



**UNIVERSITY  
OF LONDON**

# Business Analytics Report

**ST2187**

**Business Analytics,  
Applied Modelling and Prediction**

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**Word Count:  
1482 / 1500**

## Executive Summary

This business analytics report highlights observations created using Tableau. The purpose of this report is to analyse performance and identify trends from 2019 to 2022 (Dashboards 1-3), forecast sales for the next 2 years (Dashboard 4), as well as offer recommendations to senior management on improving business performance (Dashboard 5).

There are 8 key takeaways:

1. Store has been profitable since 2019.
2. Sales are dominated by consumers with largest markets in APAC and EU.
3. Prioritise products that contribute to 80% of sales (Pareto principle).
4. APAC market makes up 28.6% of total shipping cost.
5. Customers mainly prefer standard class shipping.
6. All products generated profits except for tables - with a loss of \$62,888.
7. Tables have a significantly high average percentage discount of 29%.
8. Capitalise on seasonality especially in Q3 and Q4.

This report centers on the fiscal year 2022, deemed as the most successful among the preceding three years. In 2022, sales and profit have improved by 26.4% and 23.9% respectively as compared to 2021.

To further improve the business performance, a three-pronged approach is recommended – develop a discount strategy, leverage on seasonal demand, as well as conduct a comprehensive analysis to ascertain factors contributing to varying levels of performance among different countries. The execution of these strategies can prove highly advantageous for the business in the long term.

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# 1. Introduction

## 1.1 Background

This report is based on data collected from 1<sup>st</sup> January 2019 to 31<sup>st</sup> December 2022. The data consist of sales and profits across different products and other data such as shipping dates and costs, geographical and customer information and etc.

## 1.2 Purpose of Report

Furnish senior management with strategic insights aimed at enhancing sales and profitability over the next 2 years. Consumer spending patterns have undergone significant shifts in light of the stabilisation of the COVID-19 pandemic. Thus, it is imperative for the business to adapt to these changes.

## 2. Story Insights

### 2.1 Dashboard 1 – Sales Analysis

STORY



Figure 1: Dashboard 1

#### Tree Map

The largest shaded region represents consumer segment who generated the most robust sales, reaching a peak of \$6,504,458; while home office segment had the least sales of \$2,308,507.

#### Pareto Chart

In accordance with the 80/20 principle, 80% of effects comes from 20% of causes. The pareto chart revealed that 80% of the total sales is generated from phones, copiers, chairs, bookcases, storage, appliances, machines and tables.

#### Horizontal Bar Graph

Overall, APAC market recorded the highest sales of \$3,580,581, with Canada being the lowest at \$66,928. Consumer segment had the highest sales, while home office had the lowest.

#### Symbol Map

Ranked by sales, the top 8 countries were US, Australia, France, China, Germany, Mexico, India and the UK. The circles' size corresponds to the volume of sales, with US taking the lead at \$2,296,487.

