



BUSINESS ANALYSIS REPORT

Key Discoveries and Recommendations

BSc Data Science and Business Analytics (Standard Entry)

Business analytics, applied modelling and prediction (ST2187)

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1. Executive Summary

Discovering that 4 out of 7 markets makes up for more than 80% of the sales and profits in the company, it sparks curiosity on the factors which leads to the success of these 4 markets and how to further improve the performance of these markets.

There are 6 key insights which will be analyzed and used to develop recommendations for the company.

The 6 key insights are:

1. APAC, EU, US and LATAM Markets contribute to over 80% of the total sales and profits in the company.
2. Furniture holds the smallest percentage of profits amongst the 3 categories.
3. Tables is the only sub-category making negative profits despite its significant figures in sales.
4. Average shipping cost of Tables is highest among the sub-categories in Furniture.
5. Average discount of Tables is the highest among the sub-categories in Furniture.
6. The forecast for Tables in sales and profits shows that Tables will still make losses in the future.

It was concluded that among the categories, Furniture has the lowest percentage of profits in the 4 markets. Additionally, Tables; a sub-category of Furniture, was making losses despite its remarkable figures in sales. Hence, Tables is likely a factor leading to the lower profits of Furniture.

It was then revealed that Tables were making losses due to the high discounts and shipping costs.

To address the negative profits that Tables are making, the company should share the shipping costs with consumers and reduce the discounts.

2. Introduction

This business report holds data which spans over 4 years, from January 2018 to December 2021 and includes vast information of the numerous products sold by the company.

The focus of this report is to sieve out the top performing markets and peg down factors which can be improved, thereafter provide strategies to tackle these factors and improve the performance of these markets.

3. Analysis of Story

3.1 Outline of Sales and Profits by Markets

Pareto Chart of Sales by Market

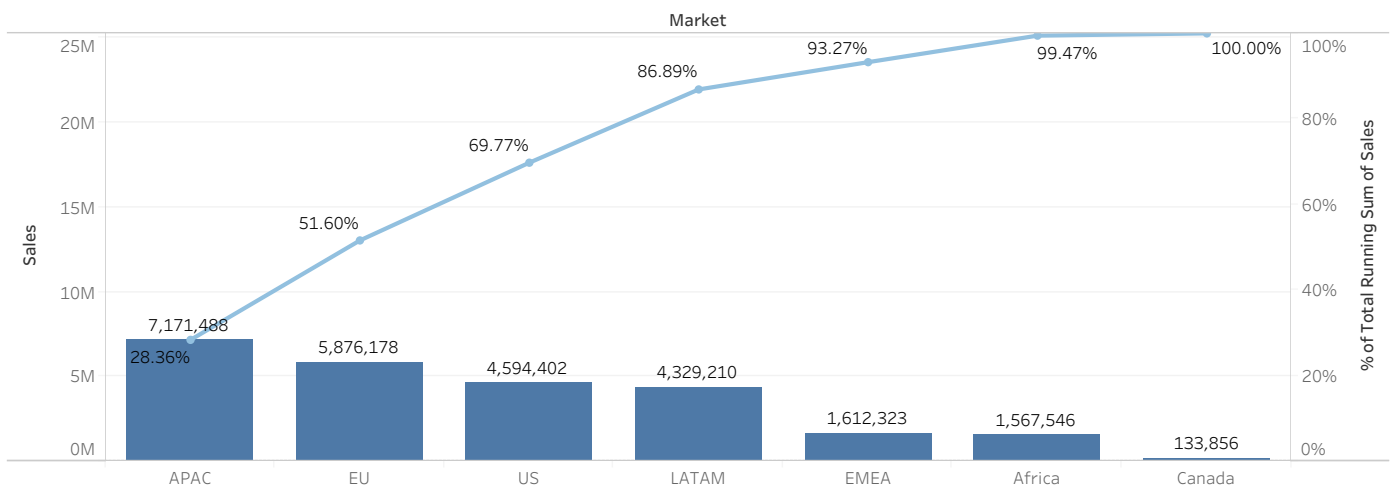


Figure 1: Pareto Chart of Sales by Market

From Figure 1, it shows that the APAC, EU, US and LATAM market makes up for 86.89%, majority of the total sales in the company.

