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Executive summary

This report represents analysis of a dataset, containing information about a company's general information, such as customers, products, sales, profits, and other key metrics. The data covers a wide range of different variables, allowing to make a comprehensive analysis.

The following dashboards were designed:

- Sales and Profit Overview: to identify overall company's sales and profit trends, regional and seasonal specifications.
- Product Performance: to evaluate the profitability of different categories and subcategories of the company's products.
- Shipping analysis: to inspect shipping areas, costs, delivery types, and their impact on profit.
- Discounts impact analysis: to study their impact on different categories, profitability and sales volume.
- Customer analysis: to segment customers and analyse their contribution to sales and profit.

The goal was to identify key factors influencing business performance and offer recommendations to senior management.

1. Company's Sales and Profit Overview

The dashboard presents the general overview of the company's profits and sales trends over time, as well as geographic patterns across regions.

Firstly, the "Sales & Profit" map and dot chart show that both highest average sales and profit volumes are concentrated in Japan, China, and India. This suggests that The Asia Pacific countries have high demand and efficient pricing or cost management, resulting in high margins, specifically 326 as average sales and 39.74 profit amounts. High profits with lower sales are seen in European countries, such as Germany, the UK, France, Austria. These markets might have a more stable or premium pricing policy, because even small sales volumes generate high margins. This confirms the importance of a differentiated pricing strategy for different regions. Some countries, for example, Australia show high sales, but relatively low profits. This may happen because of high operating costs or logistics costs that reduce margins.

The line graph of sales and profit shows clear signs of seasonality. Sales are growing steadily, with peaks in Summer and Winter months. This may indicate seasonal surges in demand, for example, during summer vacations and the holiday season.

Based on the analysis I would suggest the company to:

1. Invest in growing markets in Asia. It is recommended to strengthen marketing support in Japan, China and India to use the potential of these regions to further increase sales and profits.
2. Optimise operating costs in Australia and similar lower-profit regions. A detailed analysis of costs and logistics should be conducted to increase margins.
3. Maintain strategy in Europe, since it generates high profits even with moderate sales volumes. Further development may include tailoring marketing campaigns to local markets given the diversity of countries in Europe to increase customer engagement and increase sales.
4. Focus on seasonal peaks – sales growth can be used for strategic planning of promotions and increased marketing budgets during this period.

2. Product Performance

This dashboard provides an analysis of the performance and profitability of products of the company divided into subcategories. The key metric was chosen as profit margin, since it allows to calculate the profitability of different product categories, even if their sales volumes vary greatly.

From the “Profit Margin by Sub-Category” bar plot it can be seen that the highest profit margin is observed in the “Paper” subcategory (0.2424) in the “Office Supplies” category. This indicates that paper is a key profit driver, followed by labels and envelopes. The key insight is the fact that these sub-categories aren’t the ones bringing the highest sales as can be seen from the “Sales by categories” plot. Storage and appliances have the greatest sales volumes from the same category, but their margin profits are approximately two times smaller. This indicates that despite the popularity of the product, its profitability is relatively low. High production, marketing, or logistics costs may be the reason for this.

The subcategory “Tables” of the category “Furniture” shows a negative margin (-0.0832), which indicates losses and needs to be addressed. The whole category of Furniture falls behind in profit margin throughout the last 4 years as can be seen from the lines plot.

I would suggest the company to:

1. Focus on high-margin products. Increase marketing efforts to promote the paper and labels subcategories, as they bring in the highest profit per unit. This may include promotional offers or product range expansion. It will increase the overall profit of the company.
2. Optimise high sales with low profit margins. A cost analysis of such product as storage, and appliances should be conducted to identify opportunities for cost reduction. Consider increasing prices if this does not affect demand.
3. Analyse unprofitable subcategories, especially tables. Conduct a detailed analysis to understand the causes of losses. Perhaps it is worth reviewing the assortment, optimising logistics or dropping the product completely.

3. Shipping analysis

On the dashboard one can see analysis of shipping costs by region, shipping time depending on the method, and the relationship between shipping costs and profits.