## Extended Investigation

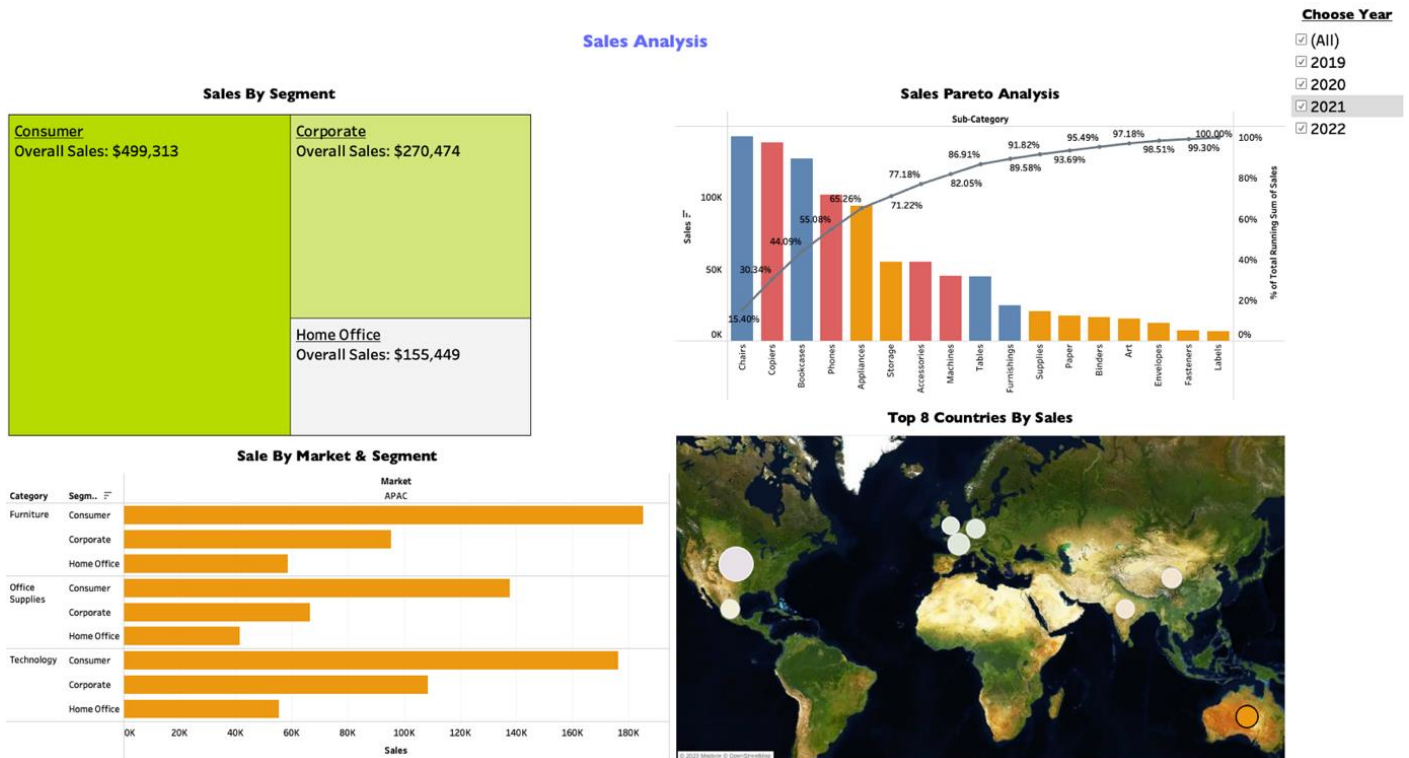


Figure 2: Dashboard 1 – Australia selected

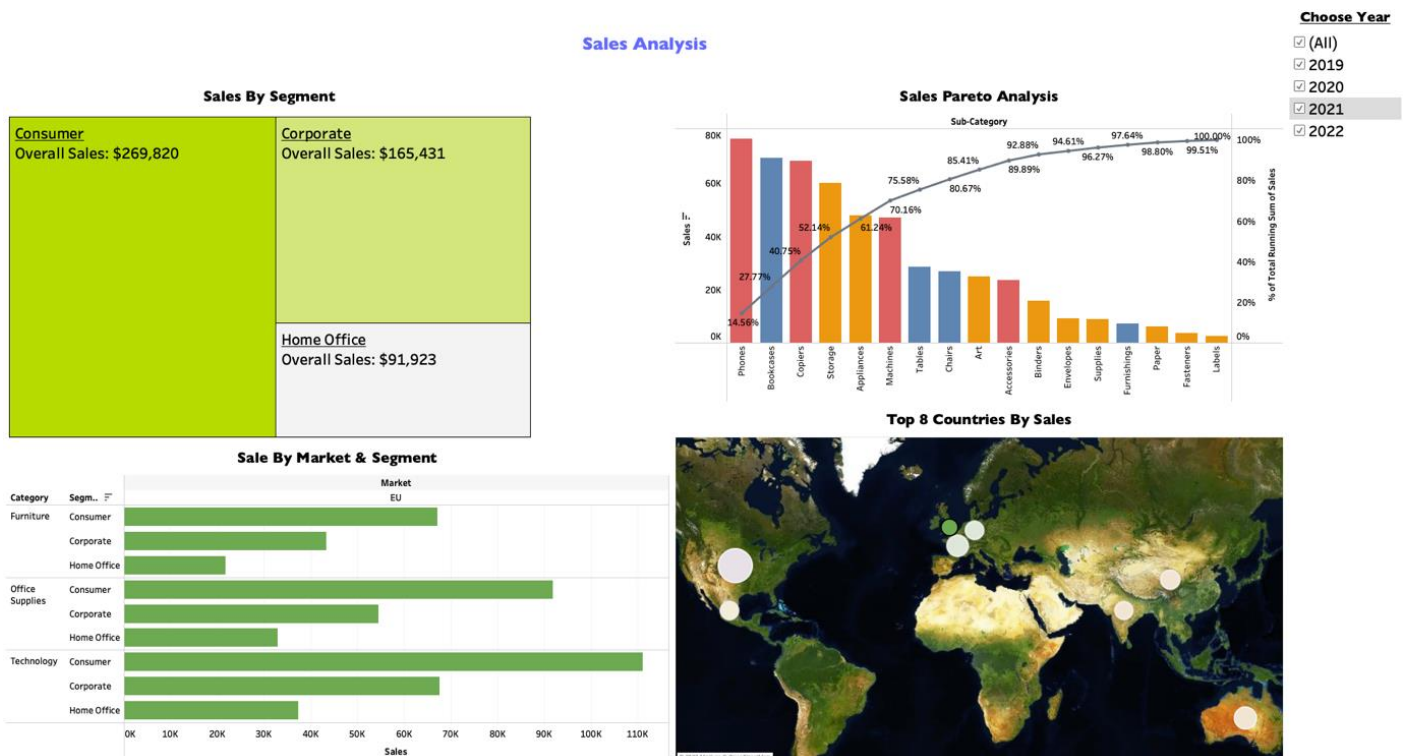


Figure 3: Dashboard 1 – UK selected

Utilising the interactive dashboard, it is evident that consumer sales predominated in both Australia and the UK, which aligns with the preceding analysis.



