XYZ Digital Investment Strategy Overview

Report of Initial Findings - 9/9/20

Executive Summary

In this report, we analyse the number of impressions on ads for XYZ Limited across a variety of different digital marketing channels, and we then use this data to build a predictive model for deciding whether a user is likely to click through on an ad.

In our analysis, we developed and tested a statistical model which can predict whether a user will click on an ad with 97% accuracy. Moreover, we analysed the channels that drive the probability of a user clicking, both from the perspective of our model, and from the perspective of which channels had the highest impressions and (estimated) click attribution rates. We summarise our recommendation for XYZ's future marketing strategy in the final section, and discuss the best channels to pursue, using several different metrics to inform our decision.

Introduction

Our analysis of XYZ Limited's advertising efforts over the past 10 weeks had several clear goals in mind:

1. To create a model which will predict the number of clicks, given an input of the number of impressions across our 81 different marketing channels,
2. To see which channels have an impact on the likelihood of whether a user will click or not,
3. To use the above results to advise XYZ on a plan of action for their future marketing efforts.

In this report, we will discuss the model we chose and why we chose it, and we will then analyse the output of said model, along with further analysis of the raw data, to make inference on what would be the best direction for XYZ to contemplate when thinking about where their future marketing endeavours could take them.

The Data

The first thing to note here is that over the course of our 10 week marketing effort, we obtained the following high-level metrics:

1. We had a total of 593238 impressions across all marketing channels,
2. We gained a total of 1234 clicks from these impressions,
3. This gave us a total CTR (click-through rate) of 0.0021.

We make the observation here that with a CPM of £2.31 per 1000 impressions, and an average click value of £1.03, we need a CTR of 0.0022 in order to make our marketing worthwhile from an ROI perspective. As we can see, we did not quite achieve this CTR with this campaign, so we definitely need to streamline our marketing strategy, but how can we do this? Let's delve deeper into the data so we can draw some conclusions, and come up with a plan of action for our marketing strategy going forward.

The Model

In our analysis, we considered a few different models that were fit for purpose, and in the end we settled on a type of model known as a Support Vector Machine (SVM) classifier. Our SVM classifier provides us with a model that, using the impressions on different marketing channels as an input, can correctly predict whether a user will click on an ad 97% of the time on average. This gives us a great insight on whether we think a user is likely to convert, given the amount of times they have seen one of XYZ Limited's ads across an assortment of marketing channels.

Moreover, not only can we predict user behaviour using this model, our SVM model also allows us to see which channels are most influential with regards to the probability of whether a user will actually click on an ad. We can use this knowledge to inform what the best marketing channels to focus on would be for any particular user, and personalise where said user sees ads, in order to maximise the probability of successful conversions. The top five most influential channels that affect whether a user will click according to our SVM model are as follows:

1. Customerlobby - 10.9% contribution

2. Thisnext - 5% contribution
3. Ubertwitter - 3.2% contribution
4. Lithium - 3.1% contribution
5. Kickapps - 3% contribution

According to our model, these channels have a direct contribution to whether a user clicks an ad or not, and thus it would be wise to consider utilising these channels as an intrinsic part of our future marketing efforts.

However, this is not the whole story, as we have another metric we can discuss here for a marketing channels influence. For the data where our marketing led to a click, we record the percentage contribution that each channel had towards that click as a ratio of impressions for each user on said channel, to the total impressions for that user across all channels. We iterate this for every user who successfully clicked on an ad, and record the percentage of total contribution of each channel towards all clicks. This process allows us to estimate which channels had the highest contribution to the users who converted (where a conversion here is a click), and hence estimate which channel the conversion should be attributed to. It is also enlightening to look at the total number of impressions across all users here, so we will also consider the five channels with the highest number of impressions overall.

Total percentage of click attribution	Total number of impressions
1. Youtube - 7.94% 2. Facebook - 7.73% 3. Blogger - 5.96% 4. Myspace - 5.06% 5. Wordpress - 4.96%	1. Youtube - 60386 impressions 2. Facebook - 58820 impressions 3. Myspace - 32830 impressions 4. Blogger - 28229 impressions 5. Twitter - 25877 impressions

Hence, we can see that in terms of attribution for clicks, we get a completely different story. Amongst both the above lists we have some of the biggest display networks in the world, and the clear brand exposure from these channels is huge. This impacts our strategy going forward, as

from a brand exposure point of view, it is wise to also consider the above channels as part of our future marketing strategy, in addition to the channels that our model suggested are influential.

The Conclusion

Our initial analysis shows that there are 11 different marketing channels that stand out as good future investments, which can be split into two different categories - channels that drive conversion rates, and channels that drive brand exposure. Moreover, our model gives us the ability to predict whether any one user will convert given the exposure they have had across different marketing channels to our advertisements. As such, we can use this information to personalise ad placement dynamically by making sure that XYZ's ads are only displayed on relevant channels, with the view of minimising advertising spend and maximising CTR.

Based on all of the above points, our analysis suggests that the 11 channels most worth investing in are as follows (ordered by most influence to least influence).

Channels to drive clicks according to SVM:	Channels to drive brand exposure:
1. Customerlobby 2. Thisnext 3. Ubertwitter 4. Lithium 5. Kickapps	1. Youtube 2. Facebook 3. Myspace 4. Blogger 5. Wordpress 6. Twitter

By focusing on these channels, we believe that we can keep impressions high, giving a boost to brand exposure, whilst also driving CTR and improving ROI.