# Marketing Campaign Performance Analysis Report

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## 1. Introduction

This report presents an analysis of marketing campaign performance based on SQL queries executed on the Marketing Campaign Dataset. The objective is to extract meaningful insights such as identifying top-performing campaigns, high-converting locations, and the most cost-effective marketing channels to guide future marketing strategies.

**Key Questions Addressed:**

- Which campaigns had the highest impressions?
- Which campaign achieved the highest Return on Investment (ROI)?
- What are the top locations generating the most impressions?
- How does engagement score vary by target audience?
- What is the overall Click-Through Rate (CTR)?
- Which campaign was the most cost-effective?
- Which marketing channels generated the most conversions?

## 2. Data Source, Tools, and Data import

### 2.1 Data Source

The dataset analyzed, **Marketing Campaign Dataset**, contains information related to different marketing campaigns, including impressions, clicks, acquisition costs, and conversions. The dataset was provided in a google sheet format, and it serves as the foundation for this analysis.

### 2.2 Tools Used

- **SQL**: Used to extract insights and perform aggregations.
- **Google sheet**: Initial data storage and review.

### 2.3 Table Creation and Data Import

To carry out analysis, the following SQL script was used to create a table for storing campaign data:

```
CREATE TABLE campaigndata(
                    Campaign_ID INT,
```

```
                    Company TEXT,
                    Campaign_Type TEXT,
                    Target_Audience TEXT,
                    Duration TEXT,
                    Channel_Used TEXT,
                    Conversion_Rate NUMERIC,
                    Acquisition_Cost MONEY,
                    ROI NUMERIC,
                    Location TEXT,
                    Date TEXT,
                    Clicks INT,
                    Impressions INT,
                    Engagement_Score NUMERIC,
                    Customer_Segment TEXT
);
```

The dataset was then imported into the **campaigndata** table for further analysis.

**3. Dataset Familiarization**

Before conducting the analysis, the dataset was reviewed to understand its structure, key variables, and data types.

**3.1 Dataset Overview**:

The Marketing Campaign Dataset consists of the following key attributes:

- Campaign Details: Campaign_ID, Company, Campaign_Type, Target_Audience, Duration, Channel_Used
- Performance Metrics: Conversion_Rate, Acquisition_Cost, ROI, Clicks, Impressions, Engagement_Score
- Other Attributes: Location, Date, Customer_Segment

**3.2 Key Variables Identified for Analysis:**

- Impressions – Total number of times an ad was displayed.
- Clicks – Number of times users interacted with the ad.
- Acquisition_Cost – The cost incurred for acquiring customers.
- Customer_Segment – The type of customers targeted.

**4. Analysis & Results**

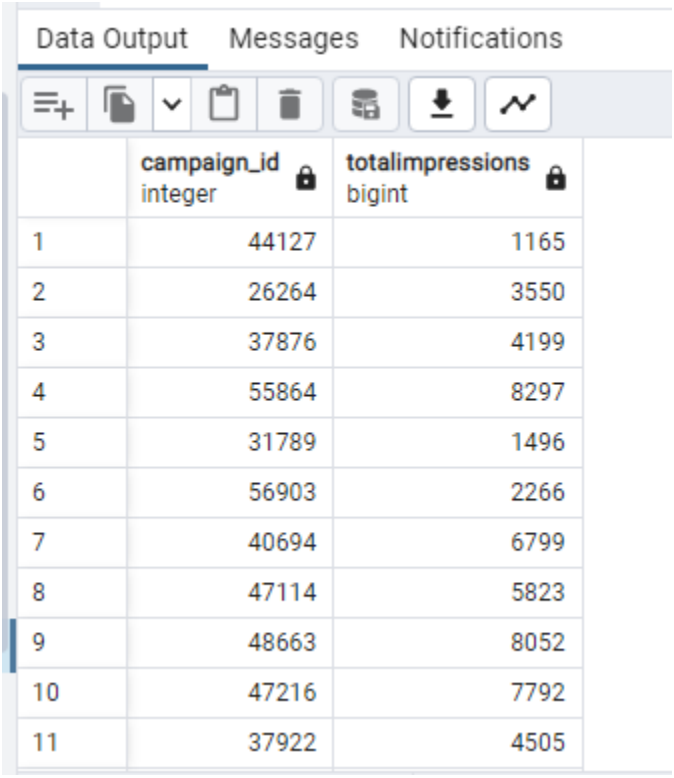
### 4.1 Total Impressions for Each Campaign

