

Analyzing Superstore Data: Uncovering Insights for Business Growth

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Summary

This report provides an in-depth analysis of a superstore's sales performance, including product category, sub-category, markets, country, segment, and trends. The report uses the SWOT analysis framework to analyze both internal and external factors affecting the business. An internal analysis shows that Technology is the most profitable category, despite high shipping costs. Furniture, on the other hand, yields low profits despite offering high discounts. External analysis shows that APAC is the most profitable market. At the country level, the US leads in profitability. The report suggests improving performance for underperforming countries such as Turkey and Nigeria. Profit trends show a consistent increase with seasonal variations. Q4 is the busiest time of year. Recommendations include further sub category level analysis and continued monitoring of market trends to ensure long-term success. A SWOT analysis provides valuable insights into strategic decision-making by highlighting areas of strength/weakness/opportunity/threat within the sales operations of a superstore.

Introduction

This report develops a business analysis of the sales activities of a superstore to help to retrieve insights for eventual improvements. Our dataset can broadly be described by sales and demand flows for various products that are allied to three categories, namely: furniture, technology and office supplier. These flows are expressed according to geographical and marketing-based partitions.

To carry out our analysis, we got inspired to adopt a “SWOT” analysis according to which four key aspects are analyzed, namely the opportunities, the threats, the weaknesses and the strengths. As such, we believe encountering the external (i.e. opportunities, threats) as well as the internal (i.e. weaknesses and the strengths) factors that typically influence the observed performances of the firm.

1. Analyzing the internal factors

This analysis is concentrated on products which would be studied per category and sub-category.

1.1. Product category-based analysis

Throughout this analysis, we aim at identifying the most profitable products as well as the most labor intensive, and thus most expensive ones.

To do so, figure 1 plots a radar chart to simultaneously visualize sales, profit, discount, shipping cost and quantity for each product category. As may be noticed, “Technology” reveals the most profitable product despite that it implies heavy shipping costs and least demanded quantities. Conversely, furniture” is found to be least profitable despite highest discount percentages offered. This leads to an alarming situation which implies an urge requirement to revise the offered quality or assess root causes for the observed underperformance.

