

ANALYSIS BASED ON WEB ANALYTICS: THE FOUR LEVELS OF INFORMATION

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ABSTRACT

The tool of web analytics or web measurement is the name of the program that integrates various information about the navigation of users of a given site and presents that information in a relational format. This tool is particularly popular for the simple presentation of data by application of various filters and indices. For professionals of social media these web metrics represent a way to extract conclusions about the profiles of the users and their behavior, a non-verbal representation of the attitude of the subject. This article deals with the possibility of analysis of the tools of web metrics and proposes a conceptual scheme to delimit the possibilities of analysis according to the declared objective of each research, being level 1-the audience, level 2-the repercussion, level 3-the respect or admiration, or level 4-the return on investment. This study concludes that, in the end, the different levels are quintessentially different and address specific needs.

Key words: Web analytics; attitude measurement on websites; social network; ecommerce metrics

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1. Introduction

Human society can be investigated from different perspectives. In the social sciences there is strong interest in scrutinizing matters relevant to persons including the ways in which these persons organize themselves, make decisions, adapt to technology, gather knowledge, relate to each other, make purchases, and have their behavior measured empirically.

In fact, over time, behavior was characterized as interfering in decisions and in large part the scientific interest in the social area was concentrated in this behavior. It would then appear that persons have social, organization group behavior that seeks more and more to be known. In this segment especially, a “sacred” area, as it is intensively under promising study referring to the way persons react relative to known situations, or in other words, their attitudes.

Persons organize in different groups or networks with different ends and understand the motives and actions of these organizations and are of particular interest to the researchers. These social researchers seek explanations and understanding of diverse aspects of the lives of persons within organizations and, as such, make deliberate use of scientific methodologies and empirical measurements.

The persons, groups, and organizations, when they need to measure attitude, look for ways to do it with the least use of resources and the greatest precision possible. Therefore, instead of designing studies for each desired measurement, these researchers seek models, ready to use and already accredited by academia to which they wish to convey credibility and confidence. One manifestation of this is the growing number of web tools that are proposed to analyze the social interaction of users of given sites, which tools are called web analytics.

The *web analytics* tool or *web meter* is what one can call the program that merges various data about the navigation by the users of a given site and presents it in a relational form. This tool is particularly popular for the simple presentation of data by application of various filters and indices. For professionals of social media these web metrics represent a way to extract conclusions about the profiles of the users and their behavior, a non-verbal representation of the attitude of the subject.

Attitude is a predisposition or propensity, relatively stable and organized to react to opinions, on the verbal level, or actions, on the behavioral level, in the presence of persons, ideas, events, things, in a determined manner (BARDIN, 2009,) that represent a consistent mental position relative to something or someone (ANDER-EGG, 1978.)

So it is possible to access the attitude of a person by observation of their behavior or if the person communicates such, since attitude is a mental disposition in the face of potential action (MANN, 1970.)

The role of web meters or analytics is then, ultimately, to measure the attitude of the user, that according to Crowther (1995) that makes use of precision instruments to measure desired quality on a numerical basis. In principal, any observable phenomenon can be measured, as long as there is an appropriate instrument for the measurement, including attitude.

In all, the broader process of measurement, more than simply attributing numerical values to some characteristic to be measured, but should instead have as its object and to provide a mechanism for analysis that generates information and serves to enable an intelligent decision (POOJA; SAGAR, 2012.)

These web “meters,” the analytics in themselves are, at least not yet able to render behavioral analyses or to identify the attitude of users. This tool, in truth, has the capacity to collect an immense quantity of data of navigation and to organize the data, obligating the researcher to analyze the data, and to check the level of depth needed to judge the analyses.

This article deals with the possibilities of analysis of the tools of web analytics and proposes a conceptual scheme that delimits the possibilities of analysis according to the declared purpose of each research, these being level 1-the audience, level 2-the repercussion, level 3-the respect or admiration, or level 4-the return on investment. This study concludes that, in the end, the different levels are quintessentially different and address specific needs.

Each one of the proposed levels vary in degree of effort of research and level of information in such a way as to pass to the highest level such information as well as the lower levels taken together and requires more resources.

To arrive at the proposal of such a scheme it is necessary to revise the theory relative to the attitude construct and the environment of the social networks in each successive level of information of the web analytic metric tools and to present and discuss each in terms of their conceptual theme and its implications for market research.

