YOY Analysis on the Sales of T-Shirts on 3 Digital Marketing Channels

Purpose of the Project

The purpose of this project is to use data from a t-shirt selling company to understand how well their product is being sold on 3 digital marketing channels by using data from February 2016 to April 2019. In this project, we'll assume that April 2019 is the present day.

Summary of Analysis

There are 3 digital marketing channels that are used to sell t-shirts, Google, Facebook, and Twitter. From the 3 digital marketing channels, the advertisements shown on Google performed the best, then Twitter, and lastly Facebook, in 2018. However, compared to the previous year, the digital marketing channels performed poorly in selling t-shirts. It's forecasted that by the end of 2019, the net profit will be lower than 2018. In order to prevent this, the company should look to resolve 2 key factors. First, the number of conversions on Facebook is forecasted to decrease by 32.4%, resulting in a loss in revenue. The company should look into checking the data accuracy because of the sudden drop in sales. If the data is accurate, then counter actions need to be made, such as reallocating resources into another digital market. Second, customers are spending, on average, less on the product across all digital markets. However, it appears that they are interested in the product, due to the consistent CTR. Since all the digital markets are being affected, the company should look into seeing if a new competition emerged or look to see if there is a macro-level trend that is happening, such as the economy.

Key Questions

1. Which digital marketing channel had the best sales performance in 2018? The worst?
2. Which digital marketing channel had the best advertising performance in 2018? The worst?
3. How were the sales in 2018 compared to 2017?
4. How was the advertising performance in 2018 compared to 2017?
5. What can be expected in 2019?
6. What further actions are necessary to improve the sales and advertising performance for the future?

Key Insights

1. In 2018, Google had the best performance in terms of the sales. Advertisements on Google contributed 73.9% of all the sales with 2,496 sales, generated 94.5% of the net profit, and had a ROI of 110%. Google had the highest bracket for the average order value where 83.3% of customers spent between $50 - $59.

   Twitter had the 2nd performance in terms of sales despite only contributing 6.7% of the total sales with 226 sales. Advertisements on Twitter generated 5.5% of the net profit, and had a ROI of 99%. Half the customers from Twitter spent between $30 - $39 and the other half spent, on average, between $40 - $49 per order.

   Facebook had the worst performance in terms of sales. Although advertisements on Facebook contributed 19.4% of all the sales with 653 sales, it experienced a breakeven point. The net cost exceeded the net revenue by $22.04, and the ROI was 8%. All the customers from Facebook had an average order value of $40 - $49.

2. In 2018, advertisements on Google had the best performance. These advertisements had the highest average CTR (click through rate) of 4.8% and the highest average conversion rate of 4.8%. Advertisements on Google had the highest average CPC (cost per click) was $0.91.

   Advertisements on Twitter had the 2nd best performance with an average CTR (click through rate) of 3.2% and an average conversion rate of 3.2%. Advertisements on Twitter had the lowest average CPC of $0.48.

   Advertisements on Facebook had the worst performance. This channel had the lowest average CTR (click through rate) of 2.7% and the lowest average conversion rate of 2.2%. Advertisements on Facebook had the 2nd highest average CPC of $0.80.

3. In 2018, the company had a total of 3,375 sales, 17.5% more than the total number of sales in 2017. The net profit accumulated to $73,049.92; however, this is 12.2% less profit than the previous year. In 2018, the net revenue decreased by 10.2% and net cost decreased by 8.8%, compared to 2017.

4. Compared to 2017, the 3 digital marketing channels had an overall positive performance in 2018. The CTR experienced a marginal drop of 0.1% for both Facebook and Google when comparing 2018 to 2017. Twitter was the only channel to experience the same CTR. The conversion rate increased 1.2% for Google in 2018 from a 3.6% conversion rate in 2017. For Facebook and Twitter, the conversion rate remained the same.