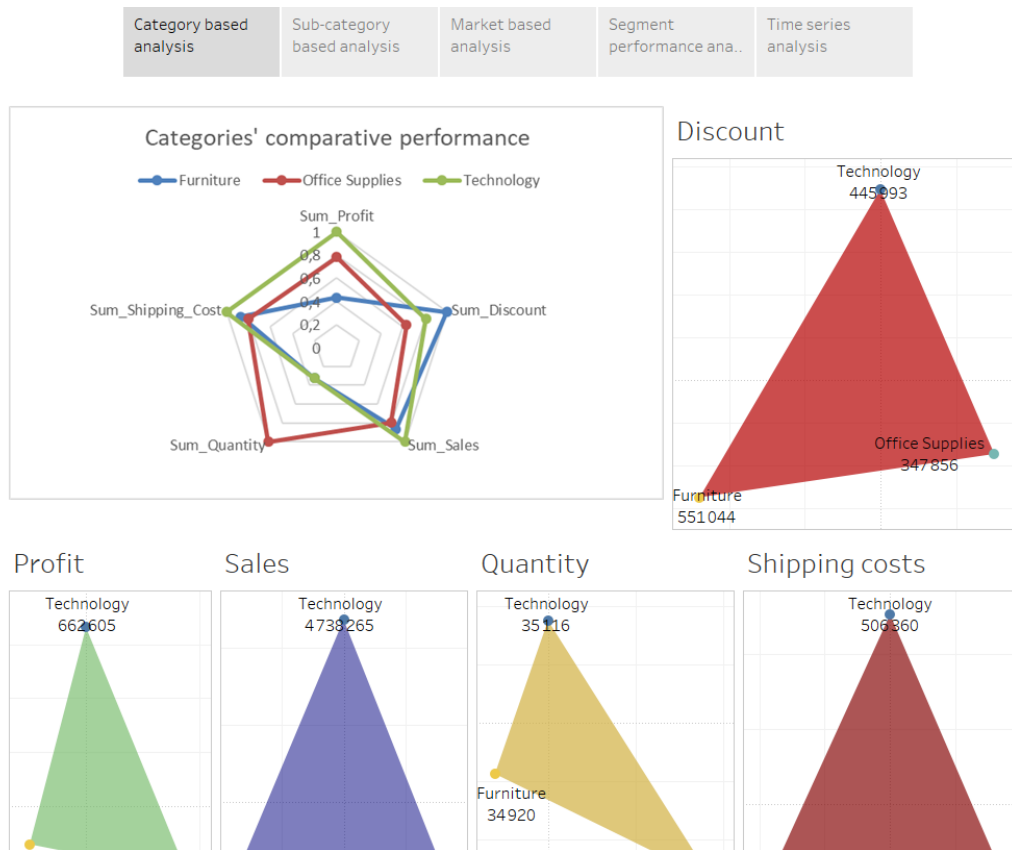


Figure 1: category-based analysis dashboard

- Quantity

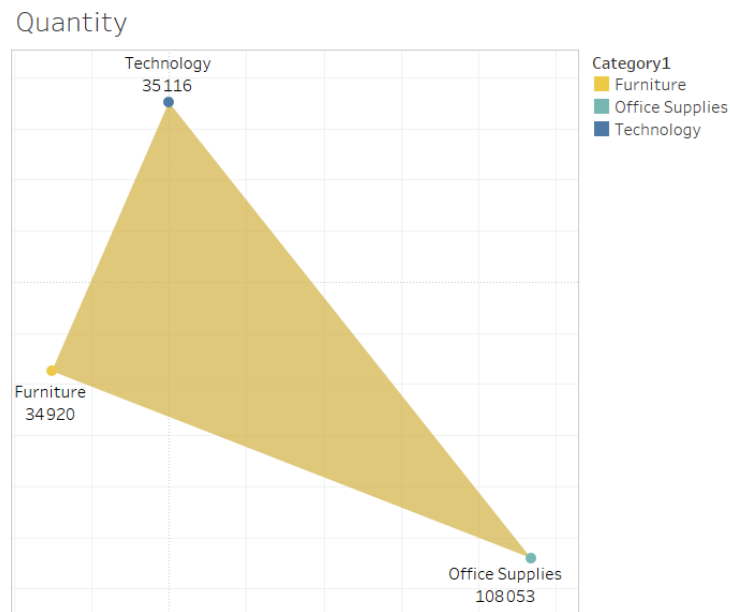


Figure 2: Radar chart for quantity-based analysis

This figure shows that office supplies are more than 3 times greater than the other categories which is concerning at first glance but considering it has the lowest shipping cost this may indicate that it's the easiest to store and move type of product

While technology's high shipping cost to quantity ratio is quite concerning but somewhat understandable (technology products are more delicate thus more expensive to move)

Conclusion

This dashboard has provided valuable insights into product performance across categories, allowing us to identify comparative strengths and weaknesses. It may be beneficial to conduct further analysis at the subcategory level.

1.2. Product sub-category based analysis

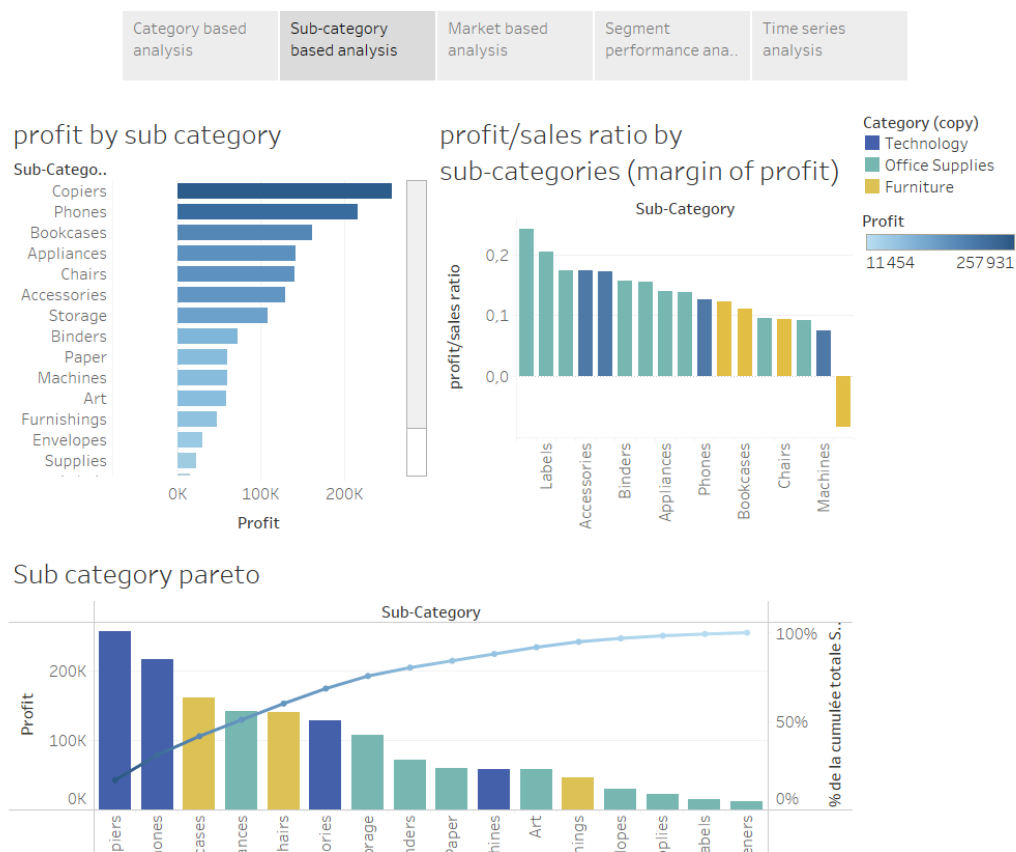


Figure 3: Sub-category Analysis dashboard

Diving further into the analysis of products, we decided to take a closer look by considering the sub-category perspective.

