

Online Advertisement and Its Impact to Sales

Technical Report

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(table of contents added and updated automatically with page numbers)

Table of Contents

1. EXECUTIVE SUMMARY	3
2. OBJECTIVE AND QUESTIONS	4
2.1. Project purpose	4
2.1.1. Objective of the project	4
2.1.2. Questions	4
2.1.3. Data.....	4
3. DATA ANALYSIS AND RESULTS	5
3.1. Customer background (Query 5 and 6)	5
3.2. Sample Size (Query 7 and 9).....	6
3.3. Sales (Query 8, 10 and 12)	7
3.4. Use cases (Query 11 and 13).....	7
4. RECOMMENDATIONS AND CONCLUSION	8

1. EXECUTIVE SUMMARY

The appropriate analysis could turn the company decreasing sales situation. On the contrary, inefficient management solutions are costing company resources. Depending on the Pop Runner available data, we analyzed the impact of customers' gender, age, loyalty, especially two kinds of online advertisements method, for the sales.

A majority of customers are around 30 years, and the number of female consumers is roughly three times that of male consumers. Among the 9032 customers, there are only 1487 consumers who received a pop-up message that added discount codes to their card. The total sales and average sales are less than did not receive advertisements. However, 716 consumers opened their emails. Their average sales are nearly two times of the customers who did not open their email.

Therefore, it is helpful that adopt email advertisements to boost company sales. Additionally, the company could target the advertisements to females around 30 years old.

2. OBJECTIVE AND QUESTIONS

2.1. Project purpose

2.1.1. Objective of the project

The objective is to see if online advertisement impacts sales.

2.1.2. Questions

What age and gender does the most sales allocate to?

Did customers who received the email blast purchase more?

Was pop-up an effective method of online advertisement?

2.1.3. Data

The available data is comprised of the total sales, total number of consumers, their loyalty status, demographics, pop-ups, emails, and whether those were opened by the consumers. The pop-up advertisement offers a discount code for consumers when they visit the website. The email is sent to everyone so it's another way to reach the market. We can find out if online advertisement works for driving more sales by executing certain SQL statements.

3. DATA ANALYSIS AND RESULTS

3.1. Customer background (Query 5 and 6)

There are 6903 female customers, and their average age is 30.61 years. Meanwhile, there are 2129 male customers, and their average age is 32.45 years.

The number of customers with the lowest loyalty status (0) is 1529, and their average age is 29.37 years.

The number of customers with the middle-lower loyalty status (1) is 1740, and their average age is 30.10 years.

The number of customers with the middle loyalty status (2) is 2612, and their average age is 30.70 years.

The number of customers with the middle-higher loyalty status (3) is 1385, and their average age is 31.59 years.

The number of customers with the highest loyalty status (4) is 1766, and their average age is 33.51 years.

Gender distribution		
Variable	Frequency distribution	Mean (Age)
Gender: Male	2129 (23.57%)	32.45
Gender: Female	6903 (76.43%)	30.61
Loyalty distribution		
Loyalty level = 0	1529 (16.93%)	29.37
Loyalty level = 1	1740 (19.26%)	30.10
Loyalty level = 2	2612 (28.92%)	30.70
Loyalty level = 3	1385 (15.33%)	31.59
Loyalty level = 4	1766 (19.55%)	33.51

Table 1: Customer background

3.2. Sample Size (Query 7 and 9)

There are 4516 consumers who do not receive a pop-up message.

There are 3029 consumers who received a pop-up message and but did not add discount code to their card.

There are 1487 consumers who received a pop-up message added discount code to their card.

There are 8316 consumers who did not open their emails. Meanwhile, there are 716 consumers who opened their emails.

Variable	Frequency distribution
Pop-up = 0, discount code = 0	4516 (50%)
Pop-up = 1, discount code = 0	3029 (33.54%)
Pop-up = 1, discount code = 1	1487 (16.46%)
Opened email = 0	8316 (92.07%)
Opened email = 1	716 (7.93%)

Table 2: Sample distribution

3.3. Sales (Query 8, 10 and 12)

On an average, consumers spend 135.21 on their total sales during their online purchase.

For pop-up advertisement, the advertisement was not successful. Because the total sales and average sales of the consumers who received advertisements are less than did not receive advertisements.

For email advertisement, the email blast was successful in a way. Since, on average, consumers who opened the email blast spend more. However, the total sales of consumers who did not open the email blast are more than opening the email blast.

Variable	Average (in \$)	Total Sales (in \$)
Total sales	135.2142	1,221,254
Pop-up = 0	138.6901	626,324.5
Pop-up = 1	131.7382	594,929.8
Opened email = 0	126.1210	1,048,822
Opened email = 1	240.8268	172,432

Table 3: Sales data by advertisement (pop-up and email)

3.4. Use cases (Query 11 and 13)

The consumer who spent the least during online shopping did not open the pop-up message, and his/her consumer id is 5887286353. The consumer who spends the most during online shopping opened the email message, and his/her consumer id is 5955534353.

4. RECOMMENDATIONS AND CONCLUSION

There are several findings we obtained from the queries. The number of female consumers is roughly three times the number of male consumers. The average age of male consumers is slightly higher than the female but they're both around 30. The average age has a positive correlation with loyalty status. Most consumers are at level 2. Half of the consumers did not receive the pop up. Roughly half of those who received it also added the discount code. The average spend per customer is 135.716 of the 9032 consumers opened the email blast. Pop ups don't really help to increase sales because both the sum and average sales are higher with those who did not receive pop ups. The email blast was successful because the average sales for those who opened the email is almost twice of those who didn't. We know that the consumer who spent the most during online shopping opened the email message, so email is a method to keep.

We recommend Pop Runner to use online advertisements to increase sales. However, since pop-ups didn't work well, it might be a better idea to add the incentive of pop-up to the emails. For instance, adding a discount code to the email. This could lead to higher conversion rate and more returning consumers, hence improved sales. They should target the advertisements to females around 30 years old. Email Headlines also need to be attractive for consumers to click.