**"Pop Runner Analytics: Enhancing Sales through Data-Driven Optimization of Online Presence"**

**Pop Runner Project Report**

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**EXECUTIVE SUMMARY**

The analysis focused on evaluating the impact of online advertising on PopRunner's sales, using descriptive statistics and SQL queries to explore customer demographics, engagement with advertisements, and sales patterns. Descriptive statistics and SQL queries were employed to analyze four key tables: email, pop\_up, consumer, and purchase.

The study revealed that email advertising had a substantial impact on sales, with customers who opened emails exhibiting significantly higher average sales compared to non-openers. On average, customers who opened emails spent $240.83, whereas non-openers had an average spending of $126.12. In contrast, pop-up advertisements showed a more subtle effect on sales, with a modest difference in average spending between recipients and non-recipients. The average spending for those who received pop-up ads was $131.74, while non-recipients spent slightly more with an average of $138.69.

The findings suggest that tailored email marketing is more effective in driving sales compared to pop-up advertisements. However, a holistic approach combining both advertising methods could be advantageous to target specific consumer segments effectively.

Management is advised to integrate pop-up ads and email blasts for optimized visibility. Personalized ad content based on consumer preferences is crucial, and continuous monitoring should guide swift adjustments. Establishing direct feedback mechanisms and exploring additional advertising channels, such as social media, are recommended. Experimenting with innovative content formats, ensuring cross-channel consistency, and refining feedback loops using AI can enhance targeted advertising. Strategic partnerships with brands or influencers should be explored for extended reach.

The analysis has certain limitations, including the absence of forecasting figures, limited information on the nature and type of the company, and potential data limitations due to insufficient details provided.

# OBJECTIVE AND QUESTIONS

This section outlines the primary objective, questions, and the dataset used in the analysis, focusing on determining the impact of online advertising on sales for PopRunner.

## Project purpose

### Objective of the project

The objective behind this project is to check if the online advertisements have an impact on their sales using descriptive statistics. Which would help them analyze the reason behind the decreasing traffic on the popruner’s website.

### Questions

To begin with, the first question that was addressed using the analysis of this project was,

* Was email blast a successful mode of advertisement when it came to sales?
* Was the pop-up advertisement successful in influencing sales?
* What is the average age group that ideally prefers shopping on poprunner’s website?
* Did the people who spent the most on shopping entertained the advertisements shown/ sent to them?

### Data

So, the data that was made available consists of four tables which were

1. email table- tells us that if the consumer opened the email blast or not which is denoted by yes(1) or no (0)
2. pop\_up table- tells us if the consumers received the pop-up advertisement or not and if at all they saved the discount to their cart or not.
3. consumer table- tells us the demographics of the people who use the website

(gender , age and their id) along with their loyalty status where 0-4 shows the lower level of loyalty whereas, 4 is the higher level of loyalty.

1. purchase table- which tells us the average sales amount for each and every consumer\_id.
   * The two advertisements mentioned in caselet are email blasts and pop up advertisements in which the email blasts were a technique in which the emails were sent over to the entire consumer base of the website.
   * whereas, the second type of advertisement was pop up advertisements which was sent to the selected consumers where they would get the discount code, as soon as they opened the website and whether or not they saved the discount to use it later or not was identified by the company.

# DATA ANALYSIS AND RESULTS

## Customer background (Query 5 and 6)

In this section, we present an overview of PopRunner's customers based on the descriptive data obtained from the consumer table. The analysis focuses on gender and loyalty status, providing insights into the structure of the customer base.

|  |  |  |
| --- | --- | --- |
| **Gender distribution** | | |
| **Variable** | **Frequency distribution** | **Mean (Age)** |
| Gender: Male | 2129 (30.82%) | 32.45 |
| Gender: Female | 6903 (69.18%) | 30.61 |
| **Loyalty distribution** | | |
| Loyalty level = 1 | 1529 | 29.37 |
| Loyalty level = 2 | 1740 | 30.10 |
| Loyalty level = 3 | 2612 | 30.70 |
| Loyalty level = 4 | 1385 | 31.59 |
| Loyalty level = 5 | 1766 | 33.51 |

**Table 1: Customer background**

**Gender Distribution**

The average age provides a brief overview of the average age for each gender category. Most customers are females, making up 69.18% of our base, with males comprising 30.82%. On average, female customers are around 30.61 years old, while males are approximately 32.45 years old.

**Loyalty Distribution**

Based on past consumer spending behavior, PopRunner assigns a loyalty status, with 0 being the lowest and 4 being the highest along with the average age in each category. This distribution provides insights into PopRunner's customer loyalty. On average, at Loyalty Level 0, customers are 29.37 years old, while at Loyalty Level 4 customers are 33.51 years old. This analysis provides valuable insights into the average age of the customers involved and their loyalty, laying the groundwork for further exploration of the data.

## Sample Size (Query 7 and 9)

In this part, we examine the frequency of customers who interact with PopRunner's advertisements. We investigate how many people, including those who saved discount codes, received and engaged with pop-up advertisements using information from queries 7 and 9. We also examine the distribution of customers who open email blasts.

|  |  |
| --- | --- |
| **Variable** | **Frequency distribution** |
| Pop-up = 0, discount code = 0 | 4516 consumers |
| Pop-up = 1, discount code = 0 | 3029 consumers |
| Pop-up = 1, discount code = 1 | 1487 consumers |
| Opened email = 0 | 8316 consumers |
| Opened email = 1 | 716 consumers |

**Table 2: Sample distribution**

Pop-up Engagement: Among consumers who received a pop-up notification, 3,029 did not save the discount code, while 1,487 did save it. A total of 4,516 consumers did not receive a pop-up at all.