The map shows that average shipping costs vary significantly by region. For example, some regions in Africa have high average shipping costs (up to 149 in Chad), which may be due to remoteness, complexity of logistics, or low order density, which increases the cost of delivery per unit due to the lack of economies of scale. Regions with lower shipping costs are likely to have more optimised logistics processes, developed infrastructure or presence of local warehouses.

From the bar plot of average shipping time it can be observed that "Same Day Delivery" has the shortest delivery time (0.037 days), making it the fastest option. “First” and “Second” classes do not differ much (2.182 and 3.230 days), but the “Standard” one has the longest delivery time (4.998 days), making it suitable for customers who do not need urgent delivery.

The “Shipping cost vs profit” graph shows that "Standard Class" generates the highest profit despite being the slowest one. "Same Day" has a high shipping cost, but its contribution to profit is minimal. This may be due to the limited demand for this shipping method due to its high price. "First Class" and "Second Class" show moderate results in both shipping costs and profit.

Based on these insights I would recommend the company to:

1. Optimise shipping in high-cost regions. In regions with high average shipping costs (e.g. Africa) consider making local warehouses or partnering with local logistics companies to reduce shipping distances.
2. Strengthen the position of "Standard Class". It generates the highest profit with low shipping costs, it is recommended to continue promoting it as the main shipping method. Maybe by providing discounts or bonuses for customers who choose this method.
3. Reconsider “Same Day Delivery” strategy. Given the high cost and low contribution to profit, it's possible to limit it for premium customers or high-margin orders.

4. Discounts Impact Analysis

This dashboard shows the impact of discounts on profitability and their impact on sales by subcategory.

The “Discount vs Profit” chart shows that as the discount level increases, profit decreases. This is especially noticeable when discounts hit 20%, where most points are in the negative profit. Moreover, on the “Discount Range & Profit margin” it can be clearly seen that subcategories with high discounts (20-30% or more) have a negative profit margin. It leads to losses despite the potential increase in sales volume.

The subcategory “Tables”, which I mentioned in point 2, has the highest average discount level (more than 30%) and at the same time a negative profit margin. This confirms that high discounts are the main cause of losses in this subcategory. At the same time subcategories with discounts of average 10% are mostly marginally profitable, as can be seen by example of paper and labels.

Based on the findings I would recommend to:

1. Set the upper limit of discounts at 15% to maintain profitability.
2. Conduct a demand analysis to understand how reducing discounts will affect sales and profit.
3. Develop alternative sales promotion strategies such as bonuses or loyalty programs instead of offering high discounts. Or offer discounts only to regular customers.
4. Implementing a dynamic pricing system where discounts depend on demand, seasonality or order volume is also a good practice.

5. Customer Analysis

The dashboard provides an analysis of customer profitability by segment, sales dynamics of key customers by year, and changes in customer segmentation over time.

On the "Customer Segmentation Over Time" it can be seen that "Consumer" segment is steadily increasing the number of clients, reaching 784 in 2023. It is the most popular segment. The "Corporate" segment is also showing growth, but more moderately. The "Home Office" segment remains the smallest in terms of the number of clients. Despite this fact it can be seen from "Customer profitability by segment & Year" plot that it shows the highest average profit in 2023 (31.486), making it the most profitable and promising segment currently.

The "Top Sales Customers by Year" graph shows that customers in the "Home Office" segment generated significant sales in 2023. For example, customer TA-21385 was the top sales customer 2023.

The "Consumer" segment has a stable presence of key customers, which contribute significantly to the overall sales. The "Corporate" segment has a smaller number of key customers, which may indicate the need to attract new corporate customers.

Recommendations:

1. Given the high profitability of the "Home Office" segment, it is recommended to increase marketing efforts aimed at attracting new customers in this segment.
2. Given the significant contribution of individual customers to overall sales, it is recommended to implement VIP service programs for key customers to increase their loyalty.
3. Considering the stable growth of the number of clients and average profit, it is worth continuing to invest in "Consumer" segment. It is recommended to strengthen personalised offers for regular customers.
4. To restore profitability of the "Corporate" segment it is necessary to analyse of the reasons for the decrease in average profit and develop strategies for attracting new corporate clients.

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