

Driving Website performance using Web Analytics: A Case Study

Research-in-Progress

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ABSTRACT

With the introduction of Web Analytics into Web Marketing, organizations now have the opportunity to measure, track, and analyze the behavior of website users. The REAN model, standing for Reach, Engage, Activate and Nurture, appears to be the most relevant model to plan and measure activities. This model is used to set goals, objectives and define metrics in order to improve a website's performance using Web analytics. Based on academic papers, official sources, white papers, and best practices, the main research objective of this paper is to establish a list of optimization actions to be implemented, and to test if these actions have a positive impact on website performance. Preliminary findings from this research-in-progress paper may assist managers on: 1) how to attract new visitors to expand website traffic, 2) how to transition visitors to users with an increase in registrations, and 3) how to build a loyal audience with repeat website visitors.

Keywords

REAN model, Web Analytics, website performance, optimization actions.

INTRODUCTION

In January 2012, there were more than 500 million websites worldwide (Netcraft, 2012). The abundance of websites made the Internet a highly competitive environment, which mandated the need for websites to constantly improve performance in order to be the best among its competitors. Visitors are key for websites. Therefore, improving website performance involves being able to follow and measure visitor/user behavior. There are several measurement tools that provide large database reporting on users behavior.

With the emergence of Web analytics tools early in 2000, data analysis became a strategic element for website optimization. The availability of measures for quantifying website visibility—such as user traffic and behaviors—has resulted in growing strategic importance of these measures for companies. However, having a manager monitor audience behaviors and manage measurement tools is not enough as most websites also use a Web analytic tool. Indeed, it is hard to determine what actions to undertake in order to have a positive impact on traffic analytic indicators. Besides, Web analytics tools are efficient for assessment and optimization of a website. A Web manager's time should therefore be used to respond to new items requiring in-depth, critical thinking to inform strategic decision-making and problem solving. In addition to following Key Performance Indicators (KPI), it is necessary to master the different levers of website performance and, more specifically, the actions that can lead to website optimization. Data collected by Web analytics tools allow advertisers to not only rely on the feeling that this particular lever works properly but also drive business strategy based on concrete data while optimizing operations in real time.

This research aims to provide an overview of website performance based on pre-selected criteria as well as show if defined optimization actions have a positive impact on performance. As there are endless ways to define a website's performance, the main objective is to determine a model showing the main topics that illustrate performance. Additionally, there are infinite ways to improve a website. The second objective is therefore to select optimization actions from different sources according to the defined objectives and to test each of these actions and verify if indeed there is a positive impact on said performance.

Finally, it is necessary to select relevant metrics to measure performance in order to be able to monitor the performance evolution according to different actions.

Hence, the research has two main objectives: 1) Establish a list of optimization actions to be implemented based on extant academic papers, official sources, white papers, and best practices; and 2) Test if these actions have a positive impact on website performance. The main query of this research is how to drive a website so as to improve its performance. As it is a very broad issue, it is mandatory to factor performance aspects of a website and to define the appropriate assessment criteria. Based on our research objectives, here are the sub questions that we want to answer which form the guidelines for the study:

- o How does a website attract new *visitors*, thereby increasing site traffic?
- o How are visitors transformed into *users* by generating registrations?
- o How does a website establish a *loyal* audience base and incite users to return?