Given the large number of subcategories we restrict our focus toward profit. The underlying

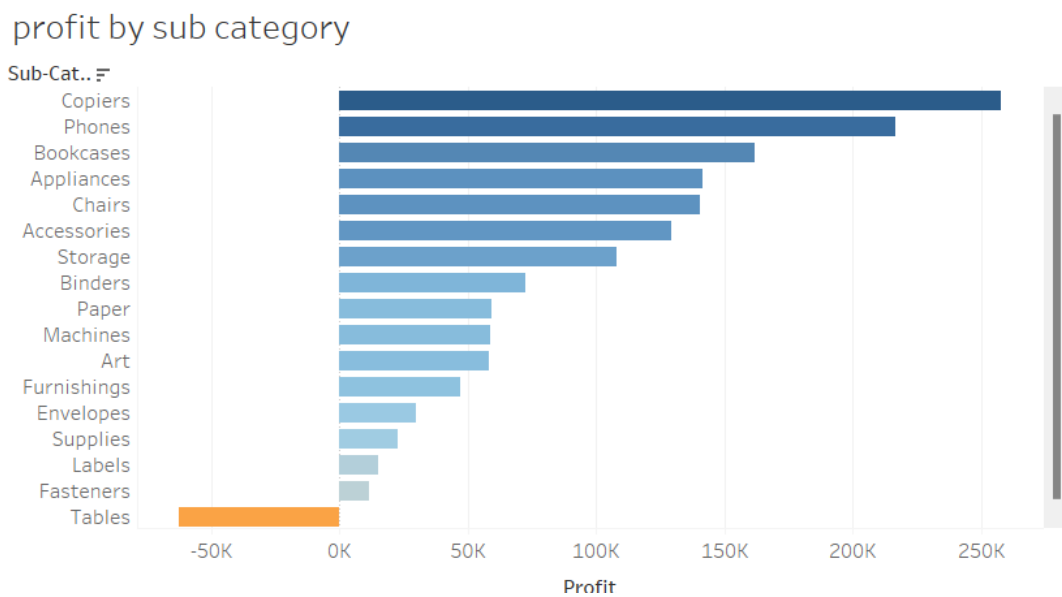


Figure 4: Profit amounts per sub-category

results are sketched in figure 4. Accordingly, we point out that “Tables” yield negative profit. Thus , we advocate declining the selling of this item unless it’s a complementary product or serves another strategic goal such as brand recognition or market penetration.

Another interesting finding that emanates from figure 4, is the discrepancy between the profits yield by each category. This has motivated us to apply the Pareto analysis with a view to systematically characterize this unequal distribution.

