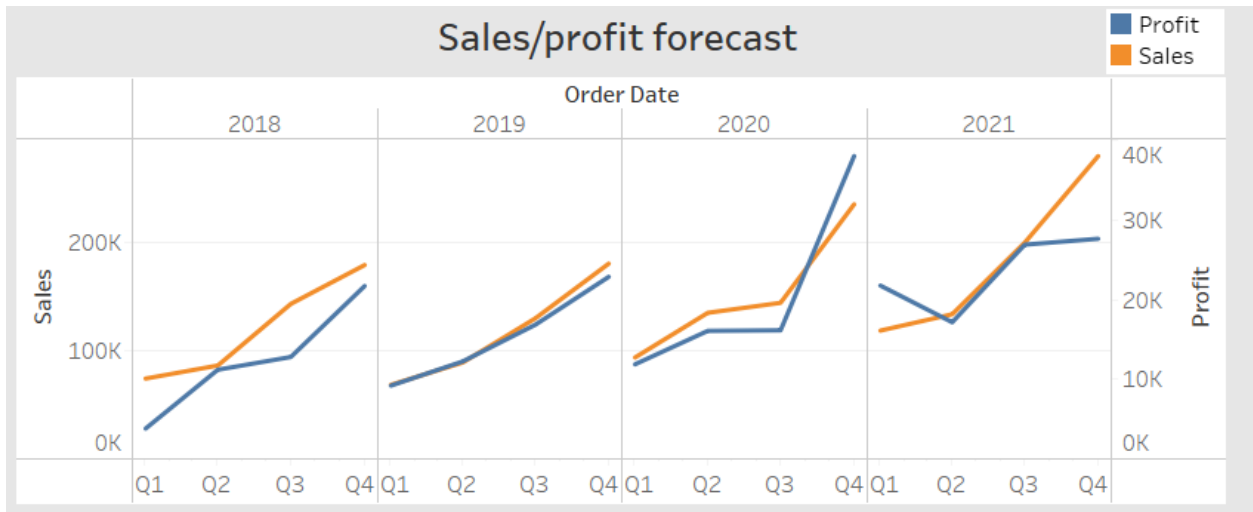
Figure 5

From Figure 5 We see that the United States has been experiencing an increase in profit and sales throughout the years with 2020 being the year with the highest profits recorded however we see a significant drop in profits in the early months of 2021.

We also see that the Sales to profit ratios kept deteriorating throughout the years with the exclusion of 2020 which could be due to poor control of expenses, poor pricing strategies and etc.

