

Project 1 - Bus110A

Mikhail Ocampo, Trung Le, Darius Tse

11/06/2022

INDIVIDUAL RECOMMENDATION REPORT (Mikhail) Colab

Goal: Provide a recommendation to increase overall sales by 20% within the year. It is assumed that the company is wrapping up Q3 and entering Q4 for the current year.

In order to achieve the goal of increasing overall sales by 20% within the year, I considered the multi-year sales data provided by Office Solutions. My first analysis was to determine the major periods of sales in order to emphasize promotions. The first analysis revealed that Q4 historically generated the most sales consistently throughout the years, particularly around November and December. This finding led me to consider if increasing discounts during Q4 would effectively drive sales. My hypothesis was that an increase in discounts would lead to an increase in sales.



Figure 1: 2020's Sales and Profits

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2020
      Sales    Profit    Discount
Sub-Category
Chairs      30123.675  2559.1789  14.150943
Phones      24142.936  3813.3746  12.876712
Accessories 20800.100  5189.1260  9.189189
The correlation between Discounts and Sales is: 0.49
At p value: 0.04702
*****
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Figure 2: Top Sub-Categories Sales, Profits, & Discounts in 2020

Moreover, I conducted an analysis of profits, discounts, and sales among the top 3 sold sub-categories within Q4. As illustrated in Figure 2, I calculated the relationship between sales and discounts through the R and P-value among each year. I calculated that the P-value for 2020 was 0.04, the historical average P-value (2017 - 2020) was 0.06, and that the R-value was 0.49 for 2020. These

values indicate a relatively weak correlation. Based on this statistical analysis, I conclude that the hypothesis is false as the P-value and R-value cannot provide evidence that an increase in discounts would increase sales. In order to increase sales in Q4 effectively, I conducted an RFM analysis of customers in 2020 to provide recommendations based on customer shopping behavior. As illustrated in Figure 3, the RFM analysis allows me to consider all recent customers ($R > 4$); the frequency of purchases per customer within the year; and the amount bought by that customer. This table allows me to categorize each customer based on the RFM analysis and produce actionable insights.

Recommendation

For customers who purchase between 12 - 15 ($F > 3$) times throughout the year, I recommend the company to target these customers with loyalty promotions in Q4. For customers who have recently purchased products, follow up emails within 2-4 weeks of their purchase date would allow us to hear feedback on the product(s) bought while also cultivating a long-term relationship by actively listening to feedback. I recommend general discounts within Q4 around holidays such as Black Friday, Thanksgiving, Cyber Monday, Christmas, and New Year according to the volume of sales in the period. For top 100 customers and frequent buyers, these customers would receive exclusive offers based on their top purchased products to further excite sales during the holiday season.

Customer Name	RFM
Andrew Gjertsen	544
Keith Dawkins	535
Anna Häberlin	534
David Bremer	534
Frank Atkinson	534
Irene Maddox	534
Matt Abelman	534
Michael Paige	534
Naresj Patel	534
Rob Dowd	534

Figure 3: 2020 Customers RFM Analysis

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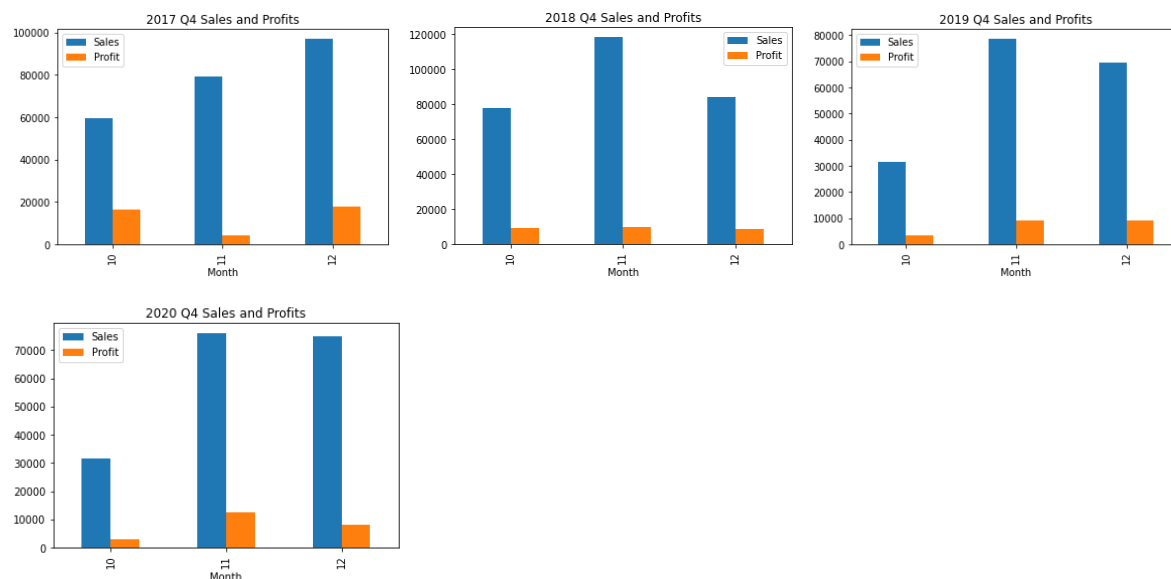
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Individual Recommendation Report (Trung Le) [Colab](#)