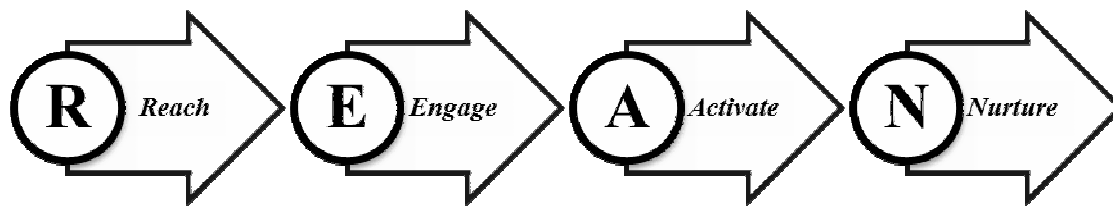
LITERATURE REVIEW

Measuring a website's performance is complex because there is a multitude of criteria to define performance. Fortunately, the literature on this issue is plentiful and broad and it is therefore necessary to choose an appropriate model covering relevant criteria which reflect website performance measurement. At first sight, the Awareness, Interest, Desire and Action (AIDA) model seemed to be relevant because it offers a general understanding of the effectiveness of communication endeavors with respect to advertising (Lewis, 1898; Glowa, 2002). This model could be applied to illustrate website performances in the sense that it implies a website must generate awareness, interest, desire, and action (Ber and Jouffroy, 2012). However, given the inherent subjective nature of the desire construct, quantitative operationalization and measurement through Web analytics is infeasible (Jackson, 2009).

Most studies report using the ACT model (Kabani, 2010), a three pillars model based on the Attraction, Conversion and Transformation. However, the ACT model only accounts for the initial attraction of users, but ignores the equally important activity of user retention. Therefore, the REAN model appears to be the most relevant and complete to cover the key research questions (Blanc, Kokko, 2006). Indeed, it takes into account four essential goals—reach, acquire, convert and retain—that define a successful website (Kermorgant, 2008).

The REAN model

The REAN model (Figure 1) can be defined as follows: “every business website is affected by REAN. They all need to reach their potential customers, then they need to engage with them, activate them and finally you need to nurture them, in other words encourage them to come back” (Jackson, 2009).



Source: Jackson, 2009

Figure 1. : The REAN Model

The REAN model is a powerful framework that gives a clear overview of a website's performance structure and helps to define a measurement strategy (Jackson, 2009). The model can be used to define and plan online activities for optimization in order to measure Return On Investment (ROI) (Shannak and Qasrawi, 2011).

Reach

“Reach sources the methods you use to attract people to your offer. It also includes how you raise awareness among your target audience” (Jackson, 2009).

Thus, the aim is to generate traffic to the website. According to Visser and Weideman (2010), there are four types that traffic is composed of:

- Direct Traffic: “when a visitor visits the website directly (by typing in the URL directly into the browser or by means of bookmarks and/or favorites),”
- Referral Traffic: “when a visitor visits the website via a link from another website, also without making use of a search engine,”
- Search Traffic (Organic): traffic generated by “unpaid search result listings,”
- Search Traffic (Paid): traffic generated by “paid search result listings” (Visser and Weideman, 2010).

High ranking on a search engine’s results page increases website traffic (Oneupweb, 2005). Moreover, 91.8% of search queries in France (the context of our case study) are made from Google (Médiаметrie, 2012). Finally, 75% of users do not look beyond the first page of the search engine results (Jenkins, 2011). This is why it is necessary to optimize a website’s presence on search engines.

To do this, there are Search Engine Optimization (SEO) actions that are essential to implement and likely to dramatically increase the number of page visits (Berger, 2011). Such SEO actions are summarized in Table 1.

- In-Page optimization

It is mandatory to optimize web pages at its HTML source. Several in-page criteria must be respected (King, 2008). Google provides a starter guide for SEO, which includes several actions to be implemented within website source code, as summarized in Table 1.

- Off-Page optimization

The very first search engines (i.e. Altavista) used to operate solely on the basis of in-page criteria. Then, Google arrived and started to use relevance criteria based on context, environment, or popularity (Andrieu, 2012). Google measures page popularity with Page Rank (PR), which is essentially based on the number of pages redirecting to the website (Brin and Page, 1998). Net linking is the most efficient strategy to promote a website by creating new links redirecting to it, and therefore improve its PR (Prat, 2011).

	Name	Action to implement
In-Page	<i>Description meta tag</i>	Use a 150-character description within the meta description summarizing the page's content.
	<i>Improve URL structure</i>	Use simple-to-understand URLs in order to enhance Google's spider crawling.
	<i>Use a sitemap</i>	Make a sitemap consisting of a hierarchical listing of the pages of the website.
	<i>Use <h_n> tags</i>	Present in <h _n > tags the structure of the page.
Off-Page	<i>Net linking</i>	Create links pointing to the website.