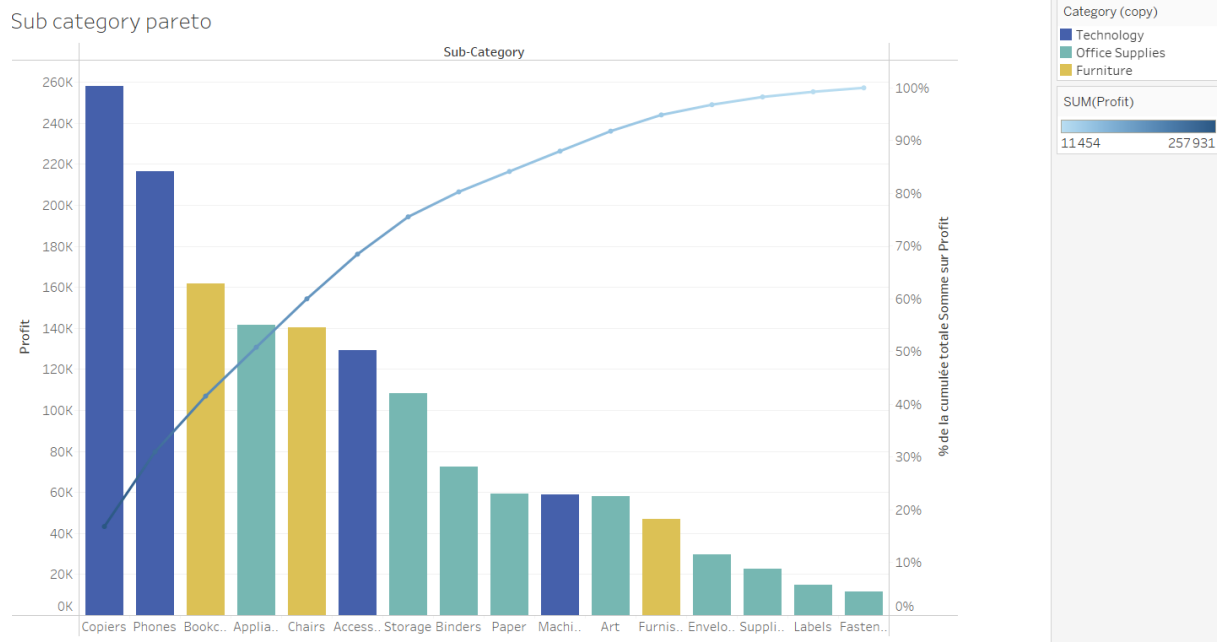


Figure 5: Pareto analysis of the unequally distributed profits of each sub-category

This analysis is depicted in figure 5. Here, we notice that we omitted “Tables” given their negative profit. The results suggest that about 70% of sub-categories contribute to 80% of the realized profit. Thereby, we explored the ABC method which is a variant to the Pareto to help to obtain a more comprehensive classification of items. To start with, we evaluated the Gini index which serves as an indicator for the adequate splitting percentages. At the outcome, we obtained three classes A, B and C whereby class A encompasses the first 20% of the subcategories encompass copiers, phones, bookcases, appliances, chairs whose management requires careful attention given their significant contribution to the superstore overall profit. The next 20% of the subcategories (accessories, storage, binders, paper) account for only 12% of the total profit. While still profitable, they clearly aren't as lucrative as the top performers. The bottom 60% of the subcategories (machinery, art furniture, envelopes, supplies, labels,

fasteners) account for only 8% of the total profit which suggests either eliminating or outsourcing them.

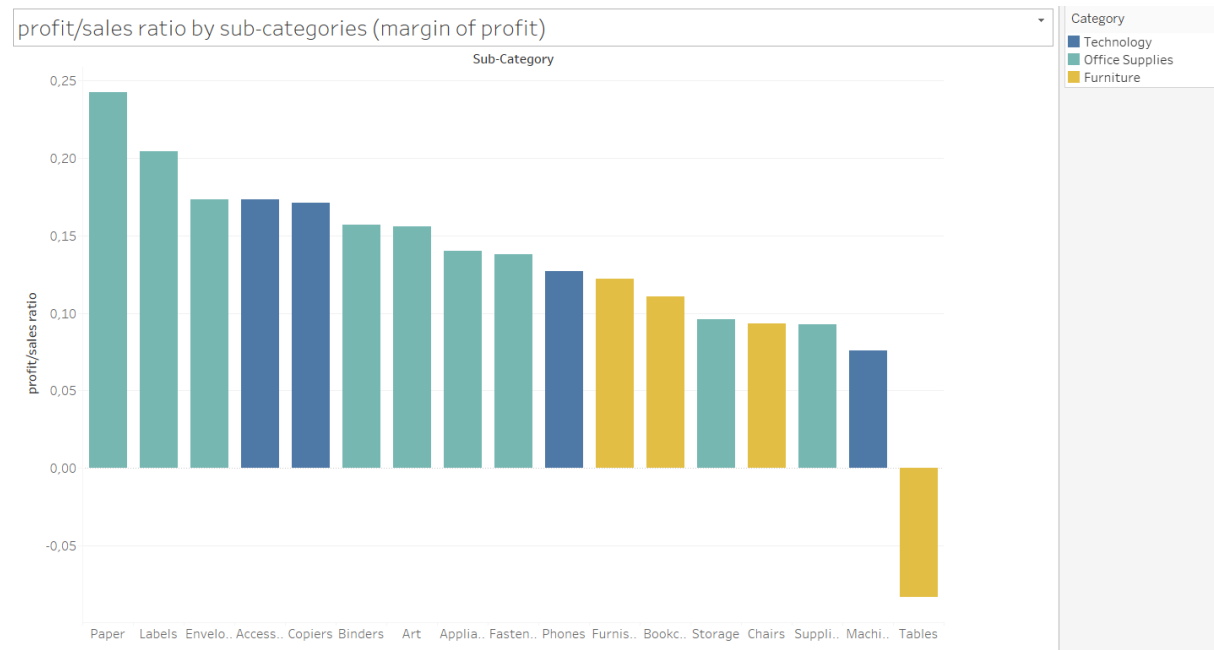


Figure 6: Margin of profit of each sub-category

This barplot represents a comparative advantage way of looking at this situation and in this case Paper (which is a zone B sub-category) is the best performing from a margin of profit POV. And furniture overall seems to have a high comparative advantage over the other categories which aligns with our findings from the radar charts (furniture having a low quantity to shipping cost ratio).