Pareto Chart of Profits by Market

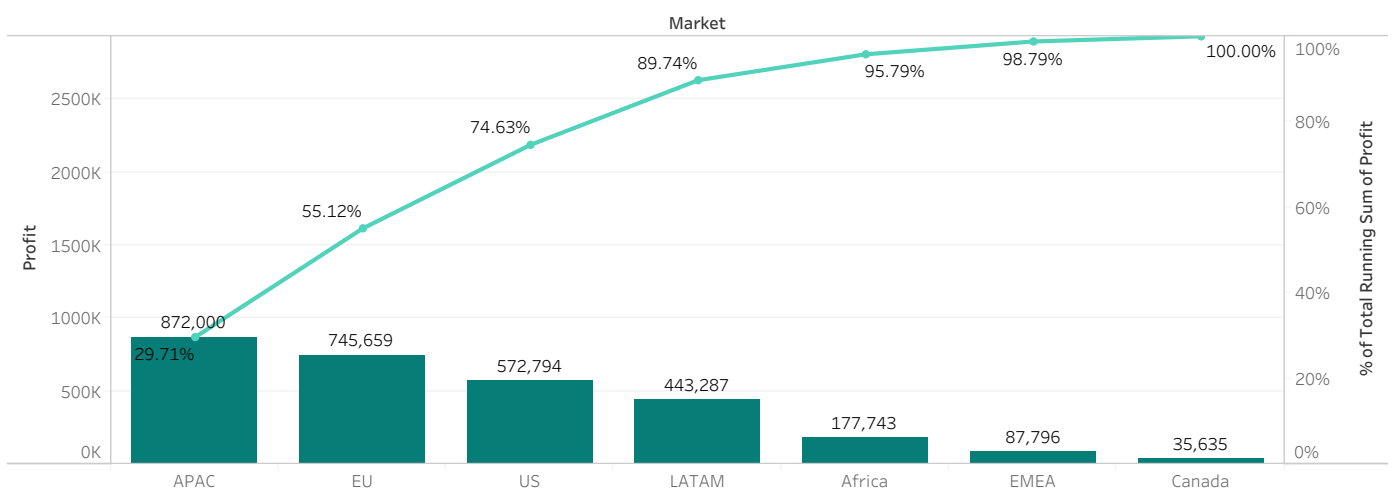


Figure 2: Pareto Chart of Profits by Market

Similarly, in Figure 2, APAC, EU, US and LATAM markets generates most of the company's profits, at 89.74% of the total profits.

From here it can be determined that most of the sales and profits gained by the company are from consumers of the APAC, EU, US, and LATAM markets.

3.2 Distribution of Sales and Profits

Sankey Diagram of the Profit Flow in Markets to Categories

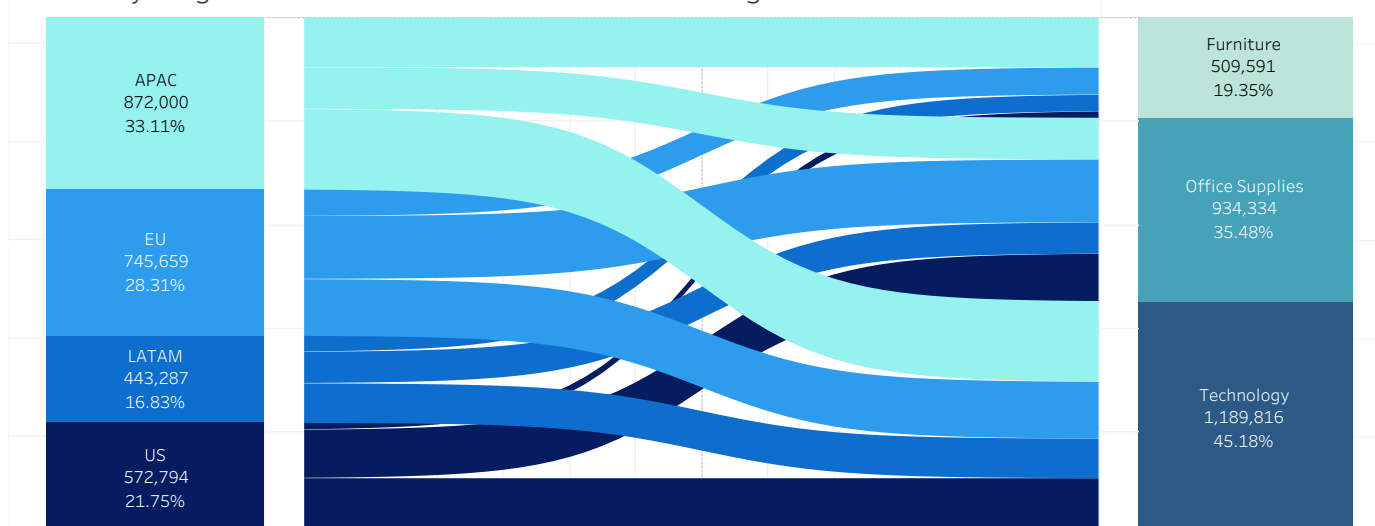


Figure 3: Sankey Diagram of Profit Flow in Markets to Categories

Based on the top 4 markets in sales and profits, the Figure 3 shows that for the APAC, LATAM and US markets, the ribbon flowing to Technology was the thickest, indicating that bulk of their profits goes to Technology. For EU, most of their profits flows to Office Supplies. However, none of the markets gain most of their profits from Furniture. Overall, most of the profits were gained by Technology at 45.18% of the total profits, followed by Office Supplies at 35.48% and finally Furniture which shares 19.35%.