Table 1. Actions to reach new users

Engage

“Engage is how people interact with your business. Engage is essentially the process before a point of action that helps your prospect come to decisions” (Jackson, 2009).

However, as aforementioned, user engagement is not studied in this research and, consequently, will not be further discussed.

Activate

“Activate means a person has taken a preferred point of action. Typical examples include a person purchasing a product, a newsletter subscription or a sign-up” (Jackson, 2009).

“Conversion Rate (CR) is the art and science of persuading your site visitors to take actions that benefit you” (King, 2008, P111). As defined in the research questions, one of the strategic objectives of a website is to increase registrations.

To this end, it is essential to understand the impact a registration form can have on a website. Eighty-six percent of Internet users are likely to leave a website, because they are asked to sign in (Rolka, 2012). According to Rolka (2012), 42% of users think that this process is too long. Therefore, it is essential to simplify the process to enhance conversions. Making registration processes quick and easy with intuitive navigation and a minimum number of clicks will decrease the abandonment rate, and therefore, increase the CR (Dodson and Davis, 2011).

In addition, in order to increase the CR, it is essential to provide reasons to register by clearly defining and communicating why the visitor should register on the website with benefit-oriented headlines (Page, Ash, and Ginty, 2012). Table 2 shows actions to transform visitors into users.

Name	Action to implement
<i>Call to action</i>	Display a catchy slogan defining reasons to register in order to make users eager to sign up.
<i>Enhance conversion funnel</i>	Simplify the registration process to decrease give-up rate.
<i>Call to action</i>	Display a pop-up window for unregistered users to remind them to sign up.

Table 2. Actions to transform visitors into users

Nurture

“Nurture describes the method of retaining and re-engaging with activated consumers. The consumer is a person who has already taken at least one preferred point of action” (Jackson, 2009).

Nurture can be also defined as the capacity of the website to make users return (Kermorgant, 2008). In other words, it is necessary to ensure that visitors will have a reason to come back again, thus building visitor (customer) loyalty. There are very few actionable resources that deal with the concept of website e-loyalty. However, in order to better understand the concept of loyalty it is relevant to review the best practices by Social Networking Sites (SNSs). As SNSs are highly addictive (Kuss and Griffiths, 2011), they can provide insights regarding features that incite users to return. Thus, it is relevant to review key success factors of some SNSs.

First, the Logged-In Landing Page (LP) has to be user centric. This means that the LP needs to have a personalized dashboard, which contains the main features available to that user (Fanelli, 2010). The “who’s visited your profile?” feature is popular (Glad, 2011), while the query “who’s viewed my Facebook profile” in Google generates 497,000,000 results. To illustrate this features popularity, the popular professional SNS, LinkedIn, provides it, and Viadeo even monetizes it.

“News Feed highlights what’s happening in your social circles” (Sanghvi, 2006). The news feed feature is one of the key success factors of SNSs and is a reason why users become so loyal, i.e. why they come back (Yu, Hsu, Yu and Hsu, 2012). Table 3 shows these nurture options.

Name	Action to implement
<i>Landing page</i>	Design a special landing page for signed-in users.
<i>News-feeds</i>	Implement in the Logged-in LP a news-feed widget highlighting what's happening in the user's social circle.
<i>Who's visited my profile?</i>	Implement a feature permitting the user to see who has visited his profile.

Table 3. Actions to make visitors come back

Web Analytics

Web analytics is a fairly recent domain with implications and value added benefits still being discovered. The Web Analytics Association defines it as: “the objective tracking, collection, measurement, reporting and analysis of quantitative Internet data to optimize websites and marketing initiatives” (Burby and Brown, 2007).

Three factors have contributed to the emergence of this discipline within companies of all sizes and from all sectors (Arson, 2012): 1) the possibility to measure a greater part of actions performed by website users, 2) the increasing contribution of online activities in earnings, and 3) the growing availability of Web analytics tools and options.

