

Use TrinityWiz to analyze social networking data, based on a data set.

**Prof. Assoc. Dr. Nevila
Baci**

Faculty of Economy,
University of Tirana
nevila.baci@unitir.edu.al

Albert Tollkuçi

Pragmatic Analytics
Tirane, Albania
albert.tollkuci@gmail.com

Dorela Karaj

Faculty of Economics
Tirane, Albania
dorela@hotmail.co.uk

Kevin Kostreci

Computer Science
American University in Bulgaria
kevin.kostreci@gmail.com

Abstract

E-commerce is an ever-growing industry, and social media have become one of the go-to outlets for reaching the highest number of customers. The staggering number of users that accesses these platforms on a day-to-day basis makes them an ideal target for the marketing department of any growth-oriented company. With such a great premise, it comes natural that companies will find it wise to invest their resources into the myriad of social networks that populate the internet, but they can't mindlessly throw their money without analyzing the behavior of their audience. Here is where TrinityWiz comes into play.

1. The general problem and the focus of the study

Once you factor in the human component of the audience the matter gets more complex.

The audience's age, gender, and even physical location play a role into the effectiveness that advertisements will have on them. Deriving lessons from past campaigns is a must for any brand that wants to allocate its investments in the best way possible to maximize profit and reach the audience that is the most interested in what they have to offer.

TrinityWiz, the subject of this study, is a tool for analyzing account placements on social networks. It achieves significantly improved structured data analysis by generating real-time and scheduled reports. It can also send different notifications or alerts according to user preferences.

We have employed a set of Python modules to accomplish the above, which provide better evaluation of our data [Kan10]. This article will examine reading and analyzing social networking data from Facebook via the application programming interface (API). Once the database is updated with the data obtained, we can perform various analyzes of the processing of this data that was implemented in Python. During the processing, we come to the type of campaign which generates more clicks or benefits for the company, what age group or which devices are the most focused

interactors, what campaign should be stopped as they have low effectiveness, and so on.

The most difficult response to get is how causal data analysis and data analysis were done using the UCB (upper limit trust algorithm). The analysis results confirm the importance of the analysis process by using different algorithms to improve or enhance return on investment (ROI).

A diversity of social networks is a very powerful tool to connect businesses to their relevant audience. But posting without realizing who the audience is or what kind of content the audience prefers is just like running a dark, unmanageable, dangerous vehicle in a blurry road and can turn into costs for businesses. Fortunately Facebook has a powerful and free tool, Facebook Insights which allows every business to easily measure the performance of their business site. Relevant views, achievements, likes etc. No matter what your goals are, Facebook Analytics will help raise brand awareness by helping you understand what your audience is most committed to, how to communicate with customers and how to interact with your site.

Over time, we see that the dominance of social networks will continue to grow even more. In all global markets consumers are spending more time on social networks every year. Aside from communicating with friends and relatives, a new phenomenon in the industry is the emergence of digital consumers who are engaging in social networks, browsing different products, interacting with Messenger bots, and watching different videos.

Given that consumers have different social behaviors, companies are even more attracted to the study of these behaviors for evaluating different marketing strategies.

To sketch a better advertisement on Facebook, we need every finding or information we receive so as to make it as distinct and different from the rest. As each company makes marketing research for their own account then they can use these search analyzes for possible marketing selection. More categorically we list the following:

- **Identify the customer key point.** If competing companies are losing services, they support wrong values. Then these are some factors that need to be considered to address the service offered by your company and give the right context of an advertising campaign on Facebook.
- **Hypothetical solution to the key point:** The solution that the company provides for customer problems is the content

of their ads. It is important that the solution is as specific as possible since it needs to be visualized.

• **Appropriate Identification of Facebook Advertising Strategy:** There are many tools that offer many different strategies for better advertising. Such strategies include surveys of what competitive advertising companies look like, how your ads may be different, etc.

• **Turn the above problem into a solution for your advertising strategy.** It should be as clear and visible as possible to the consumer.

Over the last year we have noticed a long list of social media innovation formats, a growing mobile video, and the use of Artificial Intelligence (AI) in messaging bots. Companies are interested in these innovations but are also under pressure to justify the ROI of existing social media investments.

The purpose of TrinityWiz is to offer different companies, new data, best practices and opportunities for companies' investments in social networks like Facebook.

2 General overview

2.1 What the analysis of social networking data is and how it works

Social networking data analysis refers to the practice of using a massive amount of data and indicators to analyze what is happening in ads placed on social networks. In most cases the analysis of social networks covers the analysis of online media channels such as news, blogs and forums. But it's not only that. Lately it is extending broadly to analyzing user behavior for business marketing.