2.3 Customer analysis

795 distinct customers have been taken into account for this analysis with an average sale per customer of **$247.89.**
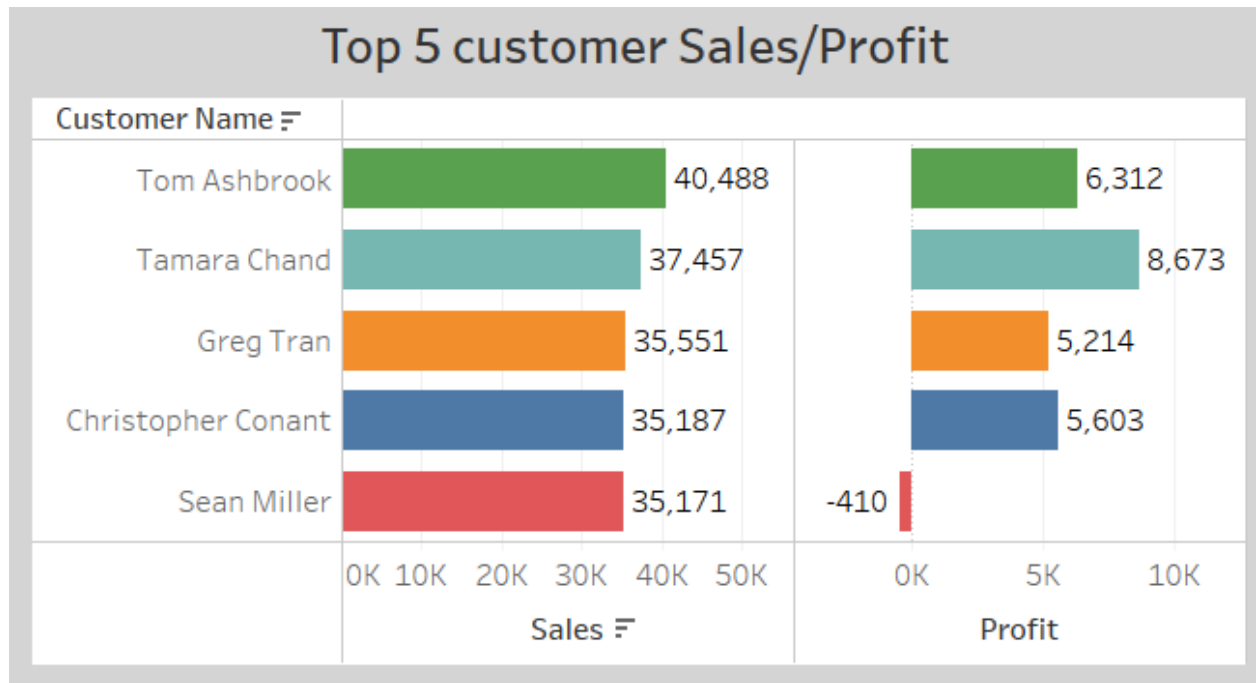

Figure 6

From Figure 6 we see the top 5 customers who have contributed the most sales. **Tom Ashbrook** being number 1 with a profit margin of 15.59%.

However, when analyzing the 5th customer, **Sean Miller**, we see him to be making a loss although of contributing such high sales. This may be due to higher shipping costs and lesser discounts provided for the products he purchased.

Order priority for customers

Order Priority

Figure 7

Overall, we see that majority of the customer orders have a **medium** order priority **(58.78% of all orders).**

Customer Retention Rate

Quarter of Order Date

Quarter..	Custome..	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2	2021 Q3	2021 Q4
Q1	465	100.0%	71.8%	74.8%	87.3%	63.9%	78.5%	86.5%	88.8%	73.5%	88.2%	91.8%	92.9%	81.1%	94.0%	95.1%	97.8%
Q2	234		100.0%	78.6%	85.9%	70.1%	80.8%	84.6%	91.0%	73.1%	88.0%	88.5%	93.6%	84.6%	92.7%	95.7%	96.2%
Q3	78			100.0%	89.7%	55.1%	78.2%	87.2%	94.9%	74.4%	88.5%	98.7%	91.0%	84.6%	84.6%	96.2%	96.2%
Q4	18				100.0%	77.8%	94.4%	83.3%	83.3%	77.8%	94.4%	94.4%	100.0%	66.7%	94.4%	94.4%	100.0%

Figure 8

Figure 8 analyses the retention rate of the customers, being able to show us how many of the initial customers come back to make another sale.

All customers in this dataset have made their initial sale in the year **2018.**

A glimpse of how to interpret this visualization would be for example in 2018 Q2 71.8% of the initial 465 customers contributed to another sale (**repeated customers**).

Thus, we see that between each initial customers' quarter (**2018 Q1-Q4**) and the last quarter of the last year (**2021 Q4**) more than 95% of the original customer base has been retained. This is a very good sign for the company as it indicates high customer loyalty as customers keep coming back for repeated purchases.