Conclusion

While the category-based is a valid one, the pareto analysis division of sub-categories into zones seems like a better way to evaluate absolute performance, however comparative performance is sometimes as crucial and we will explore more of it by analyzing the markets.

2. Analyzing the external factors

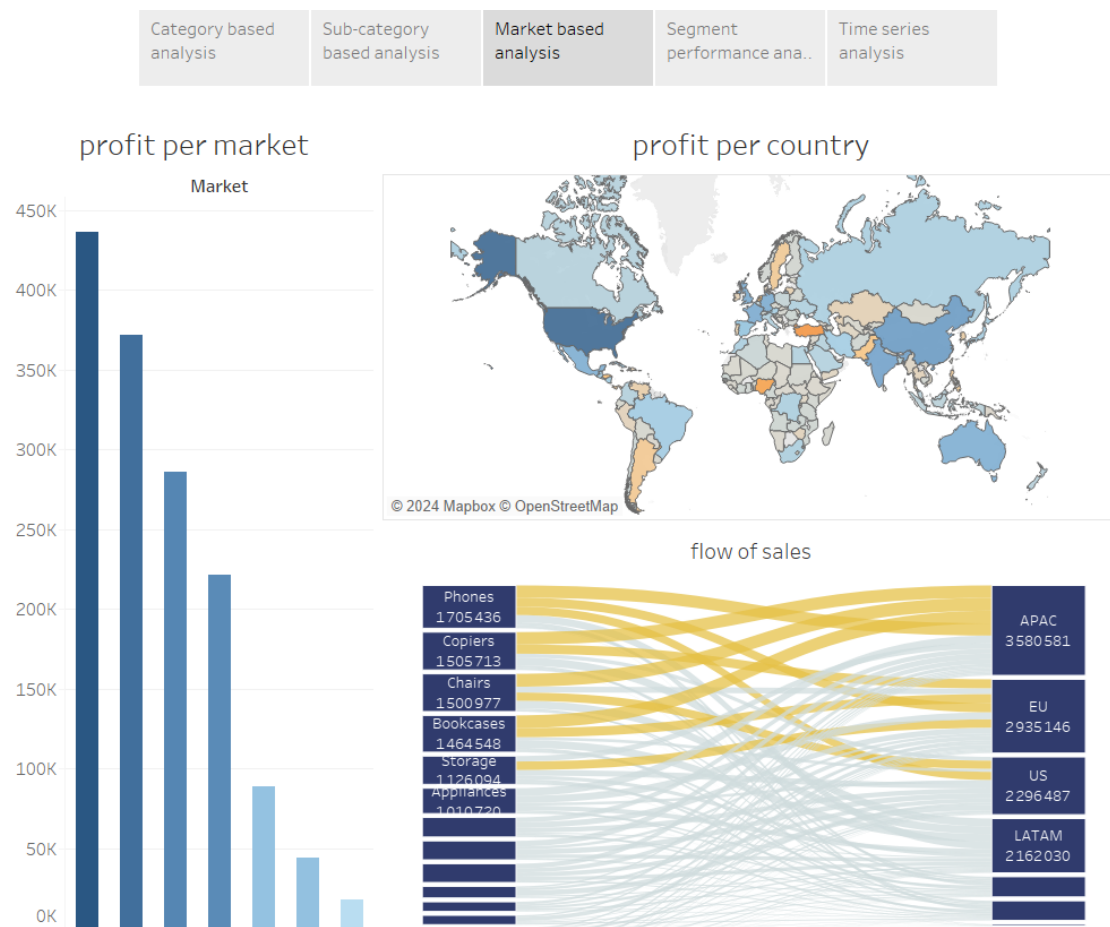
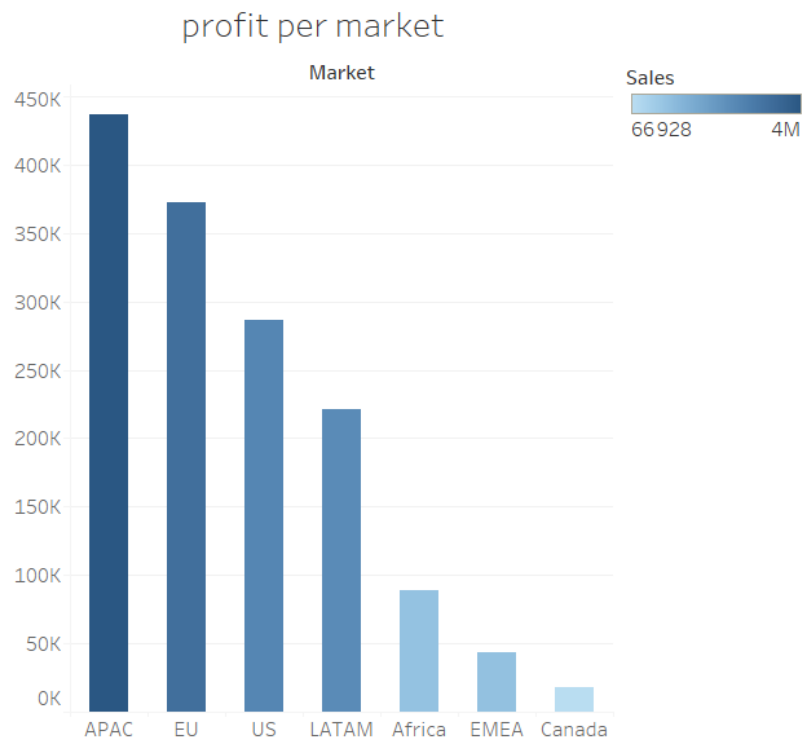