Initially, what is needed to analyze this data is the selection of a social network. It can be selected by a network with a high number of users or some networks together. We will then collect all information that can be obtained from a person who has an account in the relevant social network using the API provided by the social network.

Once the information has been collected, the next step is its organization. Information can be categorized using a variety of different filters such as demographics, language, content, age groups, and so on [CGK10]. Here too, we can analyze the information we receive by evaluating what content people like, the age group that is drawn more, etc.

Once the information is collected and analyzed then we can display it visually using different platforms for presentation of the data.

2.1.1 Why and how social network data analysis should be used

Without an accurate analysis of social media advertising, it is difficult to understand what happens to online products or services, and this makes the performance of marketing harder to follow. Analyzing this data gives companies more

access to the virtual world, as we know that virtual users are a major focus group in the world. All positive or negative ratings made by users can be collected and analyzed in real time, which enables companies to react faster to new tendencies and potential risks.

To understand user activity in social media, the latter usually provide relevant analysis tools. Usually these only allow data analysis for the company's account. But what is even more necessary is an analysis that compares performance with the company's competitiveness and standard.

There are several ways in which social media analysis can be used, depending on what the company wants to follow and appreciate. Some of the most common ways that businesses and organizations use are:

- Monitoring and analyzing online reputation
- Analyzing and optimizing the performance of social networks (such as marketing campaigns)
- Identifying key customer points

2.1.2 Which indicators should be evaluated

Different platforms are able to track many networks including Twitter, Facebook, Instagram, YouTube, Google+, LinkedIn, Viemo, Weibo, etc.

Generally these platforms have tools included in the social network. Analysis of social media differs from the choice of social media analysis method of following all social networks at the same time. It is instead more efficient and will yield valuable results. Since I'm referring to the social network Facebook, let's see what Facebook Analytics offers. Facebook page analysis only shows you the performance of your posts and followers behavior [Wym11]. Then how will you be able to determine:

- What is the best time to post?
- What is the best weekday to post?
- What is the most widespread type of content?
- A review of Facebook Insights.

You can also view a general overview of your site that covers your audience and posting performance. Data can be retrieved for different time periods, ranging from one day to the next seven days or the last 28 days.

You can also reach high-level statistics by identifying the demographics of followers, including location, language, gender, and so on. For posts you can see how the page was viewed each day and in what part of the day there was a higher value.

2.2 Integrating Facebook Profile into TrinityWiz

2.2.1 How to Add An Advertising Account to TrinityWiz

The first thing you should do is allow TrinityWiz to add your Facebook accounts. TrinityWiz allows you to manage your advertising accounts for several different Facebook accounts. Once logged into TrinityWiz, you can add

adaccounts by clicking the "Add an Account" button as shown below:



Figure 1: Illustration of adding an "Add an account"

Then, if you do not enter Facebook, you will be asked to login and you will receive a prompt requesting your Facebook account to allow TrinityWiz to have access to your name, profile, and email address.

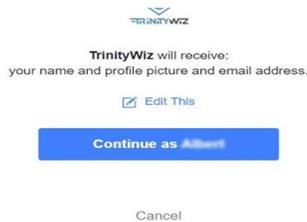


Figure 2: Illustrating the permissions that the app requires

Clicking "Continue" will display another prompt to allow TrinityWiz access to the ads that are required to read the account details. If you click on "Choose what you will allow", you will see the following request to read the permissions that are required:



Figure 3: More detailed illustration of the permissions required by the application

The only permission required is to allow TrinityWiz access to ads and advertising statistics. TrinityWiz will automatically retrieve information on your advertising reports for the accounts you are accessing. Once you click OK, you will be returned to TrinityWiz and all advertising accounts that you have permission to (personal and

business) will appear on the list. From there you can search all the information about the advertising campaigns.

2.2.2 What are the divisions and how to apply them?

Divisions are categorizations of knowledge that behave according to the following groups:

The main categories are:

1. Category by Time: Useful to see how your ad operates at different times of the day. You can choose to view the classified delivery every hour, day, month, in your time zone of your advertising account or in the viewer time zone.
2. Category by Distribution: It will help you understand the way the distribution is made according to age, gender, region, equipment, etc.
3. Category by Actions: It is useful to analyze the various actions that users have received in advertising, get action_destination, action_device, action_reaction, action_target_id, action_type, etc. data.