## 2.2 Dashboard 2 – Shipping Cost

STORY

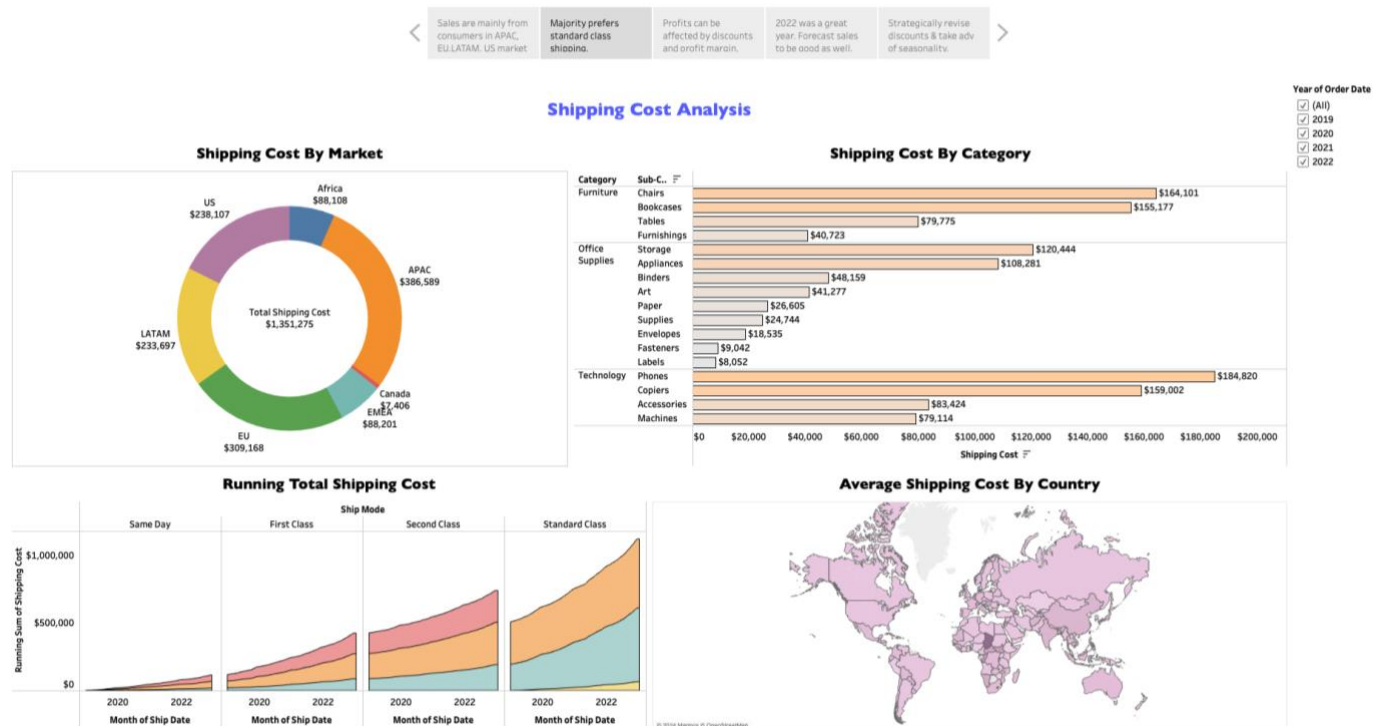


Figure 4: Dashboard 2

**Donut Chart**

APAC had the highest shipping cost of \$386,589 (28.6%) while Canada had the least at \$7,406 (0.5%).

**Horizontal Bar Chart**

Chairs, storage, and phones in the furniture, office supplies, and technology categories had the highest shipping costs at \$164,101, \$120,444, and \$184,820 respectively. Whereas the lowest were furnishings, labels and machines amounting to \$40,723, \$8,052 and \$79,114 respectively.

**Area Graph**

Standard class shipping was the only ship mode for low order priority (Yellow). High order priority (Orange) had the largest area, representing a total running sum of shipping cost at \$508,563. Customers preferred standard class for medium order priority (Green) and second class for high order priority.

**Symbol Map**

Average shipping cost ranged from \$3 to \$156, with Chad and Taiwan having the highest value at \$156 and \$149, indicated by the darkest shade. However, they only had 5 and 1 distinct orders which made them an outlier.