5. In 2019, it can be expected to generate less net profit from the digital advertising channels than in 2018. It's forecasted that the total number of sales from all the digital marketing channels will drop 2.2% and the net profit will decrease by 9.5%, compared to

2018. Twitter is expected to generate 4.1% less profit, and Facebook is expected to only generate about $15,000 in revenue with the net cost being about $25,700. This is because Facebook's CTR is expected to be similar from 2018 to 2019, 2.7% v 2.6%, driving up the advertising cost. While the average order value is expected to fall with 58.33% of buyers spending between $30 - $39 and the other 41.67% of buyers spending between $40 -$49. Google is the only digital marketing channel expected to experience a positive increase in profit from 2018 to 2019 by 2.3%.

6. Currently, there are 2 key issues. First, Facebook sales is at a breakeven point in 2018 and is expected to experience a loss in 2019 due to a forecasted decrease in the number of conversions by 32.4% while maintaining similar costs. This may be an issue of data accuracy, so the company should check that all data related to the number of conversions has been correctly documented. If it's not, then users on Facebook may not be finding value in the t-shirts being sold so counter actions should be accounted for. For example, the company should look to understand the demographic that uses the platform and compare it to the overall demographics of the customers that buy the product. Second, the average order value from the customers are decreasing across all digital marketing channels, leading to less profit being generated year over year. Although customers are spending less money, it appears that they are interested in the products due to the consistent CTR. The company should look into seeing if their competition launched a new t-shirt or to see if there is a macro trend that is affecting the market, such as the economic state between the years.

About the Data

The data contains information from February 2016 to April 2019. It contains information that tracks the customer interactions (impressions, clicks, conversions) and the sale from these interactions (CPC, advertising cost, other cost, revenue) with the advertisements shown on these 3 digital marketing channels: Facebook, Google, and Twitter.

Tools Used:

1. Excel
    a. Pivot Tables
    b. IF statements
    c. FORECAST function
    d. VLOOKUP

Columns created for further analysis.

- Average Order Bracket
    - Created using IF statements to group the column "Average Order Value"
- CTR
    - Divided the column "Clicks" by "Impressions"
- Conversion Rate

    - Divided the column “Conversions” by “Clicks”
- Total Cost
    - Added columns “Advertising Cost” and “Other Cost”
- ROI
    - Divided the column “Total Profit” by “Total Cost”
- Total Profit
    - Subtracted the column “Total Revenue” by “Total Cost”
- Forecast Average Order Value
    - FORECAST function on the “Average Order Value” column from February 2016 to April 2019
- Forecast Average Order Bracket
    - FORECAST function on the “Average Order Value Bracket” column from February 2016 to April 2019
- Forecast Impressions
    - FORECAST function on the “Impressions” column from February 2016 to April 2019
- Forecast Clicks
    - FORECAST function on the “Clicks” column from February 2016 to April 2019
- Forecast CTR
    - Divided the column “Forecast Clicks” by “Forecast Impressions”
- Forecast CPC
    - FORECAST function on the “CPC” column from February 2016 to April 2019
- Forecast Conversion
    - FORECAST function on the “Conversions” column from February 2016 to April 2019
- Forecast Conversion Rate
    - Divided the column “Forecast Conversion” by “Forecast Clicks”
- Forecast Revenue
    - Multiplied the columns “Forecast Conversions” and “Forecast Average Order Value”
- Forecast Advertising Cost
    - Multiplied the columns “Forecast Clicks” and “Forecast CPC”
- Forecast Other Cost
    - FORECAST function on the “Other Cost” column from February 2016 to April 2019
- Forecast Total Cost
    - Added the columns “Forecast Advertising Cost” and “Forecast Other Cost”
- Forecast Total Profit
    - Subtracted the columns “Forecast Revenue” by “Forecast Total Cost”
- Forecast ROI
    - Divided the columns “Forecast Total Profit” by “Forecast Total Cost”

To find the maximum and minimum value for the “average order value,” I used the functions MAX() and MIN() inside the VLOOKUP ().

- VLOOKUP(MAX( ), table, column number, [range lookup])
- VLOOKUP(MIN( ), table, column number, [range lookup])