2.4 Shipping Analysis

Here we analyze the shipping costs and durations. The average shipping days and shipping costs being **4 days** and **$26.38** respectively.
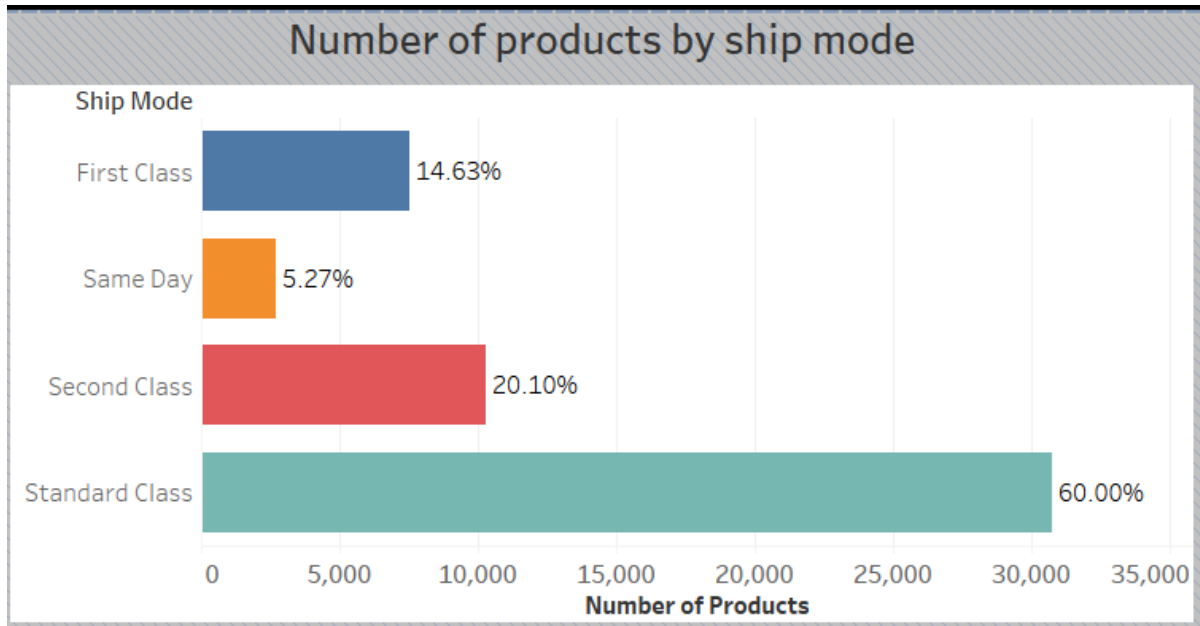

Figure 9

From Figure 9 We can see that 60% of all the products were shipped using **standard class** which takes an average of **5 days** to be shipped which is about one day more than the overall average.
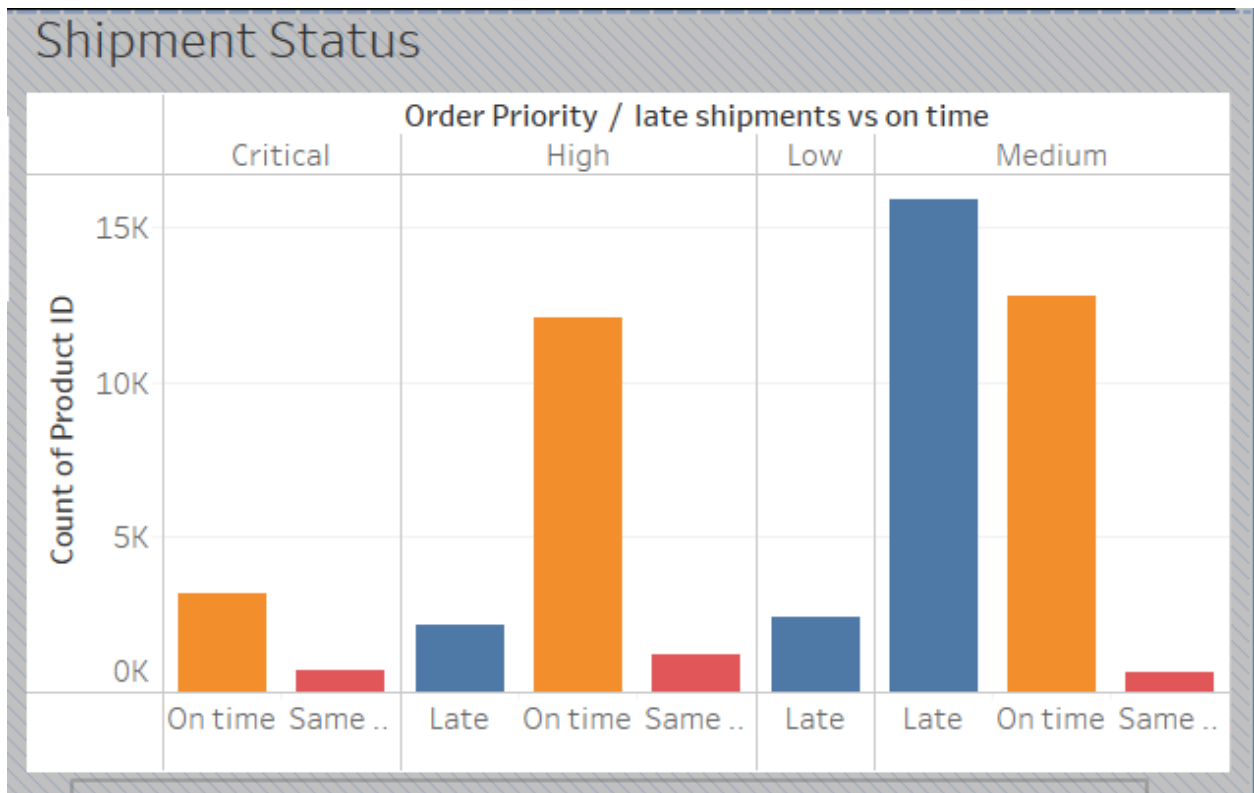
Figure 10

