

## **Project title:** Ad Campaign Analysis

**Project description:** Analyze a social media ad campaign dataset to understand which factors influence ad conversions. By using cluster analysis, identify various patterns in the data and how the advertisements effect people with different age ranges, genders, and dates of the month the advertisement campaign is run.

### **Used Tools:**

Kaggle: For dataset. link: <https://www.kaggle.com/datasets/arpit2712/digital-marketing-company>

MS SQL Server: For query

### **Insights:**

#### **Campaign channels with their Investment and Income:**

CampaignChannel	total_spend	total_income
PPC	8199236.97	144264628
Referral	8653518.69	144194895
Email	7871575.86	129148354
SEO	7740903.87	129539799
Social Media	7542323.25	130165898

#### **Insights:**

- PPC and Referral campaigns earn most from campaign but requires the most investment.
- PPC earn most revenue on the basis of total investment.

#### **Campaigns with their Investment and Income:**

CampaignType	total_spend	total_income
Consideration	9861273.67	167620366
Awareness	10077845.82	169391408
Conversion	10300076.98	175196918
Retention	9768362.17	165104882

#### **Insights:**

- Conversion campaigns generate the highest income but also require the highest investment.
- Awareness campaigns have the second-highest income with slightly less spending compared to Conversion campaigns.

- This means focusing more on Conversion and Awareness campaigns, as they yield higher returns.
- Combining Conversion and Awareness campaign with the best-performing channels like Referral or PPC can maximize returns.
- For Retention campaigns, consider revisiting strategies to boost their performance.

### Profitable Campaign Pairs:

CampaignType	CampaignChannel	total_spend	total_income
Conversion	PPC	2157813.01	38252257
Conversion	Referral	2226188.92	37539794
Retention	Referral	2170367.82	36385503
Awareness	Referral	2220262.7	36292582
Awareness	PPC	2056791.87	36223671
Consideration	PPC	2021319.14	35481090
Consideration	Social Media	1976548.04	34687234
Conversion	Email	2150688.38	34507480
Retention	PPC	1963312.95	34307610

### Insights:

- The best-performing pairs are dominated by referral-based promotion (both Awareness and Conversion). This suggests that referral channels are very effective at increasing user awareness and converting current opportunities.
- Another effective channel is PPC, which comes in third overall in terms of revenue and is especially useful for awareness efforts.

### Email opt-out rate:

CampaignType	opt_out_rate
Consideration	48
Awareness	46
Conversion	47
Retention	46

### Insights:

- In all campaigns, opt-out rates are nearly half. Which means the recipients even clicked on the emails; they may not have converted further. This suggests an average level of interest, but engagement holding might be improved.

### Engagement rate in different campaign:

CampaignType	engagement_rate
Consideration	74
Awareness	75
Conversion	68
Retention	73

#### Insights:

- The engagement rate of all campaigns except Conversion has a similar and much higher rate, which indicates good interaction levels with the campaign content.
- There is a low engagement rate of Conversion. Which means they have to improve their ad designs or targeting methods for a better engagement rate.

### Channel Performance:

campaignchannel	impressions	conversion	ctr
PPC	25505126	1461	262
Referral	26661459	1518	260.73
Email	23030027	1355	242.28
SEO	23367499	1359	237.38
Social Media	20711109	1319	236.24

#### Insights:

- PPC and Referral have the most impressions, which indicates that their ad is visible more than other channels.
- Also depends on the conversion rate; these campaigns are the most effective channels for conversions.
- Social media and Email campaigns have to improve their targeting or creative content optimization.
- High CTR of PPC and Referral means that their ads are clicked by most of the time. Its reasoned maybe their ads are more attractive than others.

### How many campaigns have done:

CampaignType	no_of_campaigns
Consideration	1988
Awareness	1988
Conversion	2077
Retention	1947

#### Insights:

- Conversion campaigns are the most held, meaning campaign efforts focus more on converting users.

- Retention and Consideration campaigns are the least amount of time held but not a huge difference from conversion. Investing more in these campaigns could improve long-term customer engagement and loyalty.

#### Loyalty points by campaign type:

CampaignChannel	average_loyalty
PPC	2446
Referral	2479
Email	2500
SEO	2488
Social Media	2542

#### Insights:

- Social media leads with the highest average loyalty points, followed closely by email. These indicate higher user engagement of social media and emails, offers of more discounts, or other facilities.

#### Campaign share rates:

CampaignType	social_shares_rate
Consideration	24.729792820245
Awareness	25.200176707714
Conversion	25.916796771068
Retention	24.153233700972

#### Insights:

- Awareness campaigns have the highest social share rate, followed by consideration and conversion, indicating strong shareability.
- Retention campaigns have the lowest retention. Content programs that promote social sharing may require improvement.
- High social share rate of conversion campaigns indicates that their customers, maybe most, are highly social media user.

### Conversion rate in different ages:

age_range	average_cr
56-65	0.10640278134612
36-46	0.105263155697382
65+	0.105231306692238
46-55	0.103819464031403
26-35	0.103056071234351
18-25	0.102629870934332

#### Insights:

- The 56-65 age group has the highest average conversion rate
- The 18–25 age group has the lowest average conversion rate
- Compared to younger audiences, older audiences tend to have a higher conversion rate. To increase conversions, consider adjusting campaigns that relate to older consumers. So, older demographics suggest a potential focus on this age group for future campaigns.

#### Conclusions:

The best campaigns for increasing revenue and conversions are PPC and referral work, with referrals dominating successful campaign combinations. The most successful campaigns are those that increase awareness and conversion, but conversion campaigns require more effective engagement tactics. The highest conversion rates are seen in older age groups (56–65), suggesting that campaigns should be specifically targeted to this group. Email and social media platforms are excellent at generating loyalty points, but they need to improve their original content to increase conversions.