2. Measuring Attitude

Attitude comes from the Latin, *aptitude*, and means the way of thinking or acting in relation to an object, person, or situation (CROWTHER, 1995.) For Bagozzi (2002,) it also designates the state of mind related to the behavior representing that sentiment or opinion.

The object of the studies of attitude were always to know the responses of persons in relation to something and the studies relative to its measurement had their origin in the field of psychometrics.

The first approximations date from the 19th century but studies migrated and intensified in social sciences between the 1920s and 1930s, when the concept of scalar measurement attitude appeared. In beginnings of academia, the service of this goal was through individual psychological testing, being a method which required a lot of resources and had a low capacity to reach large groups (Thurstone, 1928.) On the other hand, due to the wide acceptance that the attitude research obtained at the Academy of psychology (ALLPORT; HARTMAN, 1925) there was an effort by academics to develop methods that allow its application in groups and it was through the scales of opinion.

For Anilkumar and Joseph (2012,) an attitude is an association between an object and a series of evaluations and judgments previously made by the person. Classically, for Thurston (1928,) in a perspective of measurement of the phenomenon, attitude is a latent variable that represents that represents the sympathy or sentiment in favor of or against a stimulus. Fazio (1989) and Eagly and Chaiken (1993) further indicated four basic characteristics of attitude:

- It is essentially acquired by experience through contact, directly or indirectly with these things.
- It is perennial and remains immutable through life.
- It is observable through manifestation by behavior of the subject which tends to be consistent with the attitude.
- It is declarable by dissemination of individual opinion regarding any object in question.

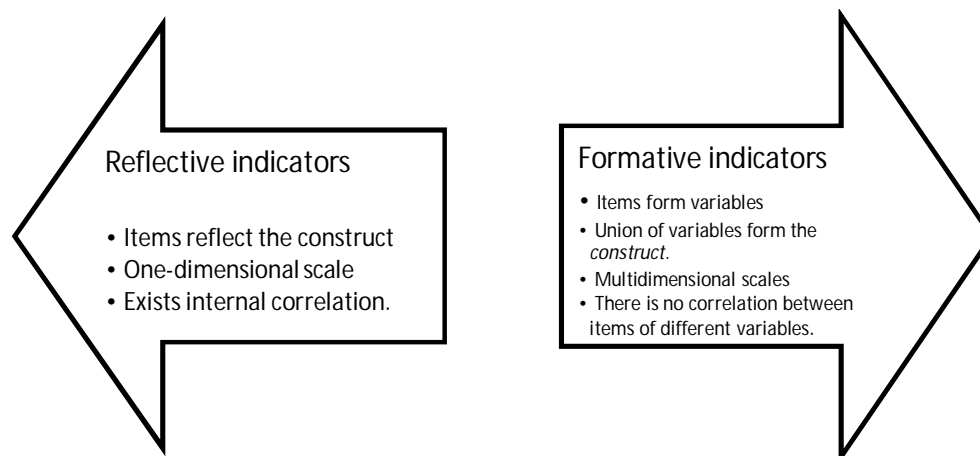
The most controversial among these characteristics of attitude is duration. Surely a person can change their attitude as many times as they believe necessary during their life, but for Petty, (1997,) this change is not simple and to occur, requires meeting resistance to change that naturally exists in individuals.

So, to exist, the attitude depends on three factors: The subject must possess the attitude, the thing to which the attitude relates, and the behavior which must be external. Another finding is that the phenomenon of attitude occurs within people, who clearly have an external object that can cause different attitudes in people and this gives valuable clues towards how to make your measurement. Thus, the first effort to capture the attitude is to understand its constitution indicates its formation or reflection (Anilkumar; JOSEPH, 2012.)

There basically exists reflexive and formative operational indicators. The first are referred to when the construct is represented by observable indicators. In this case there is a direct correlation between the construct and the items. The items are internally correlated and they share the same antecedents and consequences (HELM, 2005.)

The indicators do not represent the formative construct, but are, in fact, part of it. The construct is the sum of the associated formative variables and each of these must represent a single component, so that all together form the construct (UHRICH; BENKENSTEIN, 2010.) These indicators are represented by multidimensional scaling, where each item of the scale should correlate with those of their same size and do not correlate with the other dimensions (MACKENZIE et al., 2011). In order to clarify the difference between them, Figure 1 lists and highlights the main points.