Figure 7: Market based analysis dashboard

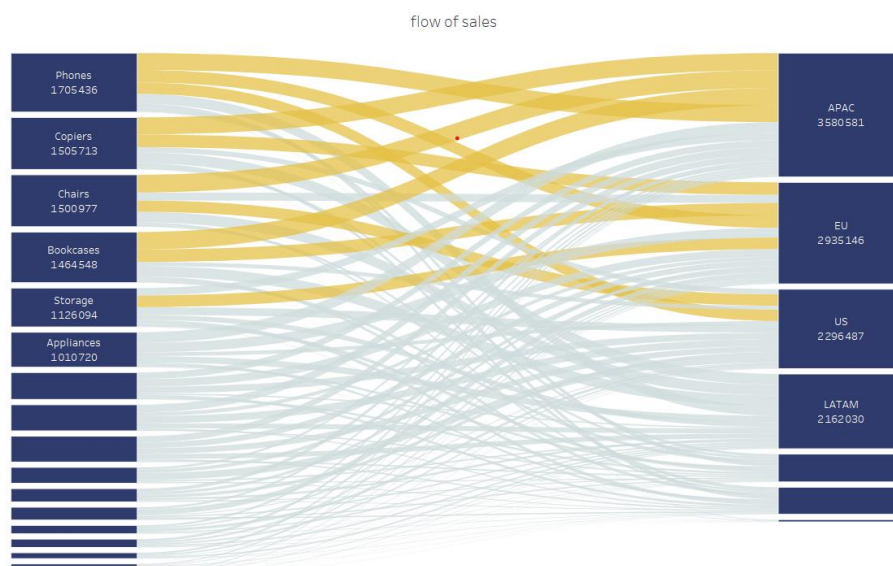
For the purpose of analyzing the external factors, careful is directed toward the market-based performances. More specifically, we attempt to put evidence on the threats and opportunities.

2.1. Market-based analysis

To start with, the profit per market is plotted in figure 7. As may be noticed, the APAC region is the most profitable market, followed by EMEA and the US while Canada, EMEA and Canada are the least preferred ones.



Going into more details on the distribution of the product categories for each markets, we sketch, in figure 8, the sankey diagram shows the flow of sales between the most profitable products (sub-categories) and the most profitable markets. With lines widths getting thicker as far as sales grow.



This figure reveals that the size of traffic in APAC, EU, US and LATAM are very significant and it directly affects the best performing products (Zone A products) with most of Phones , Copiers ,Chairs and Bookcases going to these markets