Bar Chart Showing Distribution of Sales and Profits by Category in APAC, EU, US and LATAM Markets

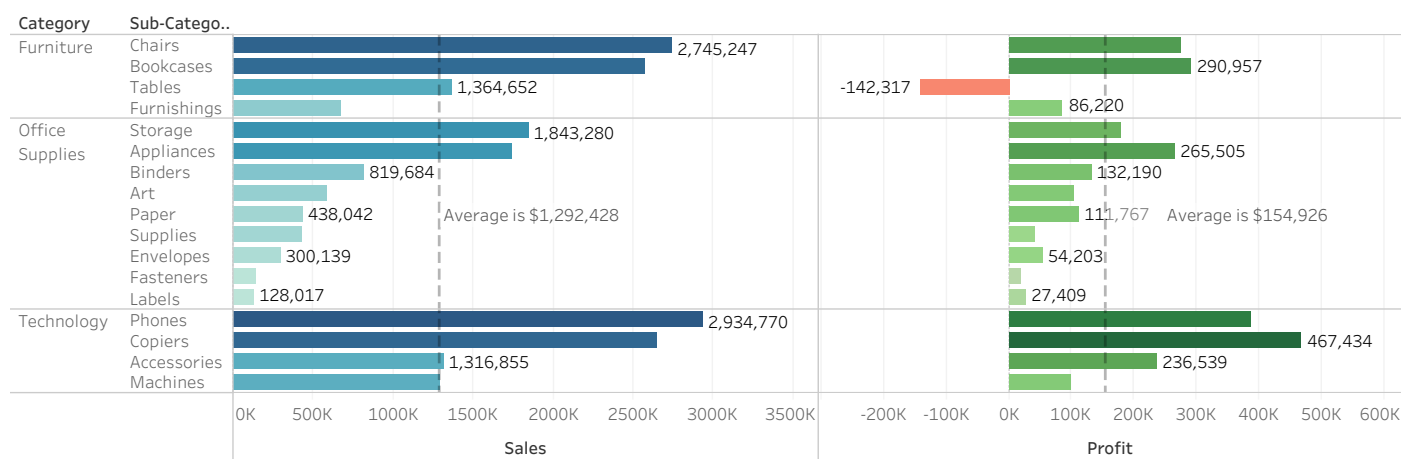


Figure 4: Bar Chart Showing Distribution of Sales and Profits by Category in APAC, EU, US and LATAM

The negative profits of Tables is incongruous with the consistent positive trend in profits by other Sub-Categories. Despite the sales of Tables making a figure of \$1,364,652, higher than the average sales of \$1,292,428, its profits are making losses at -\$142,317, way below the average profit of \$154,926.

3.3 Overview of Shipping Cost of Furniture

Bar Chart on **Shipping Cost** by Sub-Category in APAC, EU, US and LATAM Markets

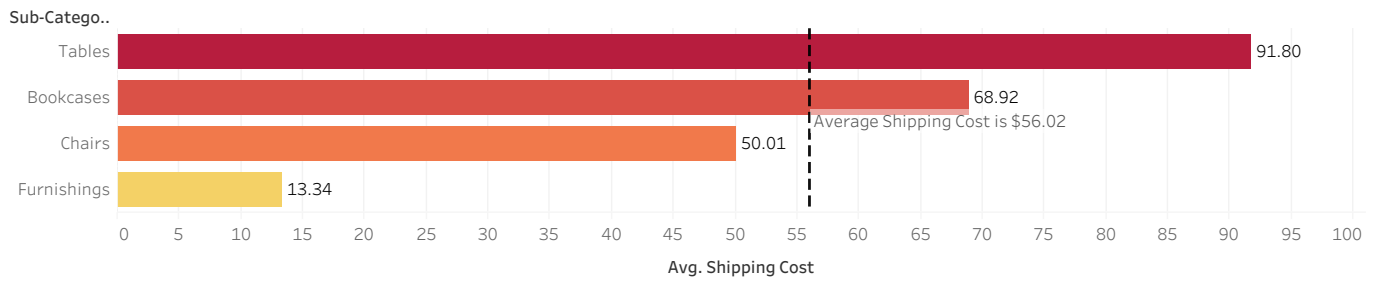


Figure 5: Bar Chart on Shipping Cost by Sub-Category in APAC, EU, US and LATAM Markets

With [Profit = Sales – Cost] and profit of Tables being a negative number, -\$142,317(Figure 4), the cost of Tables must be higher than the sales made.

Assuming that the shipping cost would be by absorbed the company, Figure 5 shows that Tables has the highest shipping cost in their category at \$91.80 where the average shipping cost is \$56.02. With such a significant amount of shipping cost on Tables, this would reduce the profits made from sales of Tables.

Box Plot on **Shipping Cost** of each **Ship Mode** by Sub-Category in APAC, EU, US and LATAM Markets