TrinityWiz is focused on divisions by distribution and time:

Category by distribution

- Age - enables viewing and analyzing data by the age of people who have watched / clicked your ad.
- Region - View your data from the region (like the state or province) where people are living or where they see your ads, depending on how you place your location.
- Device - enables viewing and analyzing the data of the device that has accessed the advertisement.
- Gender - Allows viewing and analyzing data by gender.
- Gender and Age - Combining data by sex and age.

To see your distributions, you need to go to your ad account or the relevant campaign.

There is shown that distributions are divided into five tabs: age, sex, device, country, and gender and age combination. For each type of breakdown, impressions, CTRs, Clicks, CPPs, CPMs, CPCs, and associated costs for each grouping appear.

Depending on your goals, you will find some of the available options more useful than others. Below are some pictures that show the type of data that will be displayed for different segments:



Figure 4: Graphic representation of indicators grouped by age

The largest age range for this ad's impressions is 25-34, 119,495 impressions / week, which accounts for 34.5% of all impressions.

2.2.3 View results of your Facebook Ads in TrinityWiz

For every ad you run on Facebook, you can view insights on the ad's performance in the TrinityWiz App. This data includes:

- The number of people who click on your ad
- The amount you spend on your ad
- How many impressions your ad has
- Frequency and CTR of your ads

Here are the metrics that most Facebook ad campaign managers will want to keep an eye on:

Impressions: The impressions metric tells you how many times your ad was viewed. If you are running a brand awareness campaign, you may want to keep an eye on this metric as it tells you what your brand name exposure level is.

Frequency: The frequency metric tells you how many times your ad was viewed, on average, by a specific individual.

Clicks: The clicks metric is very important since it represents the number of times someone has clicked on your ad.

Click-Through Rates: The click-through rate (CTR) metric tells you the percentage of people who click an ad out of all the people who saw the ad.

Cost Per Click / Cost Per Impression: The cost per click and cost per impression metrics are pretty straight forward. Cost per click, or CPC, shows how much you're paying when someone clicks your ad. The cost per impression, or CPM, shows how much you're paying per 1,000 views.

Cost Per Conversion: The cost per conversion metric tells you how much you're paying for each lead or sale.

2.2.4 Introducing TrinityWiz

We manage all of these metrics with our TrinityWiz app, including lifetime and daily data, so you can start tracking and see the results.

If you want to see lifetime data of your ad campaign, just click in the right button 'Details' near your ad campaign row as in the table below:

Name	Objective	Buying Type	Objective	Start Time	Stop Time	Status	More Info
...	...	AUCTION	PAGE_LIKES	2016/02/04	2016/04/30	ACTIVE	Details
...	...	AUCTION	PAGE_LIKES	2016/01/12	2016/02/15	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/12/04	2016/12/16	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/12/23		PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/11/29	2016/12/30	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/11/19	2016/11/19	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/11/02	2016/12/31	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/10/01	2016/10/31	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/09/06	2016/10/18	PAUSED	Details
...	...	AUCTION	PAGE_LIKES	2016/09/04		PAUSED	Details

Figure 5: Illustration of all campaigns for an ad account

A popup appears and you can see the details all the time for a campaign.

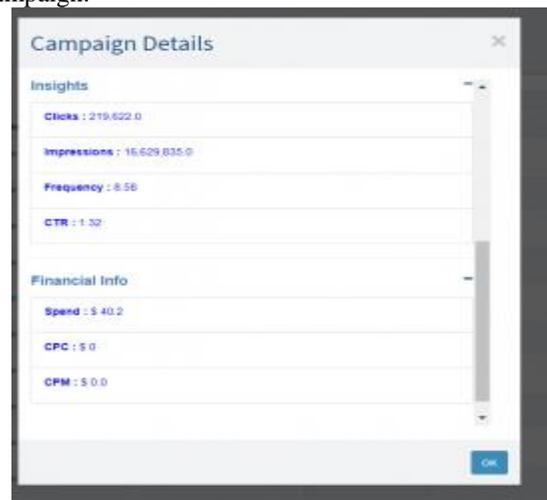


Figure 6: Illustration of lifetime data for an campaign

Click all (-) icons to hide the detailed features. You can also download the campaign details to an Excel file, just click on the Download Excel button.

To see the details of daily updates for each of your ad objects, just click on the name of each of the ad objects and you will see the graphs and the value tables.

Below is the weekly data for a specific campaign:



Figure 7: The visual appearance of the indicators compared to those a week ago

These are the indicator data for your ad object compared to the data of the previous week. In the calendar you can choose your period for about a week, a month or today, yesterday, but you can also choose your time segment as desired.

TrinityWiz shows all of these indicators in your favorite range. The graph displays the data for the selected date range.