Email Blast Engagement: Most consumers, totaling 8,316, did not open the email blast, contrasting with 716 who actively engaged with the email.

These distributions helps tailor their marketing efforts by providing information about the performance, engagement level and reach of these advertisements among PopRunner's consumers.

## Sales (Query 8, 10 and 12)

This section explores into sales figures, studying average sales amounts and the impact of various advertising methods on PopRunner's consumer spending.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Average (in $)** | **Total Sales (in $)** |
| Total sales | 135.21 | 1,221,254 |
| Pop-up = 0 | 138.69 | 626,324.5 |
| Pop-up = 1 | 131.74 | 594929.8 |
| Opened email = 0 | 126.12 | 1,048,822 |
| Opened email = 1 | 240.83 | 172,432 |

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

**Average Sales**

The overall average sales amount per consumer, as derived from the purchase table, is $135.21. To comprehend consumer purchasing patterns, this number acts as a benchmark.

**Pop-Up Advertisement Impact**

Upon examining purchase data in conjunction with pop-up information, we discovered that customers who did not receive pop-ups spent an average of $138.69 more each purchase, for a total of $626,324.50. Pop-up recipients, on the other hand, made an average purchase of $131.74, bringing the total sales to $594,929.80. The findings point to a slight variation in average spending and a moderate effect of pop-up ads on sales.

**Email Advertisement Impact**

Customers who opened emails spent more, according to our analysis of the effect of email marketing on sales. The average transaction made by those who didn't open their emails was $126.12, or $1,048,822. On the other hand, the average sales amount for individuals who read emails was higher at $240.83, totaling $172,432 in sales. This indicates a potentially important customer segment—that increased spending is correlated with interacting with email marketing.

Therefore, looking at sales data shows how much money consumers spend under different advertising campaigns. Sales are affected by pop-up advertisements in a subtle way, with non-recipients experiencing somewhat higher average sales. Email advertisements, on the other hand, show a more notable effect, with participants in email campaigns experiencing noticeably greater average sales. By emphasizing the value of tailored email campaigns for maximizing sales results, these findings help guide marketing tactics.

## Use cases (Query 11 and 13)

In this section, we look at how two PopRunner customers, one with the most spending and one with the lowest, engaged with the email blast and website pop-up.

Highest Spending Customer (Query 13)

According to the analysis, the client with ID 5955534353 is the greatest spender when shopping online at PopRunner. This consumer displayed a favorable relationship between high spending and email marketing responsiveness, as they not only spent the most but also engaged with the email blast (opened\_email = 1).

Lowest Spending Customer (Query 11)

The consumer with the ID 5887286353, on the other hand, is the lowest spender at PopRunner when purchasing online. According to the analysis, this customer did not interact with the pop-up message on the website (pop\_up = 0), underlining the absence of involvement with this specific advertising approach.

In summary, these examples demonstrate that consumers respond differently to different advertising strategies. While the lowest spender did not click the pop-up message, the highest spending consumer interacted with email ads. This raises the possibility that consumer behavior in relation to advertisements and purchasing patterns are related. Understanding these scenarios can help us develop marketing plans that are more successful for certain customer segments.

# RECOMMENDATIONS AND CONCLUSION (Bala Vikram Tadikonda)

***4.1 Impact of Advertisements on Sales***

The data analysis offers information on the effect of advertising on Pop Runner sales. Total sales equal to about $135.21 on average. Pop-up ads result in a small variance in average sales—$131.74 for those who received them against $138.69 for those who did not—suggesting a minor impact. Email ads, on the other hand, have a considerable impact on sales, with email-openers paying an average of $240.83 compared to $126.12 for non-openers. Email advertising is highly impactful; hence it is advised to be prioritized. However, to effectively target specific consumer segments, an inclusive approach involving both types of advertisements could be beneficial. Also, ongoing monitoring will continuously guide necessary changes to the marketing plan.

Let us also dive into answering the objectives of this report:

1. Was email blast a successful mode of advertisement when it came to sales?

The answer to that is yes, the email blast was successful as it showed that the average sales of the people who saw the email blast was higher than of the people who did not open the email blast.

1. Was the pop-up advertisement successful in influencing sales?

Pop-up ads had a modest impact on sales. Consumers who received them spent approximately $594,930, averaging $131.74 per transaction. However, those without pop-up ads had slightly higher average sales of about $138.69 per purchase, totaling around $626,325. The difference suggests that pop-up ads may not significantly influence overall sales compared to other strategies.

1. What is the average age group that ideally prefers shopping on pop runner’s website?

On an average, the females who ideally shop on the website are around 30 years whereas, the males who ideally prefer shopping on their website are somewhere around 32 years, which tells us that people belonging from ages 30-35 is the ideal target market which the company should aim towards.

1. Did the people who spent the most on shopping entertained the advertisements shown/ sent to them?

Yes, the people who reasonably spent higher than average on shopping were seen to be opening the email blasts as well as keeping the update on the pop-up messages which lead them to spending more as they kept the track of all the deals and offers that the company had to offer.

**4.2 Recommendation to Management**

- Integrate pop-up ads and email blasts for optimized visibility.

- Develop personalized ad content based on preferences, behaviors, and demographics to enhance customer engagement.

- Implement continuous monitoring for swift adjustments based on engagement and sales.

- Establish direct feedback mechanisms for insights into preferences by each segment.

- Explore social media and influencer collaborations for outreach.

- Experiment with interactive videos and gamified experiences.

- Use AI to refine feedback loops and enhance targeted advertising.

- Experiment with innovative content formats that are interactive for engaging and distinctive advertising.