Figure 1. Difference between reflexive and formative indicators.



Source: Based on Helm (2005) Uhrich and Benkenstein (2010) and Mackenzie, et. Al (2011.)

Attitude is considered a reflexive indicator as indicator and construct mix (Diamantopoulos; Siguaw, 2006.) Thus, the attitude can be measured via a one-dimensional scale representing the *construct* itself. Thus, to create an efficient scale to measure attitude is difficult because, unlike the formative indication where nomological network is obvious, the measurement error in this case is difficult to detect. Understanding the classification of indicators is needed to better understand how their measurement in various environments including social networking, the object of interest in this study and also the subject of the next topic.

3. Web measurement tools and their levels of amplitude

The meters are sets of web statistical tools developed specifically for traffic control and interaction of certain *websites* and whose hallmark are the ease of reading data. They are currently very popular and can be found as specific tools like *clicky.com* or embedded in social media platforms like *facebook* or *blogs* like *blogger* and *wordpress*.

The meters are recent tools with less than a decade since they took their current form, which occurred in 2006 when the association of *web* meters (*Web Analytics Association*), determined the definitions and formats for these tools.

The first three metrics, much older than the gauges *web* statistics were unique visitors, visitors by section and page views, and from these the rest were developed. Before presenting what levels proposed density achieved by analyzing *web* meters, presents the main concepts and definitions by Burby and Brown (2007). The terms are standardized in English but may be some variations between platforms that translated to Portuguese, so we opted to keep the original terms.

- **Count** – It is the basic measurement, represented by a natural whole number since it measures discrete variables such as number of unique visitors, or page views.
- **Ratio**: It is why a number resulting from the division of two numbers of type count is generally not an integer. There are several applications for type values such as the ratio of visits per day indicators or displays for visitors;
- **KPI (Key Performance Indicator)**: The indicators can be formed by count type numbers or ratio numbers. The KPI is the name that is assigned to any indicator that is considered key to the business and is determined to be in line with the company's strategy;
- **Dimension**: This concept applies to the segmentation that can be applied to statistical analyzes. Each meter tool provides a series of targets that can be chosen by the user during the analysis of their website. An example of this is the ability to associate with visits with country of origin or views with browser used.
- **Aggregate universe**: The universe is the value on which all tests are performed during period of measurement. In the aggregate model considers total traffic to the website without filter;
- **Segmented universe**: In this case, the universe is segmented according to the filter set by the investigator. An example of this model is when the universe is segmented by traffic source to monitor the performance of some specific action on the Internet, such as a sponsored link;
- **Individual universe**: The third universe model considers only the data collected during the navigation of a single individual.

Understanding these definitions is important so you can use any kind of web measuring tool, but is not sufficiently complete so that they can understand the degrees of depth of analysis.

Although there is the desire of the researchers to measure the attitude of the population regarding the website, product or campaign, this can only be achieved if the data supplied by the meter web has such a depth. In some cases count data such as visitations or unique visitors can represent the scope or reach of the website, but not the attitude of consumers. In order to propose a regulation to the problem of depth of analysis, this paper presents four levels and analysis and illustrates the metrics that are responsible for each. The first and most superficial is the audience.

3.1 Audience Level

Audience data represent the first level of depth to be the most superficial. There are times when it is possible to observe the counters present on *websites* such as a basic data collector, adding a unit to the total visits for each page with each visit, whether or not this is the same visitor.

Since the first counter model to the present day, several conceptual flaws and features of functionality have been corrected. Currently it is possible to obtain data on the total number of views, unique visitors, groups of visitors by country, browser, time, day of week, traffic source and various other segmentations.

The social network *facebook* assigns the name “reach” to counters of page views. They are accurate to the point that they segment page views to “like”, “dislike,” friends of “likers” and friends of friends of “likers.” It really is a very elaborate tool compared with the counters of 90s, but conceptually they all have the same functionality and depth, informing the audience of something.

Knowing about the audience is important, but it is not in any degree the attitude of the user. It is common to attribute the same concept of audience to media such as television and radio to *websites*, however, there is an important caveat: the important thing about traditional electronic media are not the exactly peak audience, but the means of the times, and this results in a *ratio*-type number, visit time per visitor, rather than a *count* of views as on the web.