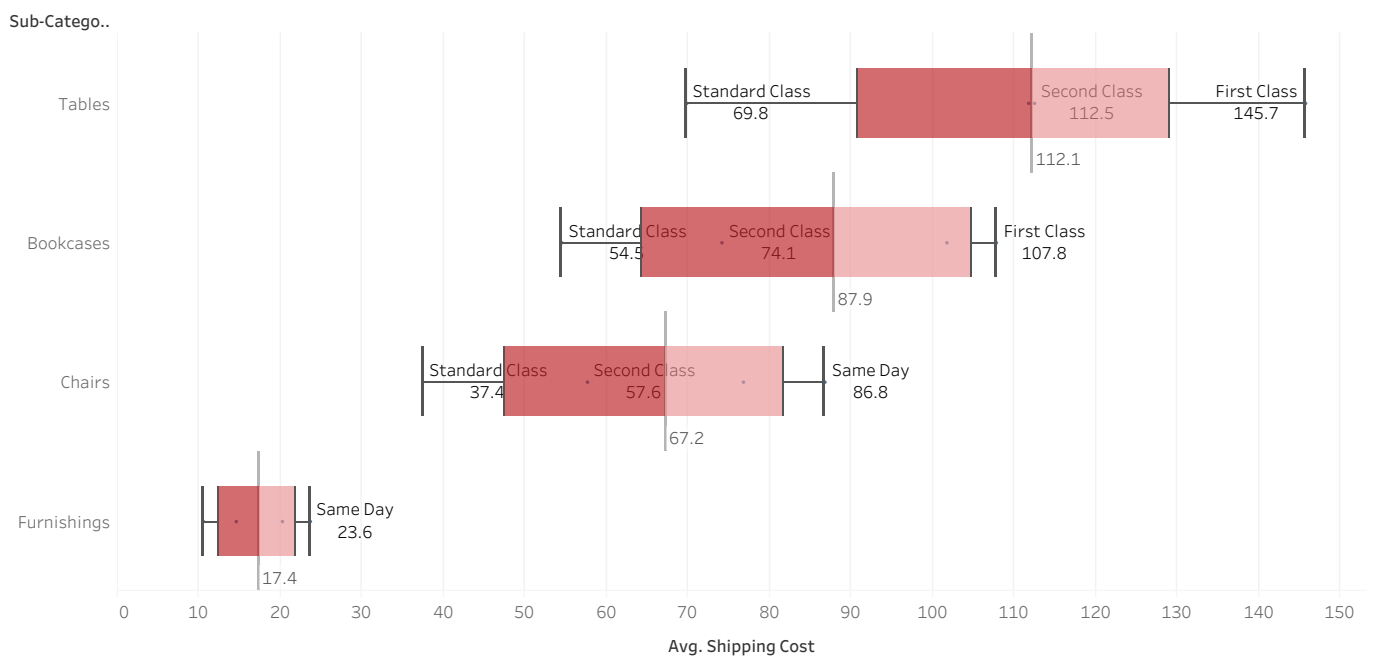


Figure 6: Box Plot on Shipping Cost of each Ship Mode by Sub-Category in APAC, EU, US and LATAM Markets

Figure 6 shows the different modes of shipping, determining the shipping cost of the respective sub-category. It is evident that Tables has a higher shipping cost as compared to the other sub-categories in Furniture, with its First Class shipping cost at \$145.7, an outlier, and the highest among other sub-categories.

3.4 Overview of Discounts of Furniture

Bar Chart on **Discount** of Furniture by Sub-Category in APAC, EU, US and LATAM Markets

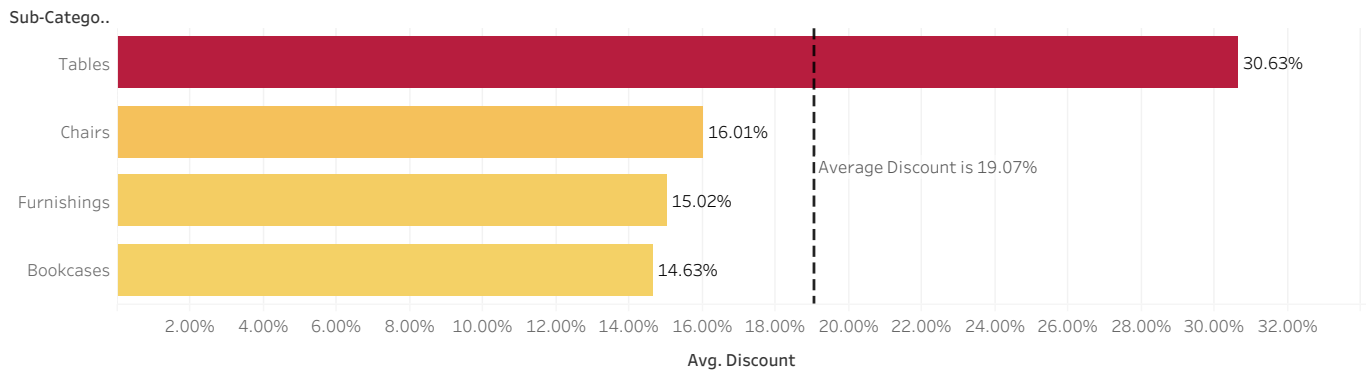


Figure 7: Bar Chart on Discount of Furniture by Sub-Category in APAC, EU, US and LATAM Markets

It is clear in Figure 7 that discounts of Tables is the highest at an average of 30.63%, almost twice the average discount at 19.07%. The notable discounts imposed on Tables would have considerably reduce the profits made by Tables albeit the significant sales made.

Bar Chart on **Quantity** and Dot Plot on **Average Discount** of Furniture by Sub-Category in APAC, EU, US and LATAM Markets