SQL Query:

```
SELECT campaign_id, SUM(impressions) AS totalimpressions
FROM campaigndata
GROUP BY campaign_id;
```

**Findings**: Campaigns with higher impressions have greater audience reach.

**Screenshot of Results:**



Data Output | Messages | Notifications

| | campaign_id integer | totalimpressions bigint |
|---|---|---|
| 1 | 44127 | 1165 |
| 2 | 26264 | 3550 |
| 3 | 37876 | 4199 |
| 4 | 55864 | 8297 |
| 5 | 31789 | 1496 |
| 6 | 56903 | 2266 |
| 7 | 40694 | 6799 |
| 8 | 47114 | 5823 |
| 9 | 48663 | 8052 |
| 10 | 47216 | 7792 |
| 11 | 37922 | 4505 |

### 4.2 Campaign with the Highest ROI

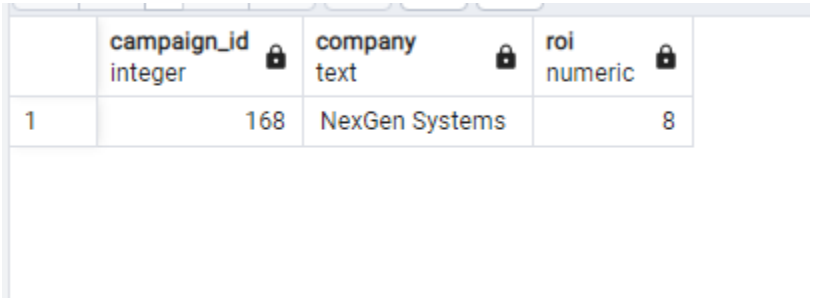
SQL Query:

```
SELECT campaign_id, company, roi
FROM campaigndata
```

```
ORDER BY roi DESC
LIMIT 1;
```

**Findings:** The campaign with the highest ROI belongs to NexGen Systems, with an ROI of **8**.This indicates that NexGen Systems' marketing strategy was highly effective in generating returns relative to its investment. Campaigns with higher impressions have greater audience reach.

**Screenshot of Results:**



| | campaign_id integer | company text | roi numeric |
|---|---|---|---|
| 1 | 168 | NexGen Systems | 8 |

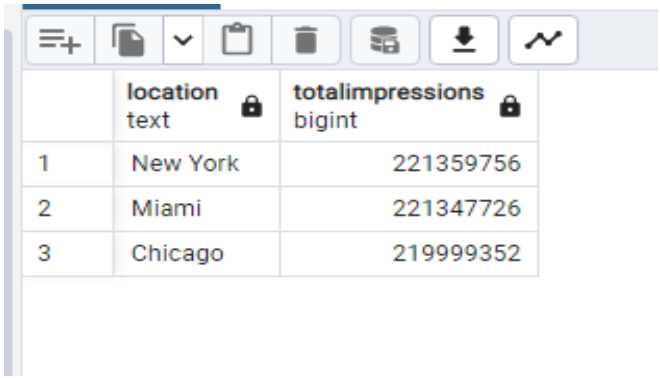
**4.3 Top 3 Locations with the Most Impressions**

SQL Query:

```
SELECT location,
            SUM(impressions) AS totalimpressions
FROM campaigndata
GROUP BY location
ORDER BY totalimpressions DESC
LIMIT 3;
```

**Findings**: New York recorded the highest number of impressions, reaching 221,359,756, indicating it as a prime location for campaign visibility. Miami followed closely, and Chicago secured the third spot. More budget should be allocated to these high-performing areas.