Website views do not consider the time (although there are other categories of data to do so) and therefore can only tell the researcher how many people opened certain websites on their browser. This information is of poor accuracy and can only be used to compare the website with itself at different periods of time to see if the audience undergoes some kind of change.

The researcher ought to keep in mind that variations of audience can be caused by influences external to the website, such as seasonality, action by competitors, or for reasons simply unknown. That being the case it is not prudent to infer that any given content was responsible for gain or loss of audience. Such affirmation should only be made should only be made if the variation is explicitly atypical and, even then, there is always the caveat of an unknown variation.

That being the case, due to the lack of depth of the analyses of of audience, the researcher in greater need of information should opt for another level of depth of standard analyses of web gauges the sequence the next level and is was named as repercussion and is discussed in the next section.

3.2. Level of Impact

The second level of depth of information does not provide clues about the attitude of the users or consumers, because they lack the ability to identify whether the comments are positive or negative and thus are not an accurate reference for understanding the attitude of users, as web analytics only has statistical information that does not include the content of the comments. Values count the number of comments were registered by how many people a comment, either on blogs or on social media, and this has strengths and weaknesses.

The advantage of this analysis is to provide the researcher an indicator of how many comments were recorded on the website. This type of interaction is more valuable than simply audience and suggests that not only did the user view the page, but read your content and became interested to the point to expose their opinions, either negative or positive.

Indexes repercussions have higher commercial value than indices of the audience, but these figures hide relevant information, being the attitude of the user. Attitude can be negative, positive or neutral, and it is plausible that people visit websites to both make compliments as well as complaints. Thus, the way they currently presented, indicators of impact are not able to capture attitude.

Although there is this limitation of the sense of attitude, the effect is an important indicator because it shows people's interest in the website. Even without knowing the sentiment or meaning of the attitude is possible to say that the high impact indicators suggest greater public interest.

Concerning the figures, they may be of the count per time ratio, or if there is some type of filter, for example, country of origin. The social network *facebook* an index of repercussions for fan pages is 'talking about it'.

The first two levels are older and therefore more popular, while the third is more difficult to capture, requires more planning as much as the web analytics of the websites in question as seen in the next section.

3.3. Level of Admiration

Called the level of worship information that has the ability to indicate how many people showed a particular brand or product to their contacts. The simplest web meters lack the ability to capture such behavioral nuance, because the tools to express interaction are not able to discern whether there was positive indication.

On social networks it is possible to observe the level of admiration if an interpretative analysis of each publication is performed, which, although possible, requires a high amount of resources, especially if there is significant user interaction with the website or profile analysis. However, there are viable alternatives to the problem.

One of the solutions commonly used by the meter is on web designing campaigns and excluding measuring indicators unique to each one. It is understood as a specific goal for a campaign that produces the product or brand in order to guide users to predetermined paths that result in positive indication (or purchase). Specifically the level of admiration, the measurement to be made is the type count of the number of users who took the campaign until its final stage.

The campaigns can be more readily observed on blogs or websites not connected to platforms of social network sites, because the format of sites of relationship between users, such as Facebook, Tumbler, and MySpace do not allow created using functionality beyond the existing scope. For such situations metrics of level of admiration becomes nonexistent if they have not been previously planned.

Although there are tools such as Facebook's "share," they do not represent in essence a metric of admiration, since it is not possible to know if the user's intention was to influence others. To circumvent this limitation advertisers can develop campaigns where sharing is synonymous with the statement, but there is to emphasize that this is about adapting a tool originally created for other purposes and, therefore, the analyses are beyond the scope of the built-in web analytics.

If in social networks the level of admiration is, as yet, difficult to reach, in blogs is a known reality and has specific web gauges. Some of the web analytics tools can be configured to measure the campaigns, as the data count of clicks on given link that is an ad hoc positive indication. Another common practice is the subsidy indication purchase, giving an award to the referrer and an indication of level of of admiration to the company.

Measures of the third level are capable of capturing the attitude of the user. For example, if someone positively indicates the product to another person it is considered a positive attitude. It is believed that this is the first of four levels representing concrete tracks of attitude of the target market or public.

While the level of admiration is now the frontier of web gauges, the next level of information is still far from having its scope defined. Although the nomenclature return on investment is widely known, its application to online advertising platforms in statistical measurement are still in the first stages of evolution. The information level of return on investment (ROI) is the subject of the next subsection.