Therefore, the literature on this subject is plentiful, and Web analytics belongs in the family of Web marketing. This is its cornerstone: without analytics, it is impossible to measure the Return On Investment (ROI) of Web marketing or any other actions (e.g. an e-mail campaign). Web analytics allows the analysis of quantitative and qualitative data of a website and its competitors in order to bring continuous improvement of its users’ experience (Chardonneau, 2011). There are many Web analytics solutions on the market that can measure different variables (i.e. Omniture, Urchin, Google Analytics, and many others).

The free tool Google Analytics was already implemented within our case study’s website—which will be further explained below— meaning that data have been collected over a period of two years, which was the primary reason for the selection of this tool in this study. Google Analytics is a quantitative analytics tool that measures the volume of clicks, informs about where visitors come from, and informs web administrators about users’ behaviors. Google Analytics provides several metrics that can be categorized according to the Digital Analytics Association (DAA), such as:

- “Count: the most basic unit of measure; a single number, not a ratio”
- “Ratio: typically a count divided by a count, although a ratio can use either a count or a ratio in the numerator or denominator”
- “KPI (Key Performance Indicator): while a KPI can be either a count or a ratio, it is frequently a ratio” (Burby and Brown, 2007).

CONCEPTUAL FRAMEWORK

We propose a conceptual framework (see Figure 2) which encapsulates the various optimization actions according to the REAN Model, and can be used to develop our hypotheses below:

- H1: Improved URL structure implemented in a sitemap with the use of <hn> tags to operate Net Linking and improve description meta-tags will have a positive impact on the traffic.
- H2: Enhance the conversion funnel by implementing a call-to-action feature will have a positive impact on the number of registration members.
- H3: Change the sign-in page by implementing news-feeds and the “who's visited my profile?” widget will have a positive impact on user loyalty therefore resulting in repeat visits.

It should be noted that this study will only focus on the first of the three hypotheses, although all three were presented for the sake of providing a comprehensive consideration of the REAN model in action.

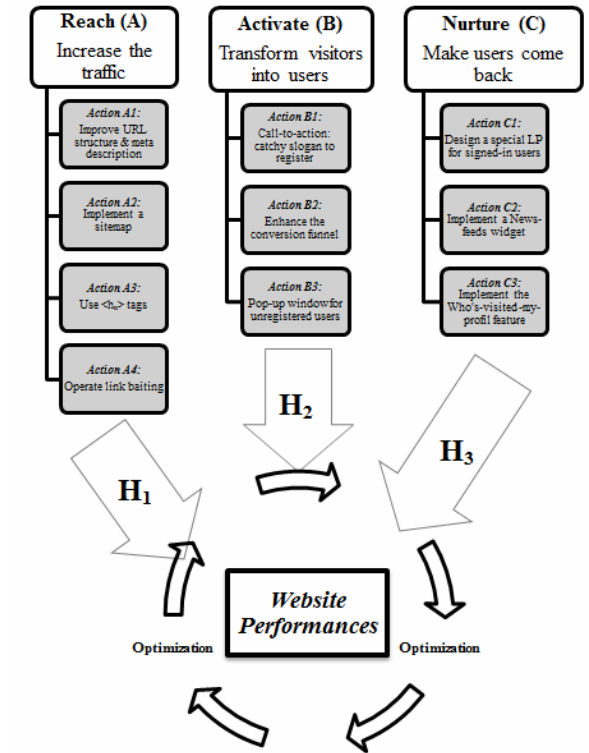


Figure 2. Conceptual model

METHODOLOGY

As the proposed study will be conducted within the context of a specific website—i.e., through a case study—it is necessary to determine a clear plan of action in line with managerial objectives. The action plan includes four main phases. The first phase involves preparation, consisting of the determination of the objectives, followed by the choice of the Key Performance Indicators (KPIs). The next phase is essentially composed of a literature review: according to the given objectives, optimization actions have to be found resulting from various studies in order to answer to the managerial problem (or objectives). Then, those proposed actions have to be implemented. Finally, the implemented actions need to be evaluated, so this step defines how and where data are extracted from.

Preparation Phase

Define the purpose of the website.

For any business, it is key to define the website’s purpose, and how this site will contribute to the success of the business.

Define the strategic objectives of the website.