## Extended Investigation

### Shipping Cost Analysis

Year of Order Date  
☒ (All)  
☒ 2019  
☒ 2020  
☒ 2021  
☒ 2022

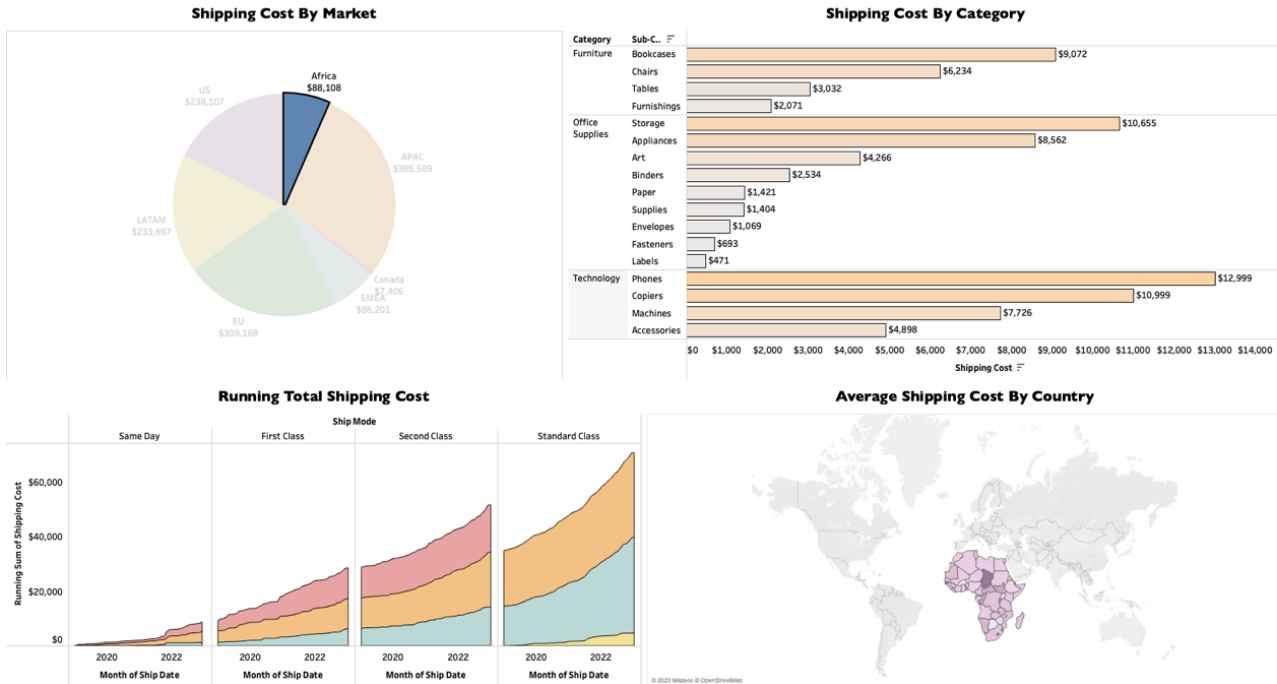


Figure 5: Dashboard 2 – Africa Market selected

### Shipping Cost Analysis

Year of Order Date  
☒ (All)  
☒ 2019  
☒ 2020  
☒ 2021  
☒ 2022

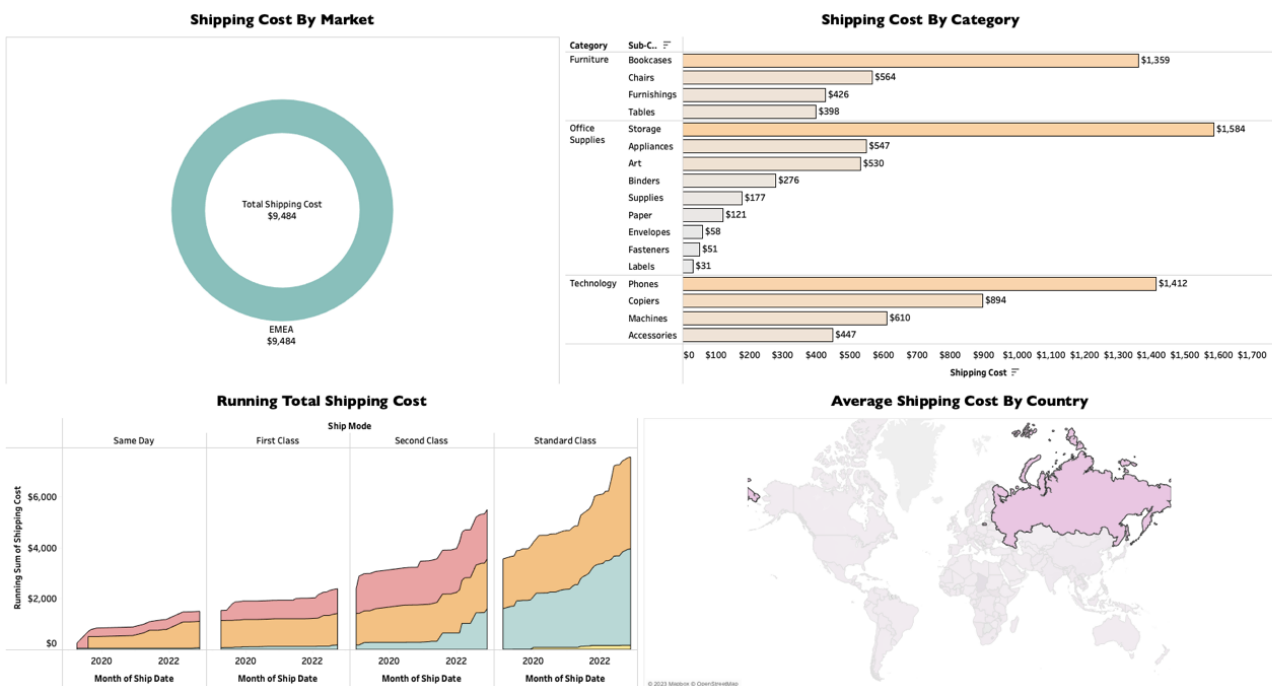


Figure 6: Dashboard 2 – Russia selected

The interactive dashboard allows for a more comprehensive view with the option to analyse data according to the respective market (Figure 5) or country (Figure 6).



## 2.3 Dashboard 3 – Profits and Losses

STORY

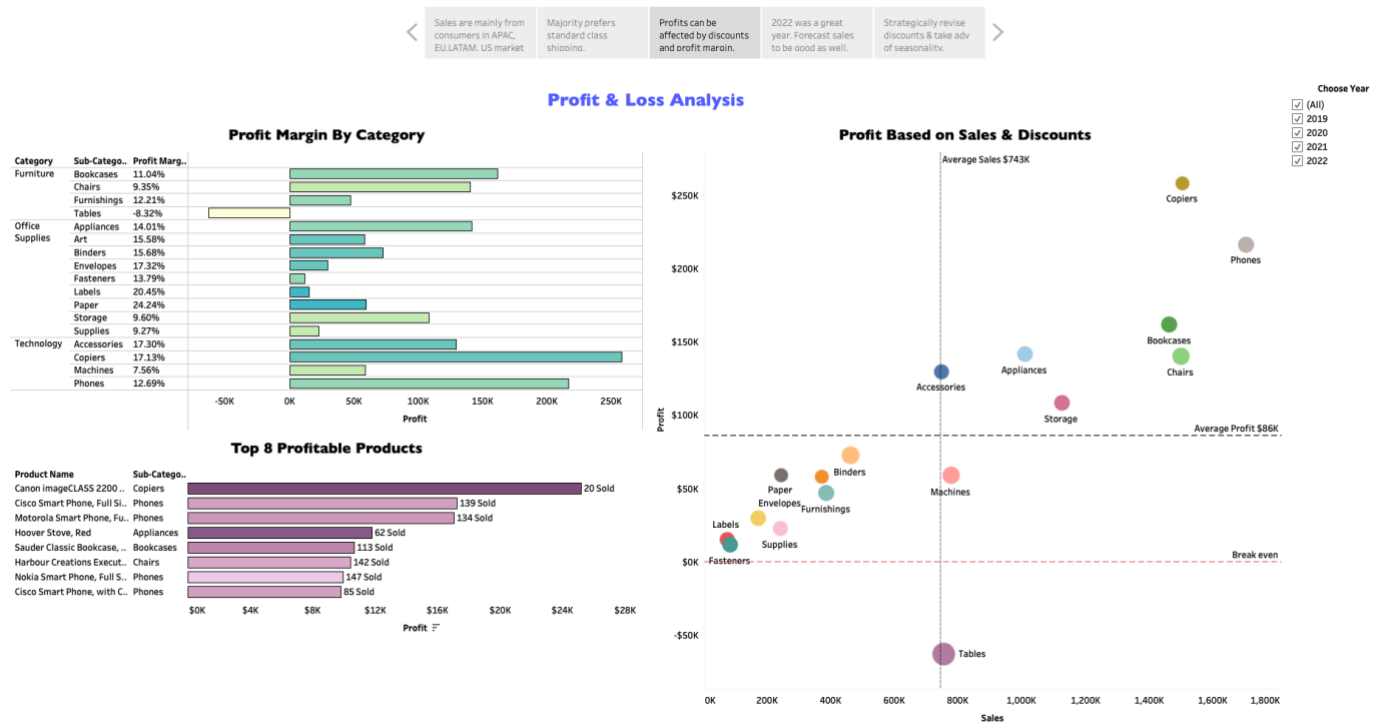


Figure 7: Dashboard 3

### Horizontal Bar Chart (Profit Margin)

Profit margin is a good indicator of a business's financial viability. Tables were the only sub-category with a negative profit margin of 8.32%, whereas paper had the highest of 24.24%.

### Horizontal Bar Chart (Top 8 Profitable Products)

The top 8 profitable products belonged to the sub-categories copiers, phones, appliances and bookcases. Canon imageCLASS 2200 brought in the highest profit of \$25,000 with a modest sale of 20 units, contributing to copiers' strong profit margin of 17.65%. The fact that the highest profit was generated from a product with relatively low sales, underscores the importance of high profit margins.