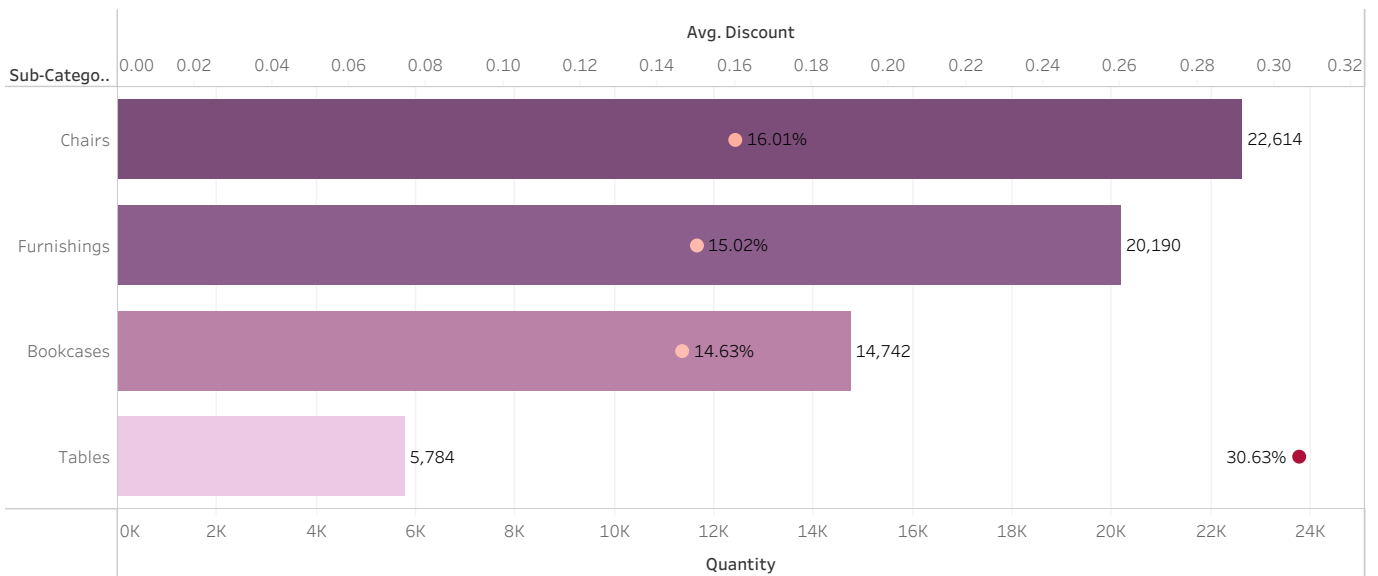


Figure 8: Bar Chart on Quantity and Dot Plot on Average Discount for Furniture by Sub-Category in APAC, EU, US and LATAM Markets

Though it is logical to assume that when discounts are high, consumers will have higher incentive to consume Tables, thus causing sales to increase. However, from Figure 8, this cannot be concluded due to the inconsistent relationship between sales and discounts. For example, with Tables having an average discount of 30.63% , the quantity sold was just 5,784, the lowest in Furniture. Meanwhile, when Chairs has an average discount of 16.01%, the quantity sold was 22,614, the highest record in Furniture. Therefore, higher discounts does not necessarily link to higher quantities of goods sold.

With such high values in the average discount and average shipping cost imposed on Tables, these are the likely factors contributing to the high cost of Tables, leading to the negative profits of Tables despite its notable contribution in Sales.

3.5 Trends and Forecast for Tables

Trend of Sales and Profits of Tables by Month

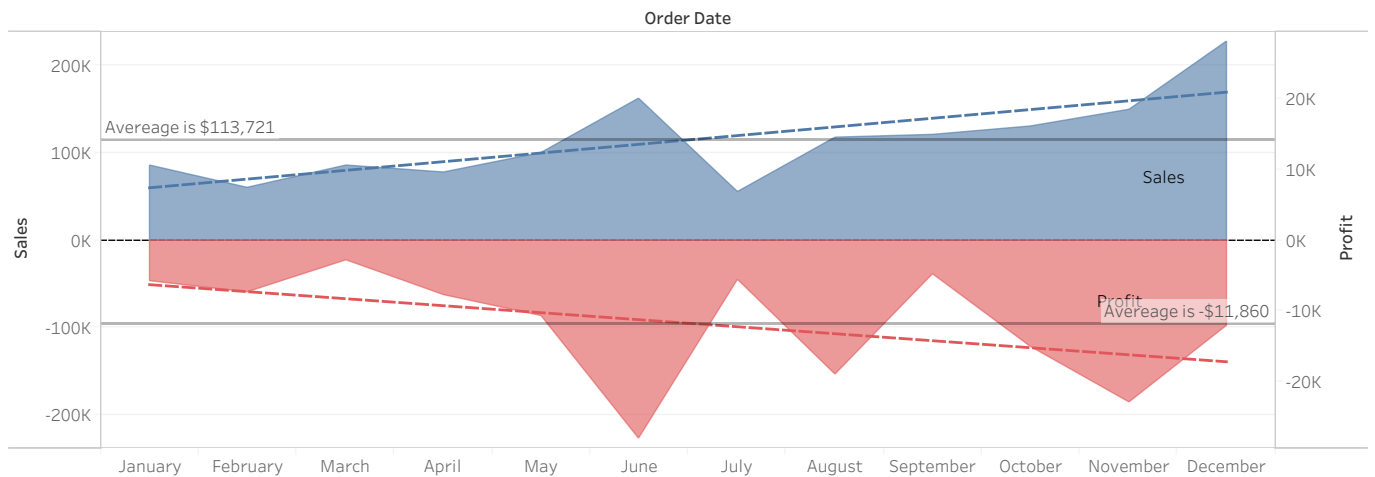


Figure 9: Trend of Sales and Profits of Tables by Month

Figure 9 shows the trend in sales and profits of Tables across the months in the top 4 Markets. The top 3 months which generated the most sales of Tables are December, June and November at, \$226,574, \$161,261 and \$149,222 respectively. However, though the sales of Tables are the highest in these months, it is quite the opposite for profits. Profits for December, June and November are -\$12,063, -\$28,128 and -\$22,990 respectively, which falls below the average profit for Tables, -\$11,860.