2.2. Country-based analysis

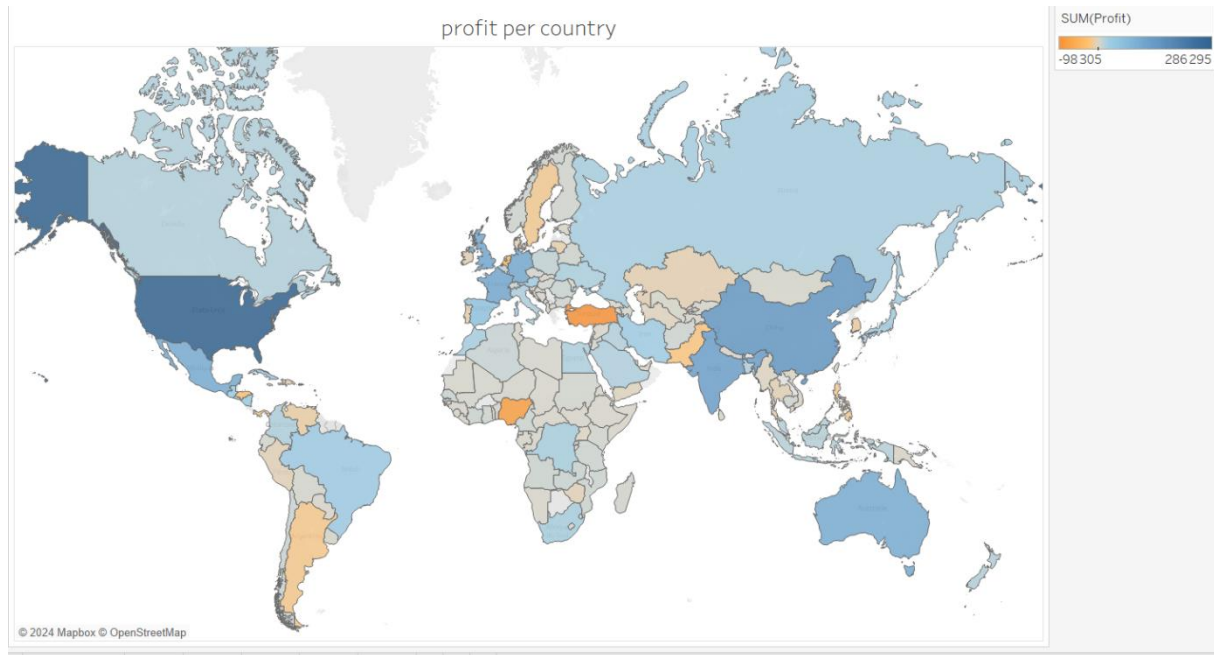


Figure 10: Profit distribution per country

Figure 10 shows the profit generated by each country with US being the most profitable. Indeed, it's a market on its own, followed by China and Japan.

However, it is necessary to address the low performance of some countries, most notably, Turkey (EMEA) followed by Nigeria (Africa) , Honduras (LATAM) and Pakistan (APAC)

2.3. Segment based analysis

- Profit by segment

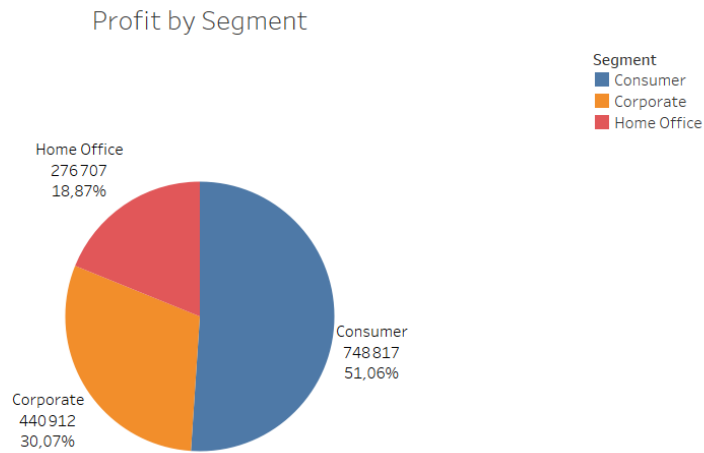


Figure 11: Profit proportions per segment

The pie chart in figure 11 displays the distribution of the profit per segment . Clearly, the consumer is the largest segment with more than half of the profit, followed by corporate and home office, respectively

For the purpose of getting a more comprehensive understanding on this performance, we engaged in calculations of the following performance indicators.

SWOT Analysis

Category based analysis	Sub-category based analysis	Market based analysis	Segment performance ana..	Time series analysis
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Average time to delivery by ship mode and market

