**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.