Further analyzing ship mode with the shipment status of the product we see that all **Low priority orders** were shipped **late** as well as majority of the medium priority orders.

This indicates negligence towards Low/medium priority orders and only satisfying the High/Critical orders on time. This may affect customer satisfaction.

Overall about **40%** of all orders were delivered late which should be an eye opener for the logistics department to improve their efficiency.
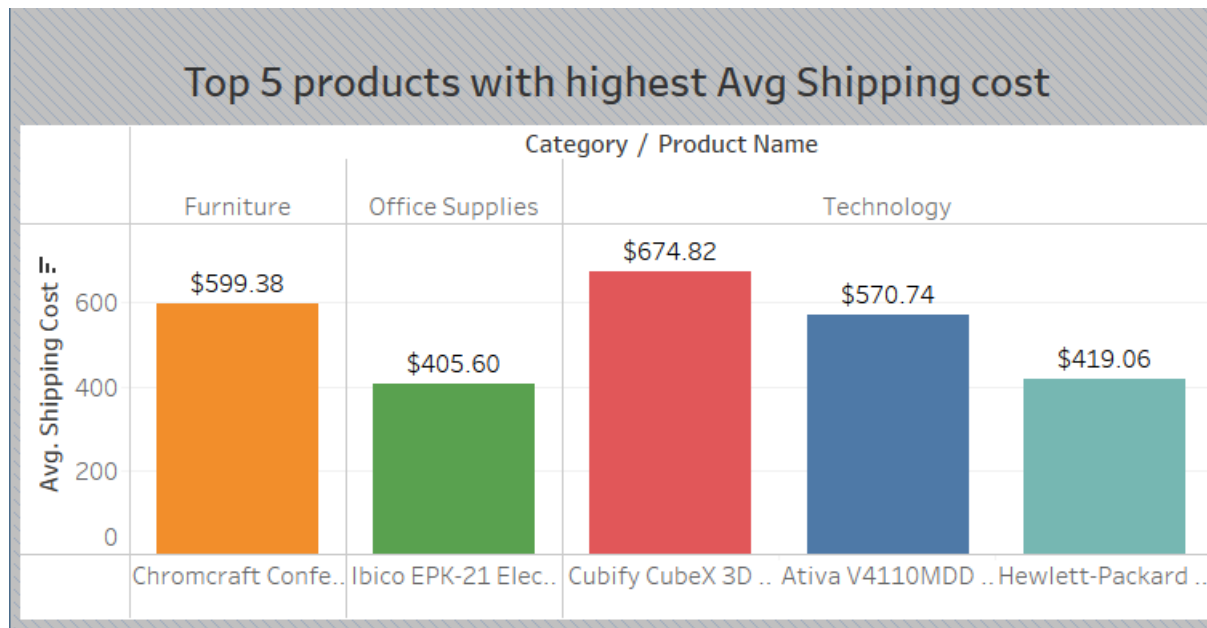
Figure 11