It is observed that the sales and profits of Tables have an inverse relationship to each other. This could be due to the high discounts Tables has as discovered in Figure 7. Thus, leading to greater losses when sales are high.

Trend and Forecast in Sales and Profits for Tables by Year

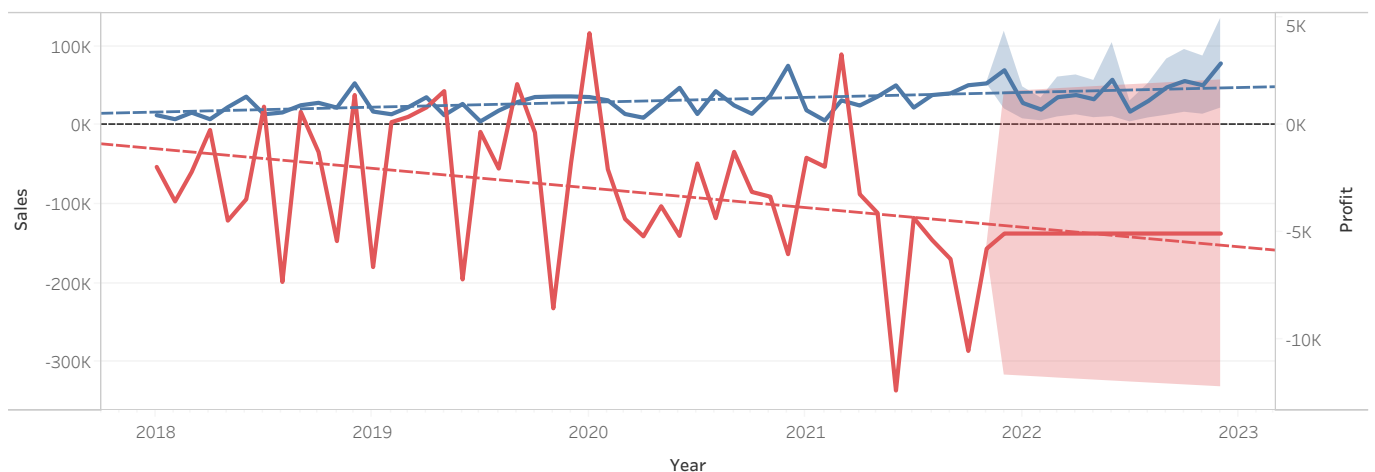


Figure 10: Trend and Forecast in Sales and Profits for Tables by Year

Based on Figure 10, the 4 years of data for sales and profits from 2018 to 2021 shows that there is a general increase in sales but decrease in profits of Tables over the years and with an inverse relationship with each other. The

forecast for the next 2 years indicates that the sales of Tables will continue increasing, while profits of Tables is predicted to fall in the following 2 years and staying within the negative range.

4 Conclusion

After narrowing down on the top 4 performing markets in terms of sales and profits, the report disclosed that Tables are the least profitable sub-category in the markets. In fact, on top of being unprofitable, Tables are the only sub-category making losses.

The root cause for the unprofitability of Tables is possibly due to the high discounts and high shipping costs absorbed by the company, which is apparent when comparing to the other sub-categories in Furniture. Therefore, leading to the high costs and negative profits despite the significant sales in Tables.

With the findings uncovered, tactics and recommendations are suggested in the next section directed to minimise the cost of Tables and work towards improving its profitability.

5 Recommendations

5.1 Passing on Shipping Costs of Tables to Consumers

Box Plot on **Shipping Cost** of each **Ship Mode** by Sub-Category in APAC, EU, US and LATAM Markets