Choose each of the 7 indicators: CPP, CPM, Impressions, CTR, CPC, Cost, Clicks, and you can see the results. The CTR average for the current week appears in the summary of the information summary and we compare it to the average of a week ago.

It's the same for CPP, CPM, and CPC. Meanwhile Cost, Impressions, and Clicks are calculated for the current week and compared to the amount of the previous week.

You can see information in the ad group or ad level, further going into those from a specific campaign.

The following figure shows the number of likes:

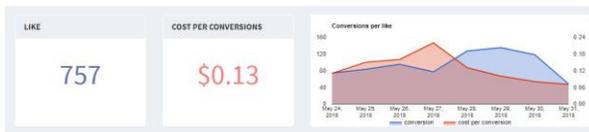


Figure 8: Conversion per like

Below are shown all the above mentioned indicators, with lifetime data.



Figure 9: Lifetime data

2.3 The Upper Confidence Bounds (UCB) algorithm

How to Use in Analyzing Advertising:

The UCB algorithm mechanism is simple. In every round, we simply draw the arm with a higher empirical value up to a point and some terms that are inversely proportional to the number of times the arm has moved [LR85]. More formally, we define $n_{i,t}$ which is the number of times that arm i has played up to t time. Determine $r_t \in [0, 1]$ to be the value we observe in time t . Let $I_t \in \{1 \dots N\}$ will be the choice of wing at time t [ACF02]. Then the empirical value of the wing value at time t is:

$$\mu_{i,t} = \frac{\sum_{s=1:t} I_s = i r_s}{n_{i,t}}$$

UCB assigns the following value for each arm i at any time t [Agr95] :

UCB

Input: N arms, nr of rounds $T \geq N$

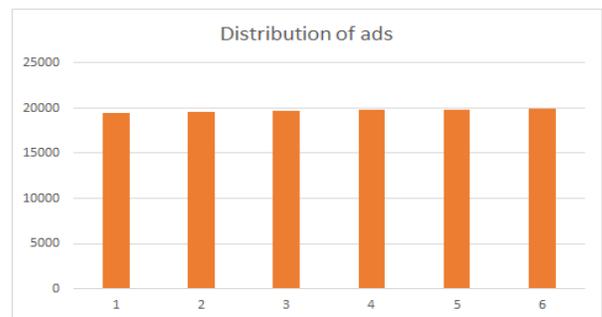
1. $t = 1 \dots N$, move arm t .

2. $t = N + 1 \dots T$, moves:

$$I_t = \arg \max_{i \in \{1 \dots N\}} \text{UCB}_{i,t-1}$$

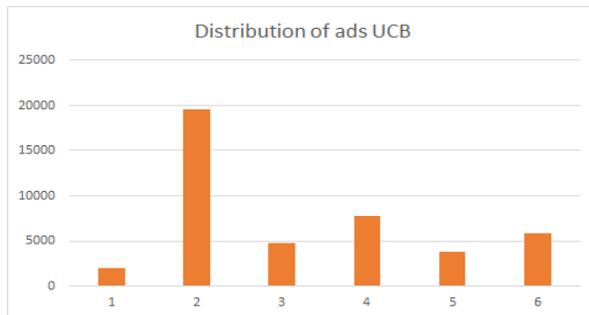
Implementation

Taking into consideration 6 different ads and data points of only 5k user actions, we below see that with random selection different ads are selected almost uniformly and the click rate is approximately 19.57% [Kan10].



Graph 1. Distribution of ads.

Now below we will see if the UCB algorithm improves the click rate.



Graph 2. Distribution of ads using UCB.

By using the Upper Confidence Bounds (UCB) algorithm we get the click rate of 21.35%. As we can see from the graph, second Ad has the highest probability of getting clicked [KR95]. This algorithm would also minimize the cost of the company investing in the right advertisement

Conclusions and recommendations

In this paper, an overview of the data analysis was presented, with an explanation on the necessity for companies to use sourcing tools to analyze their ads. The latter shows how advertising is helping businesses achieve certain goals. Successful results for an ad should be directly attributed to the time invested in the strategy, creation and optimization. If done wrong, it will bring nothing but loss for the business. But if done properly using a tool analyzer like TrinityWiz, the business will have more opportunities to learn about the audience, campaign, sales of products and much more. With the results of the analysis you can make more accurate decisions to create the right campaigns by improving the results.

By knowing the number of people who click your ad, the impression it leaves, frequency and CTR, you can estimate your costs. Also, the analysis offered by the UCB algorithm will be able to do so best of all, without losing much time by taking the calculations on paper.

What would be even more interesting for many companies would be the implementation of more different algorithms to further evaluate what would approach as much as possible an optimal return.

References

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