**Screenshot of Results:**



| | location text | totalimpressions bigint |
|---|---|---|
| 1 | New York | 221359756 |
| 2 | Miami | 221347726 |
| 3 | Chicago | 219999352 |

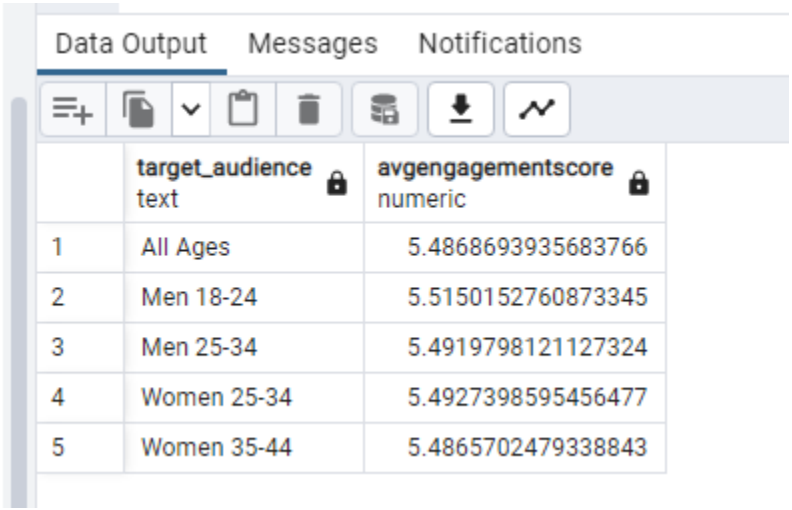
### 4.4 Average Engagement Score by Target Audience

SQL Query:

```
SELECT target_audience,
            AVG(engagement_score) AS avgengagementscore
FROM campaigndata
GROUP BY target_audience;
```

**Findings**: Men 18-24 have higher engagement score followed by women 25 - 34. Lowest engagement scores came from women 35-44 age group.  Low engagement scores may indicate poor targeting or ineffective content.

**Screenshot of Results:**



Data Output | Messages | Notifications

| | target_audience text | avgengagementscore numeric |
|---|---|---|
| 1 | All Ages | 5.4868693935683766 |
| 2 | Men 18-24 | 5.5150152760873345 |
| 3 | Men 25-34 | 5.4919798121127324 |
| 4 | Women 25-34 | 5.4927398595456477 |
| 5 | Women 35-44 | 5.4865702479338843 |

### 4.5 Overall Click-Through Rate (CTR)

CTR Calculation Formula: Click-Through Rate (CTR) is calculated using the following formula:

$$CTR(\%) = (\text{Total Clicks} / \text{Total Impressions}) \times 100$$

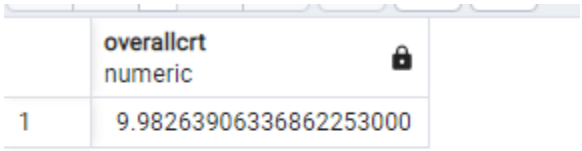
This formula measures the percentage of users who clicked on an ad after seeing it. A higher CTR indicates better engagement.

SQL Query:

```
SELECT (SUM(clicks)*1.0/SUM(impressions))*100 AS overallcrt
FROM campaigndata;
```

**Findings:** The calculated Overall CTR is 9.98%, indicating a strong engagement rate.
A CTR close to 10% suggests that the ads are well-targeted and resonate with the audience.

Screenshot of Results:



| | overallcrt<br>numeric |
|---|---|
| 1 | 9.98263906336862253000 |

### 4.6 Most Cost-Effective Campaign

Cost Per Conversion Calculation Formula: Cost Per Conversion is calculated using the following formula:

$$\text{Cost Per Conversion} = \text{Total Acquisition Cost} / \text{Total Conversions}$$

This metric determines how much is spent to acquire a single customer or conversion. A lower cost per conversion indicates a more efficient campaign.