3.5 Level of Return on Investment

To obtain statistics showing how much profit returned to each dollar invested is the desire of most companies, especially those who still have doubts about the effectiveness of the management of social networks as a form of advertising. This challenge is primarily the task of understanding the buying process and judge the effect of advertising on it.

The current structure of the web analytics embedded in social networking platforms do not yet have the ability to measure the return due to its limitation to follow what happens in the interaction site, ie, the purchase or positive statement later. The structure of the social network Facebook, for example, does not yet

incorporate in their statistics the customer through sponsored link purchase made on the site of the sponsor. Apparently this feature is not close to being built due to technological limitations that would require permission from the advertiser to the data to be collected on the spot, but other web analytics platforms are already capable of approaching this indicator of ROI.

Meters independent web are able to monitor blogs and websites of e-commerce and provide precise data on the source link of visitation, in addition they can provide the percentage of users who entered a particular link and made the purchase. These measures known as percentage of success of the campaign are currently used for measuring ROI.

In situations where the purchase cannot be made on e-commerce sites, measuring the ROI becomes more difficult. There are many advertisers on portals or social networking sites that only have physical stores or sell services that for some reason are not sold online. In this situation the web analytics are limited by its scope and in its current form are unable to calculate ROI.

Companies have the ability to find out which source of information sparked the consumer purchase process, and through cross-checking data from different sources to estimate the ROI of each ad. It is emphasized that the estimate contains invariably uncertainty about the effectiveness of the contribution of advertising investment in the purchase as several other factors clearly contribute to the purchase decision, but the finding of significant interference from advertising in the purchase process occurs if the consumer declare it became aware of a product or service through it.

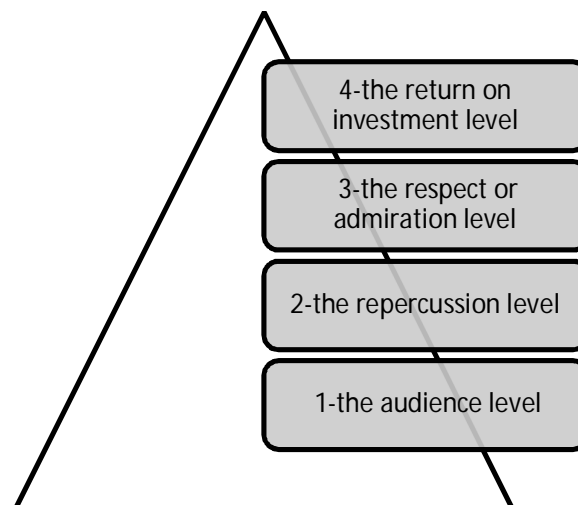
In addition to providing valuable ROI data management for executives, the fourth level information are also able to capture the attitude of consumers, because the user has completed the proposed campaign showed positive attitude when interacting with the brand in the direction desired by the company.

After watching the explanation of the four levels of information able to be extracted by means of web analytics, you can present some conclusions that estimate likely future scenarios for the growth of this tool.

4. Conclusion

It is believed that as the other platforms, web analytics should follow the path of data standardization of protocols and especially import and export data. If this is possible there will be a real chance that such systems are integrated with other online measurement tools or enterprise systems such as ERP.

Figure 2. The four levels of information.



Such integration can bring the benefit of maintaining a database updated in real time able to indicate the attitude of consumers towards the company or brand. However, for this degree of analysis is reached, web analytics must still evolve considerably in their ability to obtain data concerning the attitude.

If advertising is the subject of interest of companies and monitoring their performance is desired by their marketing department, information from web analytics should lose status as an auxiliary and be integrated with the internal systems of companies to provide dynamic information of ROI.

Furthermore, it is believed that short-term social networks incorporate into their web analytics tools customizable monitoring campaigns allowing, so that managers of social networks have greater freedom of choice on the statistics they want and consequently more precise measurements of the attitude of their target audience. The customization of campaigns will allow each company to create its own specific goals and this has a direct impact on the information levels of admiration/approval, wherein lies the greatest current potential of social networks.

To professionals of the area, the future should reserve a greater demand for knowledge of the company, notably focusing on the skills in developing communication strategies at the expense of technical knowledge. This movement has already occurred in other marketing functions in companies and should be repeated in the management of social networks, which remains the growth of participation in the marketing budget of the companies that are currently having for years tends to be embedded as internal function and not more outsourced, as happens mostly nowadays.

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