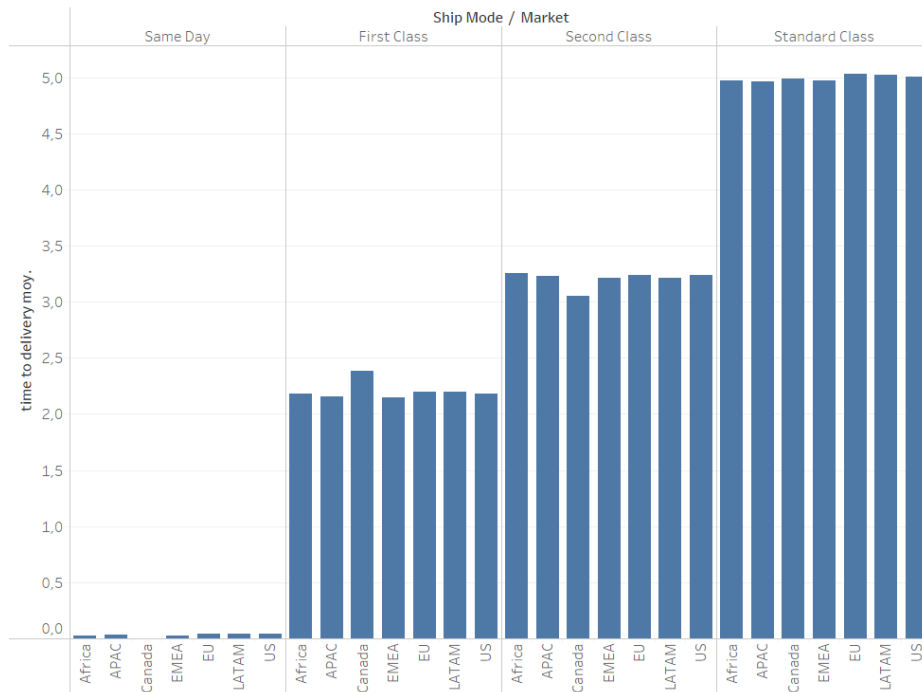


Figure 12: Average time to delivery (Performance Dashboard)

To set into it, we first introduce the average delivery time per ship mode and market. This performance is assessed for each segment type in figure 12. Accordingly, we found that on average there are no big differences in delivery times between markets so we could assume that the company is doing well in delivery time. Furthermore, we represent the trend and seasonality underpinning

3. Trends and seasonality

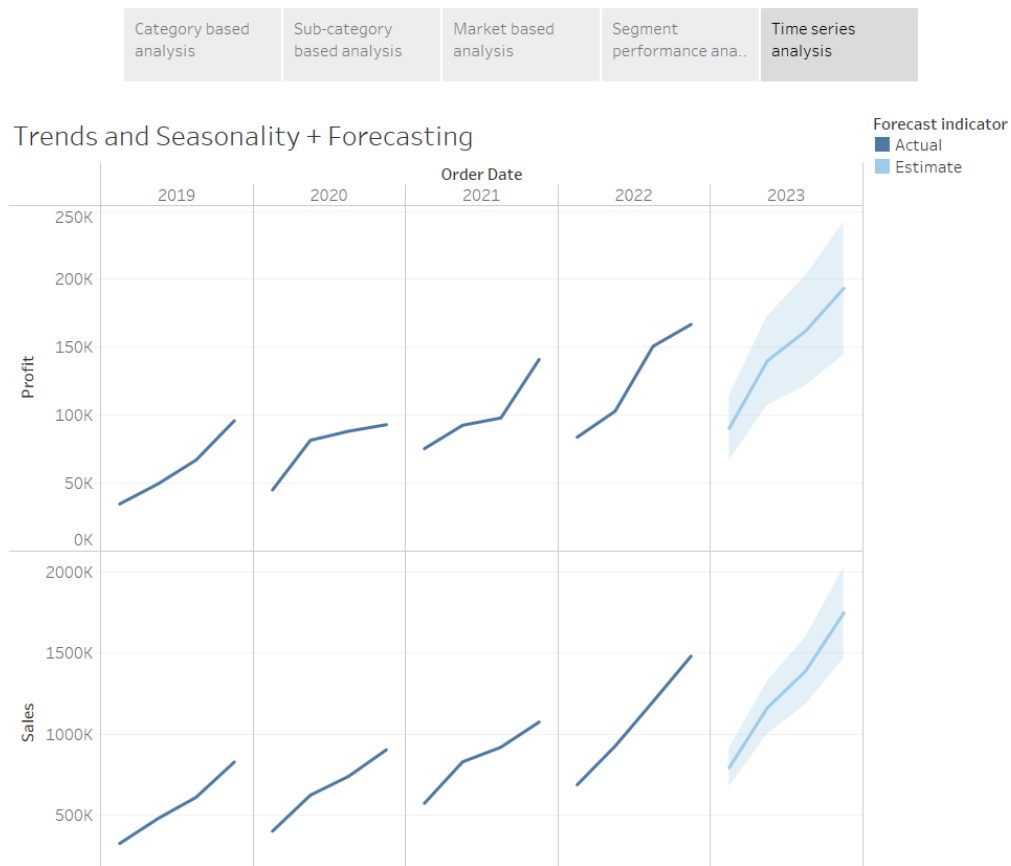


Figure 13: Time series dashboard

This graph shows the rising trend of the profit throughout the years, while it generally shows an increase in profit each year, the effect of the pandemic is quite clear with the slump in growth in 2022.

However it is clear that the busiest season is Q4 and the slowest season is Q1.

This should be a valuable insight for management planning which would ensure consistency in performance throughout the year.

- Forecast

The forecast for 2023 follows the same Trends and Seasonality which highlights its recurrence before

- General conclusion

Analyzing this data uncovers growth opportunities.

Different types of products have absolute and comparative advantages that could be exploited, others should be omitted.

Market analysis helped us identify profitable regions and strategic focuses.

Segments examination emphasized service quality and the key elements to look for to sustain it.

These insights drive strategies to optimize products, expand into lucrative markets, and enhance customer experience. The report advocates for sustained growth and competitiveness, urging further exploration for untapped opportunities.