Figure 11 shows us the products with the highest average shipping costs. At first glance, we notice that 3/5 products come from technology which indicates that technological products tend to have higher shipping costs. This may be due to higher import duties on technology. With the product, **Cubify CubeX 3D Printer Triple Head Print** having the highest shipping cost with an average of **$674.82** which is quite significantly higher than the overall mean shipping cost of **$26.38**.

2.5 Product Analysis

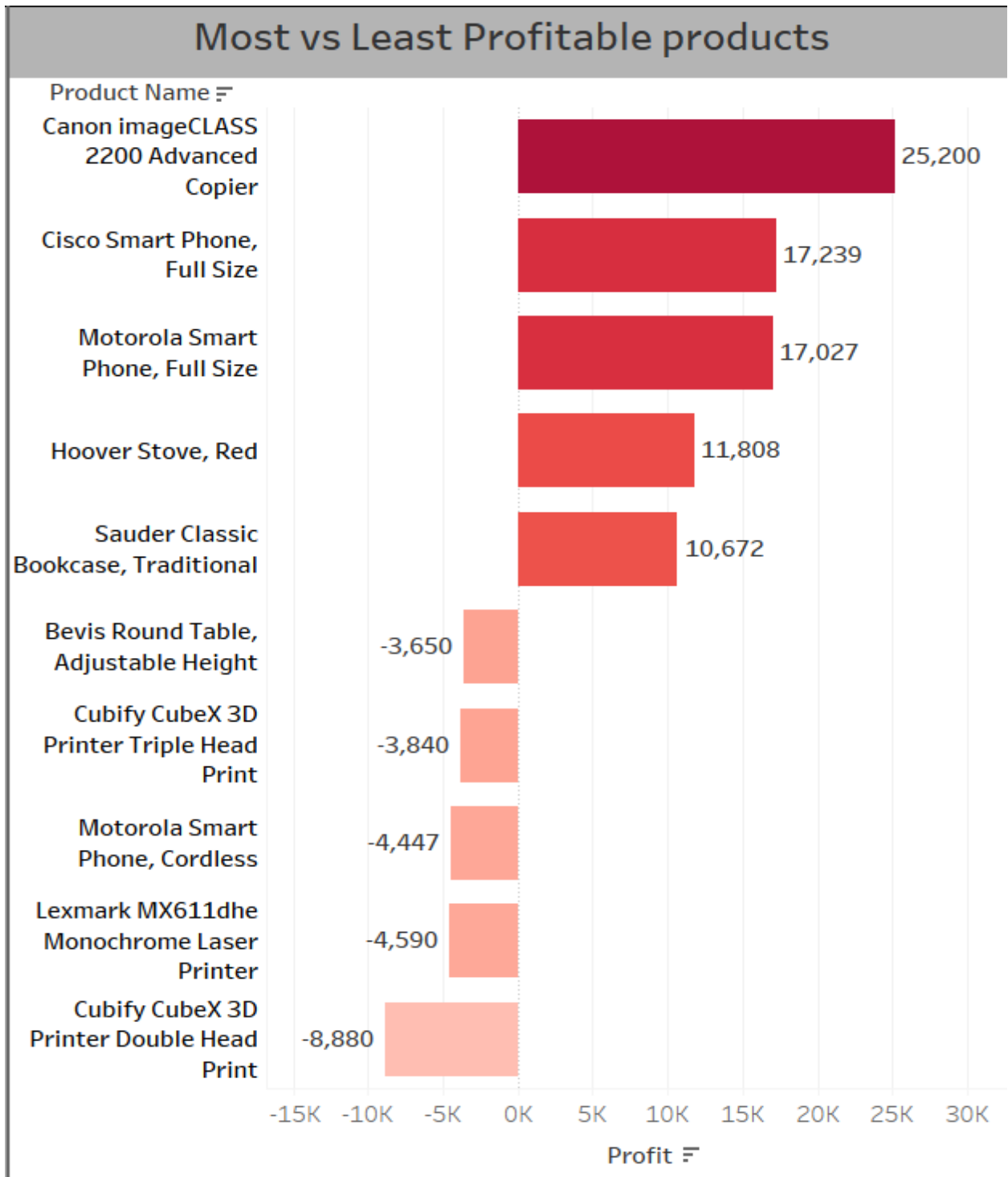3788 distinct products were taken into account for this analysis.

