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EXECUTIVE SUMMARY

It is crucial to analyse the company's performance in the market and be aware of shortcomings. I have thus created five dashboards to aid us in comprehending the data. Recommendations made are aimed to help the company by increasing the operational efficiency and profits, improve customers' view on our company and ensure our company stays competitive.

Customer Segmentation

A map showing the quantity sold by state, bar chart showing the top 10 states with highest quantity sold and box-and-whisker plot showing the customer segment. Recommendations are to

1. Give priority for resource allocation, marketing efforts and sales strategies to the top 10 states with the highest quantity sold.
2. Set up warehouses and manufacturing operations near high volume states.
3. Research on how to penetrate market better for states with decent quantity sold.

Product Category

Tree map on the proportion of sales each sub-categories makes with the blue intensity showing the profit. Heat map to see profit of individual sub-categories by regions. Recommendation is:

1. Price items more accurately so as to not incur loss.

Quantity Sold Performance

Line chart of quantity sold overtime, area chart of profit overtime and highlight table showing the top 5 states with highest quantity sold segmented by subcategories. Recommendations are:

1. Introduce sales promotions on months where quantity sold is low.
2. Customise stocks for products to meet individual state demands.

Discount Analysis

Dual combination chart showing discount to profit and quantity sold and quantity sold by discount graph. Recommendations are:

1. Set 10% discount during months with low quantity sold to increase demand.

Shipping Performance

Circles chart showing popularity of shipment modes, bar chart showing total shipping cost for individual modes and packed bubbles chart to show sub-categories and shipping modes.

Recommendation is:

1. Exclusive partnership with a shipping company.

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INTRODUCTION

From the given dataset, we can see a lot of information about the company and its activities. However, we are unable to see trends and fully understand the data without organising them. Therefore, I have extracted data from the dataset and used it to form valuable information that will help us by showing trends, losses and profit made by the company. With this information, we can make accurate recommendations to bring the company to greater heights. Additionally, it will aid us in seeing how we can optimise our operations such that we are able to meet specific demands of our customers around the world. I have narrowed it down to five dashboards: Customer Segmentation; Product Category; Quantity Sold Performance; Discount Analysis and Shipping Performance.

CUSTOMER SEGMENTATION

The purpose is so that we can get a better understanding of the states and customer segments that contribute most to our sales. The map allows us to identify high performing states and regions based on the blue intensity. The bar chart zooms in to the top 10 highest quantity sold states. Box-and-whisker plot shows the customer segmentation for these 10 states, giving us insights on the distribution of quantity sold across customer segments and identifying outliers.

I recommend that we should give priority for resource allocation, marketing efforts and sales strategies to the top 10 states with the highest quantity sold. From the box-and-whisker plot, we can see that consumers buy the most. Research on advertisement style should be done for each of these states such that it will lure more consumers, targeting them. We should monitor competitor activity and market trends closely in these states to stay competitive, ensuring that the products continue to be innovative.

To increase operational efficiency, I recommend that we set up warehouses and manufacturing operations near high volume states such as England. This will ensure punctual delivery thus increasing customer satisfaction, making customers more inclined to buy in the future. Speedy delivery will also give an edge over the competitors as customers who need items urgently will choose this company.

Looking at the map, for regions that have a decent amount of quantity sold, we can investigate how we can penetrate their market better.

PRODUCT CATEGORY

With this dashboard, we will be able to understand where most of the profits are being made and which sub-categories have the highest quantity purchased. The tree map gives us a visual

representation on the proportion of sales each sub-categories makes. The blue intensity shows the degree of profit it contributes to the company.

However, there is one orange box, which is tables. 3,074 tables were sold; however, it makes a loss of -62,888. A possible cause is that the tables are not priced well. We should change the prices of tables to be even higher such that it will decrease the losses. To be more precise with pricing, we look at the profits by region segmented by sub-categories. South and Southeast Asia contribute the most to the losses made by selling tables, -27,012 and -17,423 respectively, as seen by the harsh intensity of orange, thus we should price tables higher in those regions.