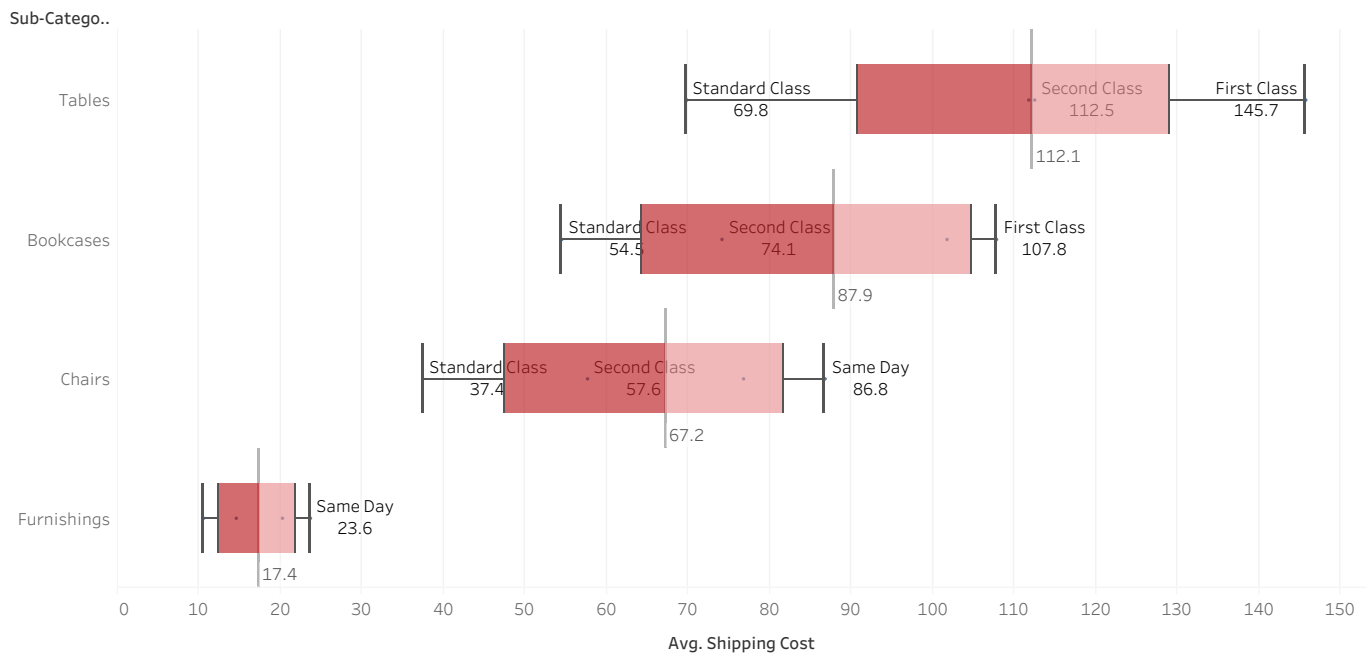


Figure 6: Box Plot on Shipping Cost of each Ship Mode by Sub-Category in APAC, EU, US and LATAM Markets

From the box plot, it can be seen that Tables have the highest shipping cost with its median at \$112.10. Additionally, taking the median(\$112.5) multiplied by the quantity(5784) of Tables sold and dividing the results by sales(\$1,364,652) of Tables, it shows that shipping costs is 47.68% of the sales made, which is nearly half of the sales made. Assuming that shipping costs are absorbed by the company, an approach to reduce cost is to pass some of the shipping costs to consumers.

In Figure 6, the First Class shipping for Tables is at \$145.70, which is beyond the interquartile range, and an outlier. By passing some of the shipping costs to consumers and bring the shipping cost down to within the interquartile range of \$90.80 and \$129.10, the burden of the heavy shipping costs of Tables would be lifted, leading to the maximisation in profits of Tables.

5.2 Reducing Average Discounts of Tables

Bar Chart on **Discount** of Furniture by Sub-Category in APAC, EU, US and LATAM Markets

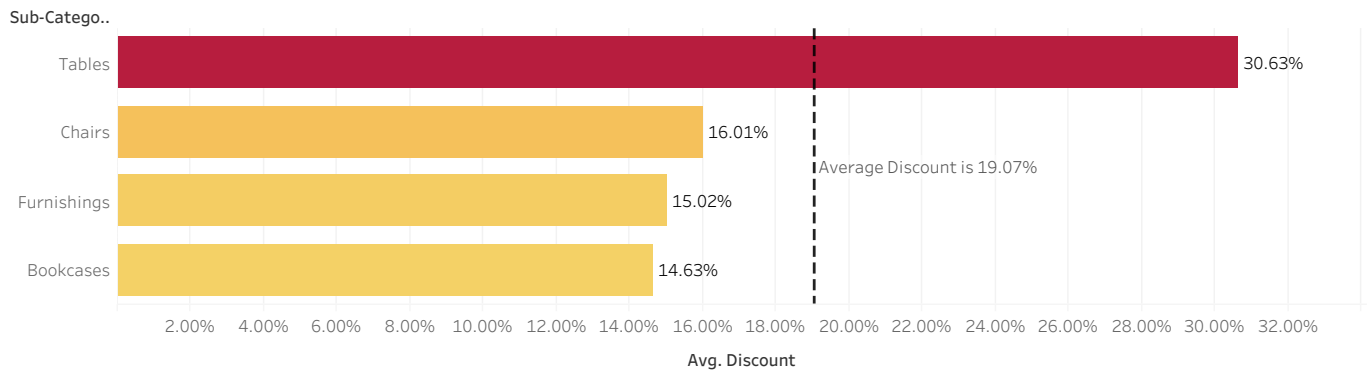


Figure 11: Bar Chart on Discount of Furniture by Sub-Category in APAC, EU, US and LATAM Markets

With the discount of Tables being 30.63% and average discount being 19.07%, Tables have greater discounts compared to other sub-categories. Since discounts is a cost absorbed by the company, it is recommended to reduce the discounts given to Tables such that profits can be gained while ensuring that demand does not fall.