Figure 12

From Figure 12, We see that the **Canon imageCLASS 2200 Advanced Copier** is the most profitable product in the market with profits of **$25200** and having a profit margin of **40.9%**. Once again we see that technological products to be taking the most sales which indicates demand for technology increasing with time.

However, when looking at the highest loss making product which is making a loss of **$8880**, We notice that this was the product with highest average shipping cost **(See Shipping Analysis).** This high shipping cost maybe making the product too overpriced which may result in a great drop in demand for the product thus explaining the loss made.
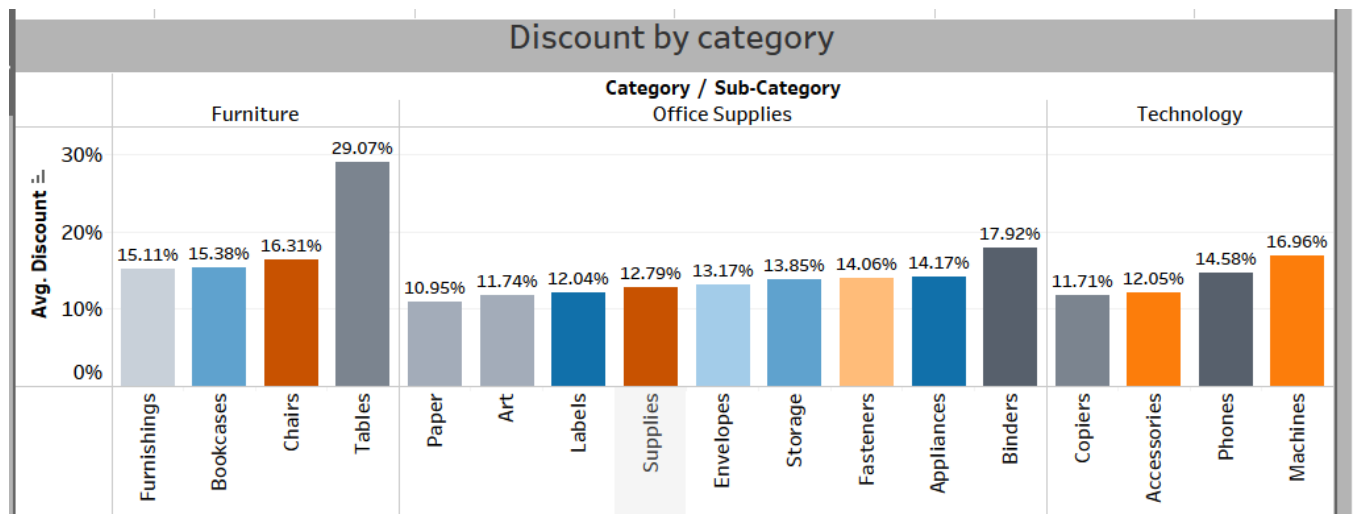