**Preprocessing Step:**

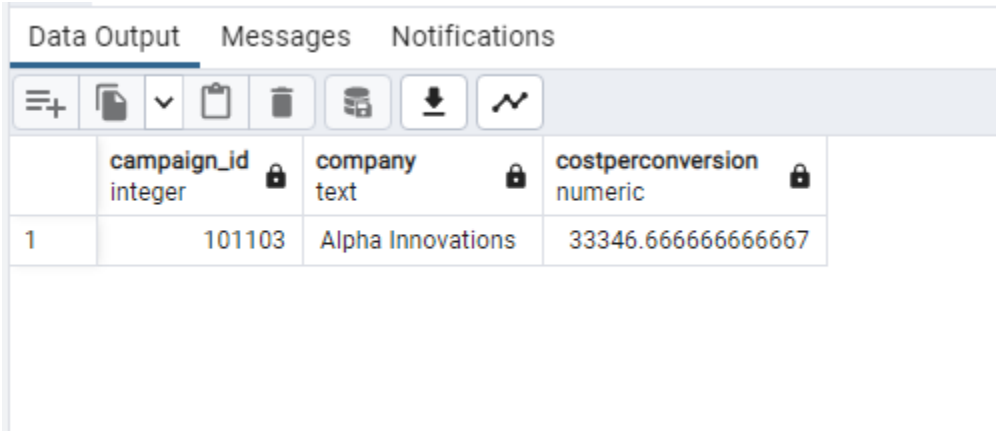
Before executing the query, the **Acquisition_Cost** column was converted from `MONEY` to `NUMERIC` to enable mathematical computations.

SQL Query:

```
SELECT campaign_id, company,
            (acquisition_cost:: NUMERIC/ conversion_Rate) AS
costperconversion
FROM campaigndata
ORDER BY costperconversion ASC
LIMIT 1;
```

Findings: The most cost-effective campaign belongs to Alpha Innovations, with a Cost Per Conversion of 33,346.67. This suggests that Alpha Innovations has the lowest cost to acquire a customer, making it the most financially efficient campaign.

Screenshot of Results:




**4.7 Campaigns with CTR Above a Threshold (5%)**

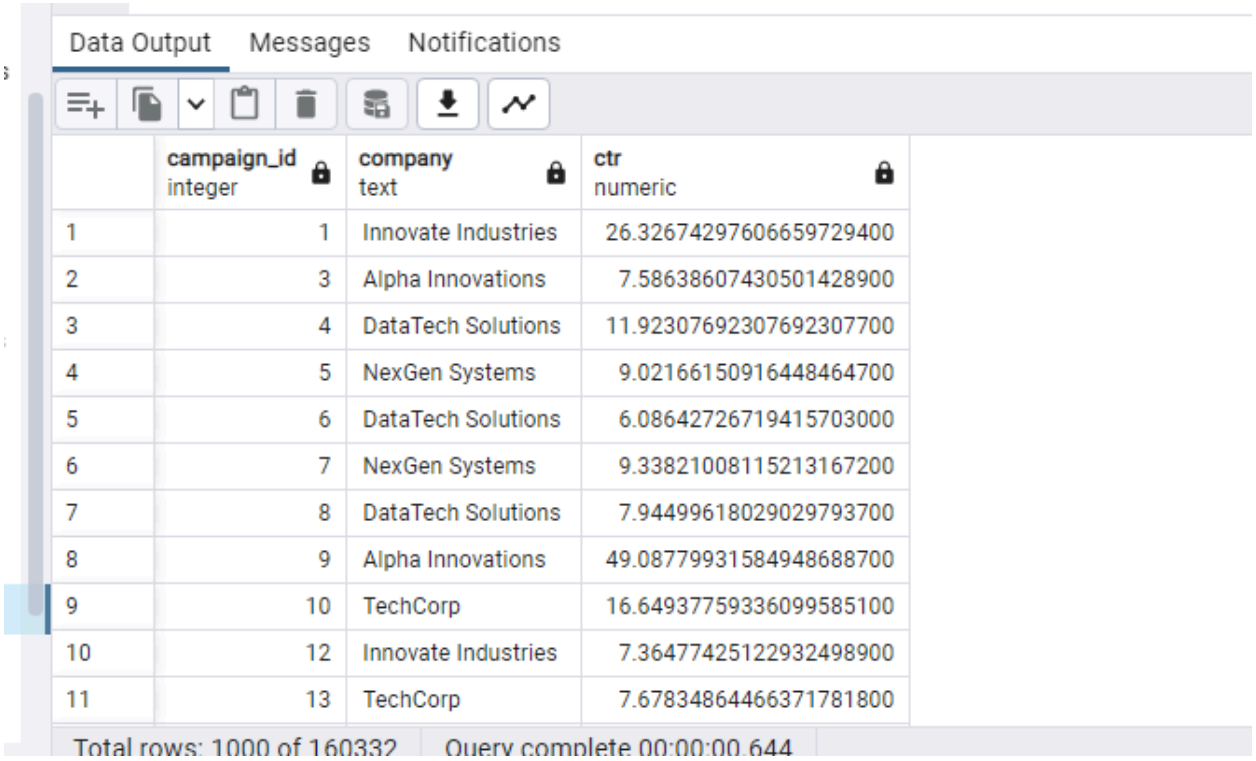
SQL Query:

```
SELECT Campaign_ID,
            Company,
            ((clicks*1.0)/impressions)*100 AS ctr
FROM campaigndata
```

```
WHERE (Clicks * 1.0 / Impressions) * 100 > 5
```