GOAL: Increase profits by 10% by the end of the year

With the goal of increasing profits by a 10% margin in mind, I decided to analyze the least performing regions, segments, products, and categories in order to deduce which items from the company were underperforming and unprofitable. For reference, my analysis was made with the implication that the company is requesting an analysis based on their Q4 fiscal year sales, so the scope of this data analysis recommendation will be based on those premises.



Looking at this information here, when looking back at the past four fiscal years, we can see that October, on average, requires the most amount of assistance in terms of profit margin. December is consistently performing well in comparison to October and November, so the focus can either be towards improving October's profit margins or progressing with December's current performance. I chose to conduct this analysis with the goal of improving October's profits, as I found that it would be more beneficial to test methods on that month and to see how it scales. Since it typically underperforms, seeing a big bonus in profit margin will be indicative of how well the company's marketing strategies are.

Recommendations

In order to increase profit margins, I believe that the best method of action is to remove the exact products that continually underperform and bottleneck the company. To be more specific, although tables had lost the most amount of money for the company, there were some that didn't perform as bad and simply requires less discounts and other methods to prevent the company's loss. With all regions in mind, the data analytics presented products that were unprofitable in all aspects, and did not play a big role in terms of sales either. This was something that turned the tide in my analysis, and I recommend removing the following: removing the bottom-tier performers in the Tables sub-category as well as the fasteners & chairs sub-categories in terms of negative profit and drastically lowered sales in comparison to its other niche products.

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INDIVIDUAL RECOMMENDATION REPORT (Darius) [Colab](#)

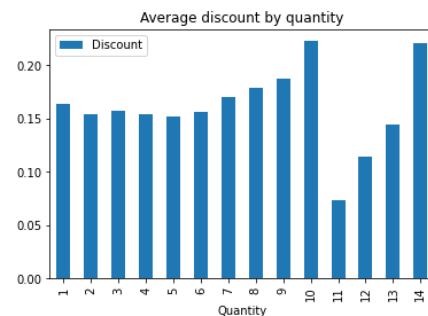
Goal: Increase corporate accounts by 50% over 3 years.

To increase the number of corporate accounts, I propose that Office Solutions launch a few incentive programs for their B2B purchases. Based on the data, I've noticed that the discounts given were a bit erratic. There were some orders with little to no discount, while other orders had absurd discounts of up to 80% off (all of which were followed by a negative value in the profits column). Rather than giving out absurd and meaningless discounts, I came up with a plan to appeal to our customers through controlled discounts and incentives. These incentives are intended to make corporate purchases more appealing, retain corporate accounts, and attract new corporate customers.

Recommendation:

Method 1: I recommend the company should implement a tiered discount strategy. To incentivize more sales from the corporate segment who typically buy in bulk, the company should give increasing discounts the more units they buy. Through analysis of corporate orders I determined a reasonable discount rate based on the average discount and quantity.

- **Tier 1:** 2 to 3 items, 15% discount
- **Tier 2:** 4 to 9 items, 20% discount
- **Tier 3:** 10 to 14 items, 25% discount
- **Tier 4:** 15+ items, 30% discount



Quantity Discount		
Segment		
Corporate	3.843709	0.158228

Method 2: Another recommendation I have is to start a loyalty program. In order to incentivize corporate accounts to return and make more orders, Office Solutions should offer points based on the amount of money a corporate customer spent. I carefully created a program based on airline travel points that will slightly decrease profits short term but will attract returning customers and increase profits overall in the long run. After analyzing the points system of multiple airlines, I came to the conclusion that a reasonable number of points awarded should be 100 points per dollar spent. This equates to \$0.01 per point. Based on the average sales and profits the average sale would result in \$2.34 value in point. This would cut into our profits by 7.6% but will surely give corporate accounts incentives to return.

Average Sales and Profits	
Sales	233.823300
Profit	30.456667

Method 3: The last recommendation is quite straightforward. I recommend that for customers who open new corporate accounts, Office Solutions should offer an additional 5% discount added on to their tiered discount for the first month after opening.