Bar Chart on **Quantity** and Dot Plot on **Average Discount** of Furniture by Sub-Category in APAC, EU, US and LATAM Markets

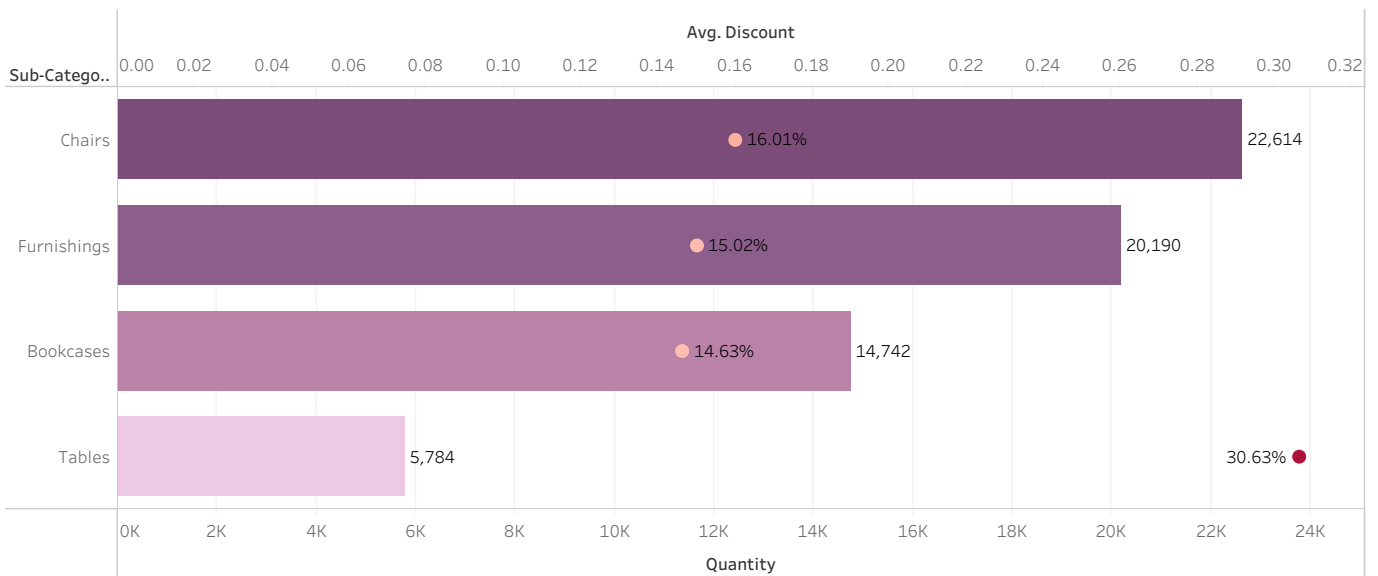


Figure 12: Bar Chart on Quantity and Dot Plot on Average Discount for Furniture by Sub-Category in APAC, EU, US and LATAM Markets

As concluded previously in section [3.4](#), that higher discounts is not associated with the higher quantity of Tables sold. This proves that it is safe to reduce the average discounts of Tables since the it does not largely affect the demand of Tables.

Trend of Sales and Profits of Tables by Month

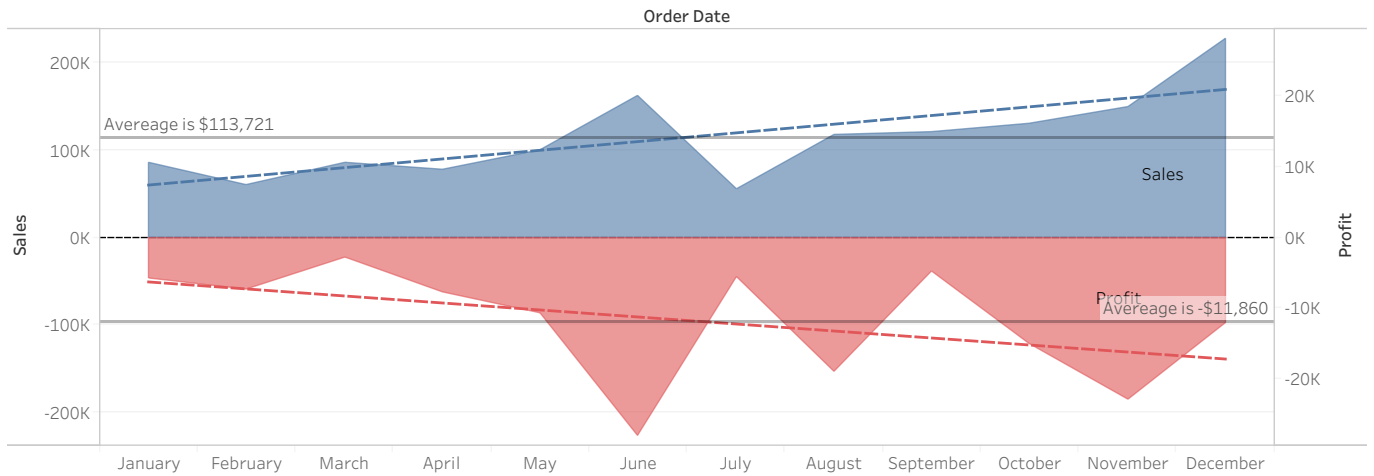


Figure 13: Trend of Sales and Profits of Tables by Month

Moreover, looking at the trends by months in sales and profits of Tables, the inverse relationship of the two measures is apparent as described in section 3.5. Taking advantage of the trends observed, the average discounts of Tables can be changed according to the sales made across the months.

In months where sales of Tables are high, discounts can be reduced to minimise the losses made in Tables.

Moreover, in months where sales are low, opportunities can be taken to facilitate sample testing to discover optimal discounts that can be implemented during peak periods. By testing during months with low sales, it minimises losses in the case where the sample discounts are over implemented.