### Scatter Plot

The size of the circle depicts the average discount given, with the largest being tables at 29%. Circles in the upper-right quadrant were performing above average for profit and sales as compared to circles in other quadrants, which exhibited below average profit and/or sales.

## Extended Investigation

### Profit & Loss Analysis

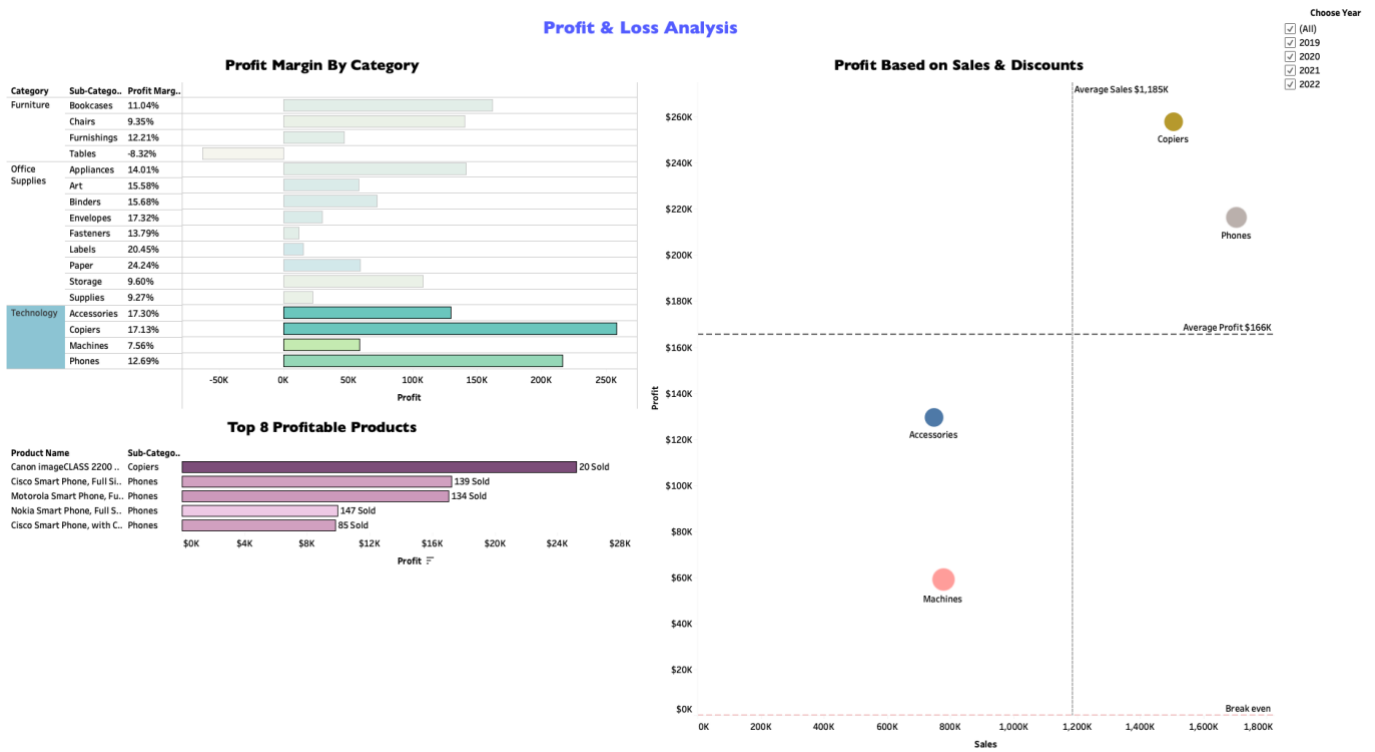


Figure 8: Dashboard 3 – Technology selected

By analysing technology category, scatter plot shows that copiers and phones surpassed the average profit and sales. However, accessories and machines generated below average profit and sales.