**Findings:** Campaigns with a CTR above the threshold are highly engaging and well-targeted. These campaigns indicate strong audience interest and should be prioritized for scaling. Underperforming campaigns that do not meet the threshold may require content optimization or improved targeting.

**Screenshot of Results:**



Data Output | Messages | Notifications

| | campaign_id integer | company text | ctr numeric |
|---|---|---|---|
| 1 | 1 | Innovate Industries | 26.32674297606659729400 |
| 2 | 3 | Alpha Innovations | 7.58638607430501428900 |
| 3 | 4 | DataTech Solutions | 11.92307692307692307700 |
| 4 | 5 | NexGen Systems | 9.02166150916448464700 |
| 5 | 6 | DataTech Solutions | 6.08642726719415703000 |
| 6 | 7 | NexGen Systems | 9.33821008115213167200 |
| 7 | 8 | DataTech Solutions | 7.94499618029029793700 |
| 8 | 9 | Alpha Innovations | 49.08779931584948688700 |
| 9 | 10 | TechCorp | 16.64937759336099585100 |
| 10 | 12 | Innovate Industries | 7.36477425122932498900 |
| 11 | 13 | TechCorp | 7.67834864466371781800 |

Total rows: 1000 of 160332 Query complete 00:00:00.644

### 4.8 Ranking Channels by Total Conversions

Total conversions are calculated using the following formula:

Total Conversions = sum (Conversion Rate * Impressions)