From the heatmap, we can also see that across all sub-categories, there are a lot of orange boxes in Southeast Asia signifying losses made. This could be items being poorly priced, we thus must increase the prices of products in Southeast Asia. For additional measures, we must monitor the impact in quantity sold and profit made after the increase in prices such that we know if we are able to increase the prices even more to cut losses or lower the price such that the demand for the products does not decrease significantly.

QUANTITY SOLD PERFORMANCE

Line chart and area chart shows us that from 2019 to 2022, quantity sold and profits have been increasing and with the forecasting, we can expect quantity sold and profit to increase even more from December 2022 onwards.

From the area chart, we can see that every 1st quarter of the year, there is a dip in the profits made. To be specific, from the line chart, every February, there is a drastic decrease in quantity sold as compared to the months before. I recommend introducing sales promotions during February such that customers will be enticed to buy more, increasing the demand, quantity sold and profits.

From the bar chart and area chart, we are also able to see that every quarter 4, quantity sold are at its highest for the year. The forecast shows that in 2023 quarter 4, quantity sold will be at 8,966. The company should then be prepared to meet the high demand by having more stocks available for customers to purchase.

Additionally, a highlight table showing the top 5 states with highest quantity sold segmented by product subcategories was made as I want to use this information to link back to the recommendation on operation efficiency. For example, in California, we can have smaller stocks of copiers and machines to make space for more binders and paper in the warehouse as it racks up the most quantity sold as seen by the dark purple colour in the highlight table. This will help to ensure

warehouses for the state are catered towards the specific demands. Popular products will then be less likely to be out of stock when customers want them. If possible, this should be implemented to all the states.

DISCOUNT ANALYSIS

The purpose is to know how discounts affect quantity sold and profits and what are the best discounts to offer during the promotion period for each category. With the dual combination chart, we can see that there are losses (1,743) incurred after we implement a 27% discount. This is undesirable, discounts are supposed to attract customers, boost sales while still ensuring the company makes profit. As seen by the chart, with 27% and above discounts, the company does not make any profit. Thus, discounts should be capped below 27%.

At 20% discount, we can see that sales increased drastically to 18,635 with profits at 117,633, indicating that 20% is the optimum discount to set if we wish to clear our stocks. This is further supported by looking at the Quantity Sold by Discount graph. At a 20% discount, all categories had the highest spike in quantity sold. Office supplies at 9,983, furniture at 5,157 and technology at 3,495.

However, if we aim to make the most profits during the sales period, we should set discounts at 10%. Profits were at 258,843 at 10% discount as compared to 117,633 at 20% discount.

Discounts should only be used during months that have low sales such as February as seen from the Sales Performance dashboard. This is because from the graph, we can see that customers are not price sensitive as quantity sold are high even without discounts. We do not want to have sales so often that customers become price sensitive and only shop during sales.

SHIPPING PERFORMANCE

From the circles chart, we observe that the preference of shipping class is the same throughout the three different customer segments with standard class being the most popular, followed by second class, first class then same day. The bar chart shows us the total amount spent on each shipping class.

Seeing that standard class has the highest total cost, I propose that we assess which shipping company provides the cheapest standard class shipping to lower shipping costs. We can also get into a partnership with a shipping company such that we can negotiate exclusive rates, and discounts such as free shipping after a condition, like minimum spend, is met. Customers will be lured by the low shipping costs and choose to purchase products from our company over others.

From the packed bubbles chart, I suggest that we can have tiered, free shipping coupons for office supplies. For example, at \$50, customers can get a free standard shipping coupon then at \$100, they can get a free second-class standard shipping coupon etc. I chose office supplies as has the most quantity purchased as seen by the sizes of the orange bubbles. With this offer, we can encourage customers to buy more.

Partnering exclusively will aid in ensuring consistency and reliability in service quality. We can focus on ensuring that the shipping partner is delivering on time and their customer service is excellent. This will give customers a good impression on the company.

Additionally, we can better streamline supply chain processes to meet the different shipping class demands. We can better optimise shipping warehouses such that there would not be an overload of orders that will cause delays in shipments.

CONCLUSION

With these recommendations implemented, I can assure that the customers' view on the company will improve, profits will increase, operations will be more efficient, and we will be able to remain competitive in the market. For additional measures, after implementation, we need to monitor the changes and adjust accordingly.