## 2.4 Dashboard 4 – 2022 Performance & Forecast

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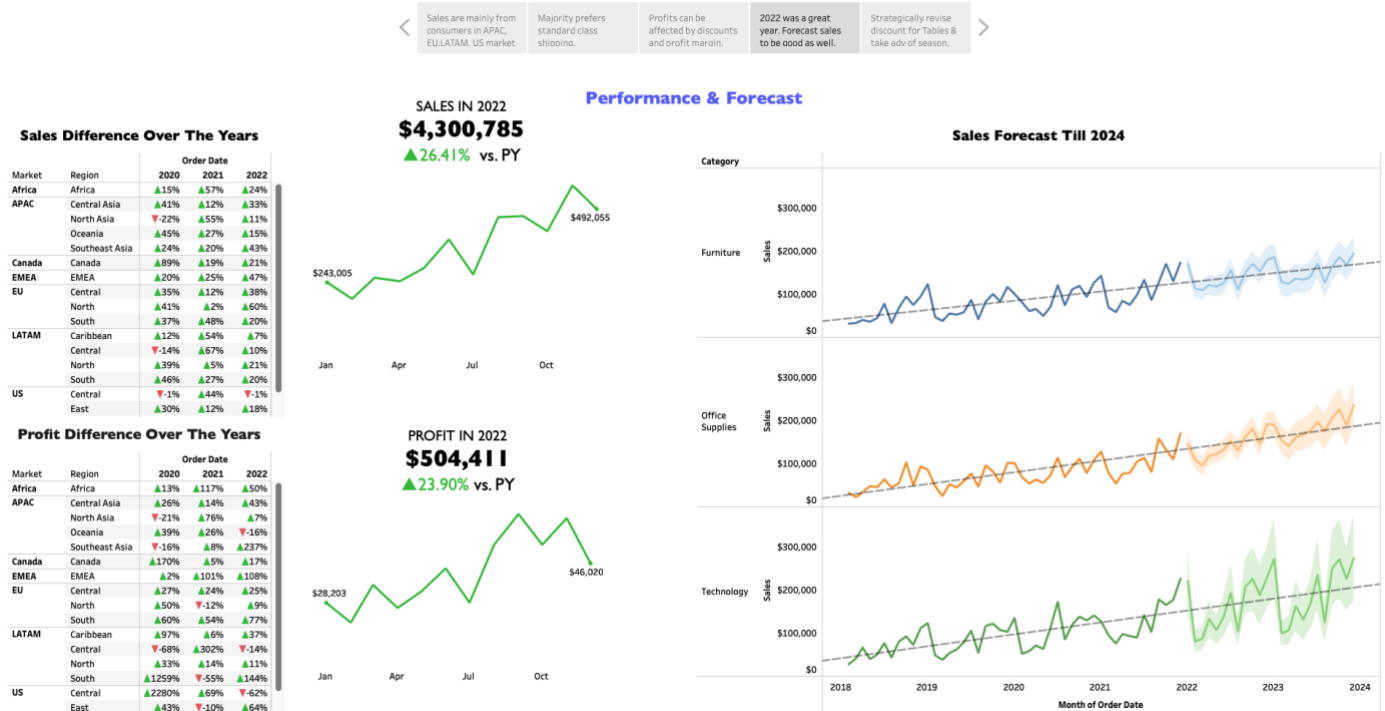


Figure 9: Dashboard 4

### Sales Percentage Difference Over The Years

The year-over-year difference in sales percentage has shown a consistent uptrend. The most significant difference was seen in the EU north region with a 60% increase between 2021 and 2022.

### Profit Percentage Difference Over The Years

The profit percentage difference over the years generally fluctuated as compared to sales percentage difference. Notably, APAC Southeast Asia had a remarkable upswing of 237%, while the US central region saw a decline of 62%.

### 2022 Performance

2022 had the most successful performance since 2019, achieving the highest levels of sales and profit of \$4,300,785 and \$504,411 respectively. Compared to prior year, both sales and profit in 2022 experienced a significant increase of 26.41% and 23.9%. November was the best month for sales, reaching a high of \$572,380. Whereas September was the most profitable month, reaching a peak of \$68,223. The increase could potentially be attributed to the stabilisation of COVID-19 where businesses and various sectors gradually resumed activities, contributing to the increase in overall performance. In addition, months characterised by a disparity between

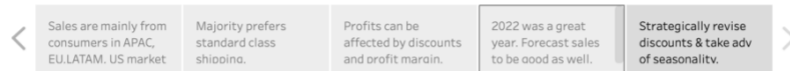
high sales and lower profits, or vice versa, may have been influenced by various factors such as discounts, shipping costs and fluctuations in currencies.

**Forecast till 2024**

Forecast for the next 2 years shows fluctuations across all categories with technology anticipated to be most volatile. Sales forecast for technology is projected to peak in December 2023 at \$273,008, while furniture and office supplies are expected to be highest in November 2024 at \$194,955 and \$236,524 respectively.