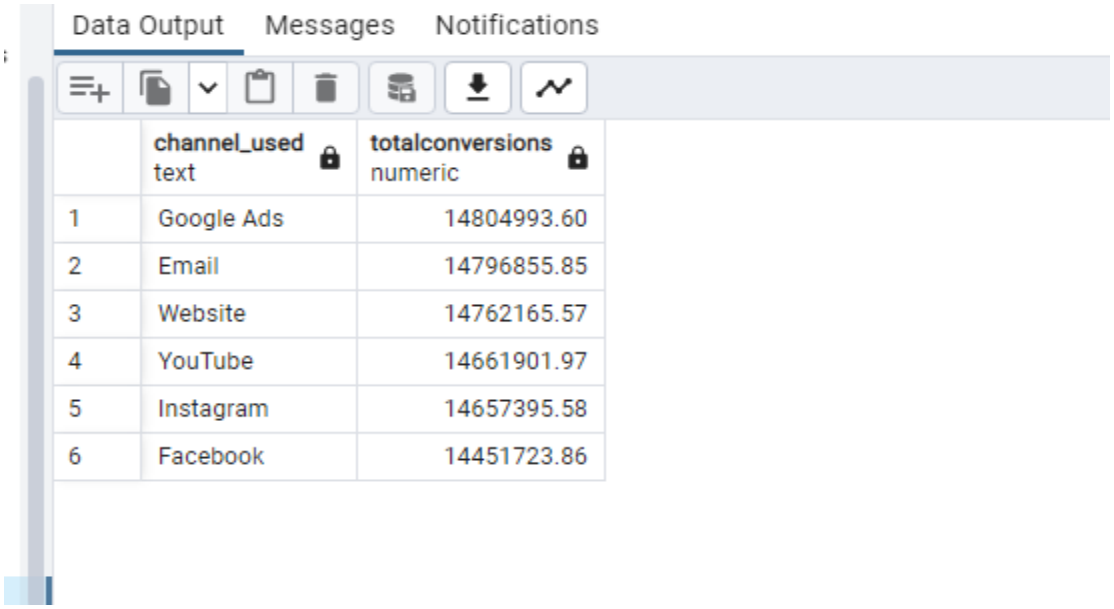
This formula estimates the total number of conversions generated by each marketing channel.

SQL Query:

```sql
SELECT channel_used,
            SUM(conversion_rate * impressions) AS totalconversions
FROM campaigndata
GROUP BY channel_used
ORDER BY totalconversions DESC;
```

**Findings:** Google Ads recorded the highest total conversions at 14,804,993.60, making it the most effective marketing channel. Email ranked second, demonstrating strong direct engagement with targeted audiences. Website came third. YouTube and Instagram followed closely, showing the growing influence of video and social media marketing.
Facebook had the lowest total conversions among the analyzed channels, suggesting the need for optimization in campaign strategies.

**Screenshot of Results:**


Data Output Messages Notifications

| | channel_used text | totalconversions numeric |
|---|---|---|
| 1 | Google Ads | 14804993.60 |
| 2 | Email | 14796855.85 |
| 3 | Website | 14762165.57 |
| 4 | YouTube | 14661901.97 |
| 5 | Instagram | 14657395.58 |
| 6 | Facebook | 14451723.86 |

### 5. Conclusion & Recommendations

#### 5.1 Conclusion

The analysis of the **Marketing Campaign Dataset** provided valuable insights into campaign performance, audience engagement, and cost-effectiveness. Key findings include:

- **Google Ads** had the highest **total conversions** (**14,804,993.60**), making it the most effective marketing channel.
- **New York** led with **221,359,756 impressions**, followed by **Miami and Chicago**, indicating strong market demand in these locations.
- The **Overall Click-Through Rate (CTR) was 9.98%**, reflecting a strong engagement rate across all campaigns.
- **NexGen Systems' campaign** achieved the **highest ROI** at **8**, making it a benchmark for future marketing strategies.
- The **most cost-effective campaign** had the lowest cost per conversion, suggesting that budget allocation should prioritize similar campaigns.

### 5.2 Recommendations

- **Increase Budget for High-Performing Channels:** Given that **Google Ads** had the highest total conversions, more resources should be allocated to this channel. **Email and Website** also performed well and should receive increased investment.
- **Optimize Engagement in Lower-Performing Channels: Instagram and Facebook** ranked lowest in conversions, indicating a need for **content improvement or better audience targeting**. A/B testing should be conducted to refine ad creatives and messaging.
- **Leverage High-Impression Locations: New York, Miami, and Chicago** should be prioritized for future campaigns, as they generated the most impressions. Customized regional strategies should be developed to further enhance conversions in these areas.
- **Refine Target Audience Strategies:** The **9.98% CTR** suggests strong engagement, but campaigns should still be optimized based on audience segmentation. Personalization techniques such as **dynamic ads and behavioral targeting** should be tested.
- **Expand Cost-Effective Campaigns:** The campaign with the **lowest cost per conversion** should be analyzed and replicated to improve overall efficiency. Similar strategies should be applied to underperforming campaigns to increase profitability.