Figure 13

When analyzing discount according to category, we see tables to be having the biggest discount offered of **29.07%.** But when analyzing further we notice that discount offered and profitability have a **negative** relationship. This can be because higher discounts result in lower sales thus this can affect the profit of the company (One of the biggest loss making products is from a table).
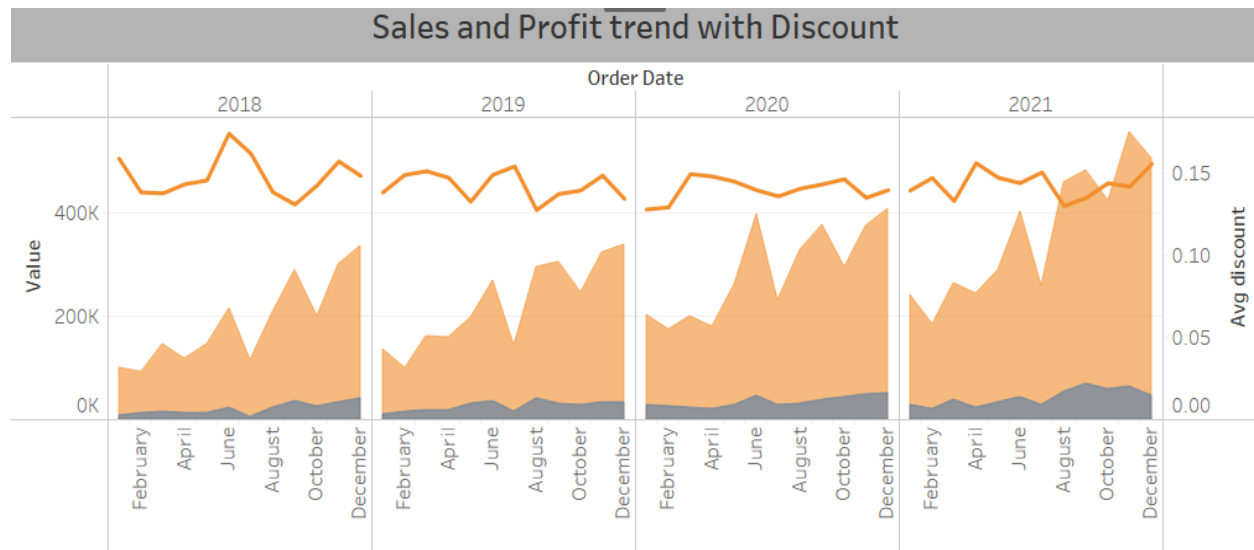
Figure 14

Further analysis with the relationship between discount and sales/profit of products can be explained with figure 14. We notice that in periods like June to July in each year there seems to be a sudden drop in sales and profits. This is also accompanied by higher discount rates, this further proves a **negative** relationship between sales/profits and discount rates.

The company also seems to maintain an average profit margin of above 10% throughout the year which is a good sign.

3.Conclusions and Recommendations

- We see Canada to be a highly potential country with its high profit margins but extremely low sales. Maybe Starting to offer discounts on its products and improving its marketing strategies (The 4Ps, Product, Price, Place and Promotion) may help Canada rise up.
- Markets such as **EMEA** and **Africa** should take measures to boost their sales in the future since they don't contribute much. Introducing new pricing schemes, introducing new products and lowering their discount rates may help them boost their sales.
- When analyzing sales in New York City we see **Tables** to be the only category with a loss of **32.31%** which is quite alarming. The high discount rate may play a contribution to the loss. Tables should be discontinued in NYC in order to improve profitability.
- The company seems to be keeping a very good retention rate of customers showing high customer loyalty and satisfaction. However, loss making customers like **Sean Miller** may have negative effects on profitability and action must be taken accordingly.
- The company must improve efficiency of its logistics department as low priority orders are all delivered late. Delaying orders could lead to a worsening of the reputation of the company.
- Technological products tend to have higher shipping costs and thus may create losses. The company can take measures in trying to reduce shipping costs by changing to more light weight packaging or using lighter weight materials to build the products.
- The company should change its discount strategy as higher discounts offered results in greater losses. Maybe offering discounts on a seasonal basis rather than all year around maybe a more viable approach.