## 2.5 Dashboard 5 – Recommendations

### STORY



### Recommendations

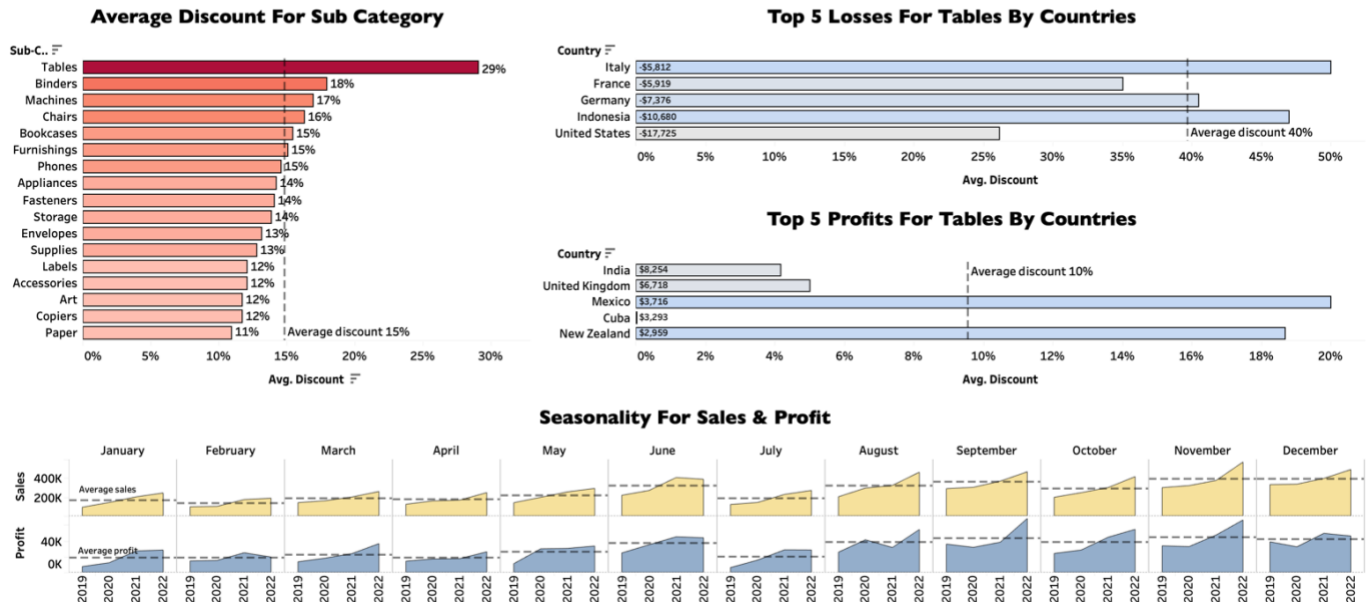


Figure 10: Dashboard 5

### Horizontal Bar Graph (Average Discount)

Over the years, the average discount across all sub-categories was 15%. However, tables had the highest average discount of 29%, exceeding the average discount of sub-categories by 14%, while paper had the lowest average discount of 11%.

### Horizontal Bar Graph (Top 5 Profits/Losses For Tables)

The top 5 countries contributing the most to losses for tables were Italy, France, Germany, Indonesia and US, offering an average discount of 40% on tables. US stood out with the highest loss amounting to \$17,725.

The top 5 countries contributing to highest profits for tables were India, the UK, Mexico, Cuba and New Zealand with an average discount of 10% discount on tables. India stood out with the highest profits amounting to \$8,254.

### **Area Graph**

Both sales and profit performed better in third and fourth quarters across the years. The last quarter brought in an average sales and profit of \$357,629 and \$41,402 respectively, which was the highest compared to the other quarters.

#### **2.5.1 Implement A Holistic Discount Strategy For Tables**

Currently, the average discount for tables in Italy is 50%, while Cuba does not offer any discount. The recommendation is to reduce the average discount for tables by balancing discounts across various countries. For instance, this involves reducing discounts in countries experiencing losses, such as the US and Italy, while simultaneously increasing discounts in profitable countries like India and the UK, as illustrated in Figure 10. The increased discounts in profitable countries can lead to greater sales, while the reduced discounts in countries with losses can minimise shortfalls. Taken together, this approach will ultimately enhance the overall profitability of tables as a whole.

#### **2.5.2 Capitalise On Seasonality**

The business should curate exclusive products and design a pricing strategy to complement seasons and capitalise on related festivities. For example, launching Christmas themed products during the holiday season and offering significant discounts only during periods such as Black Friday and Boxing Day.



### 2.5.3 Adopt Different Strategies and Loyalty Programmes

Given that the first quarter is underperforming compared to other quarters, senior management should consider holding clearance sales to sell off outdated inventory from the previous year, thereby boosting sales.

Additionally, the business should offer product bundles during lull periods such as the first half of the year. By grouping several products together and selling it as a single unit, the business can move stock more quickly and bolster sales.

Loyalty programmes expand the share of wallet, retaining customers by motivating them to spend more frequently and generously on the business's products. These programmes also provide valuable insights into customer preferences, behaviours, and purchasing patterns, enabling senior management to make more informed decisions and tailor offerings to meet evolving customer needs.

### 2.5.4 Additional Recommendations

- Identify factors contributing to high sales in the US and replicating this success in other countries worldwide.
- Reduce production cost to help increase profits.
- Find cheaper shipping alternatives.
- Maintain and sustain healthy profit margins.

## 3. Conclusion

In 2022, the business achieved its most successful year to date, witnessing a 26% increase in sales and a 24% increase in profits as compared to the previous year. The forecast for the next two years anticipates further improvement, with the potential for surpassing expectations if the recommended measures are implemented.