To arrive at these objectives, the following two foundational questions were asked:

- What are the elements that will lead to the achievement of the website’s objectives?
- What user actions do we require in order to achieve the objectives of the website?

The strategic objectives are explicitly tied to the website’s purpose, however, they need to be measurable. Hence, the following three main strategic objectives were defined:

1. Increase site traffic
2. Increase the number of user registrations
3. Increase site loyalty

Define operational objectives of the website.

Setting operational objectives can pave the way to the achievement of the aforementioned strategic objectives of a website. Operational objectives are distinct from strategic objectives in that they are more closely connected to an action. Hence, if an operational objective does not reach its target, it is easier to determine what action plans to subsequently implement. We propose the following list of key operational objectives:

- Increase Search traffic (Organic)
- Increase Conversion Rate (CR)
- Increase Click-Through-Rate (CTR)
- Increase visit frequency
- Increase direct access

With the various types of objectives having been defined, it is now necessary to translate them into metrics.

Define the metrics.

The selection of relevant metrics is an essential step for a successful data analysis and the generation of managerial/web admin knowledge. The Digital Analytics Association (DAA) provides a set of key metrics (see Table 4).

Metrics	Definition
<i>Search Traffic</i>	Search engine traffic refers to the volume of visitors who arrive at a website by clicking search results leading to that particular website.
<i>Conversion Rate</i>	The number of times a visitor completes a target action divided by the number of times that link was viewed.
<i>CTR</i>	The number of click-throughs for a specific link divided by the number of times that page was viewed.
<i>Visits per month</i>	A visit is an interaction, by an individual, with a website consisting of one or more requests for an analyst-definable unit of content (e.g. “page view”). If an individual has not taken another action (typically additional page views) on the site within a specified time period, the visit session will terminate.
<i>Direct Traffic</i>	Visitors who visited the site by typing the URL directly into their browser.
<i>Unique Visitors</i>	The number of inferred individual people (filtered for spiders and robots), within a designated reporting timeframe, with activity consisting of one or more visits to a site. Each individual is counted only once in the unique visitor measure for the reporting period.
<i>Registrations</i>	The number of users who have completed the registration process.
<i>Returning Visitors</i>	The number of Unique Visitors with activity consisting of a Visit to a site during a reporting period and where the Unique Visitor also Visited the site prior to the reporting period.
<i>Source: DDA, Web Analytics Definitions, (2007)</i>	

Table 4. List of Key Metrics for Web Analytics

Check the availability of data for each Metric.

Once a metric is defined, it is necessary to check that the related data are available. “Technical feasibility should be studied after studying the needs in terms of indicators” (Fétique, 2010). Indeed, it is necessary to check if we can measure the impact of each optimization action. Thus, it is important to check if each metric is available in the selected Web analytics tool, here, Google Analytics.

Choice of actions to be implemented

Based on academic papers, best practices, white papers, book, and official sources, a list of optimization actions have been proposed. In order to have a clear overview of the recommended plan, actions are classified in relation with their correlated objectives and metrics in Table 5.

	Objectives	Metric	Proposal:
Reach	1) Increase Traffic	<i>Unique Visitors</i>	Description meta tag; Improve URL structure; Use a sitemap; Use <h_n> tags; Net Linking.
	- Increase Search Traffic	<i>Organic Search Traffic</i>	
Activate	2) Increase number of registrations	<i>Registrations</i>	Call to action; Enhance conversion funnel; Call to action.
	- Increase conversion rate	<i>Conversion Rate</i>	
	- Increase CTR	<i>CTR</i>	
Nurture	3) Increase loyalty	<i>Returning Visitors</i>	Landing page; News-feeds; Who's visited my profile?
	- Increase Visit frequency	<i>Visits per month</i>	
	- Increase direct access	<i>Direct Traffic</i>	

Table 5. Summary of optimization actions

Implementation Plan

Once the previous work is done, it remains to convince managers of both the accuracy of the findings and the validity of the recommended actions. The ability to convey a message properly is essential for any web practitioner.

Visual data analysis and presentation skills are indeed key topics. It is mandatory to be able to “give a picture to information and ideas” (McCandless, 2011). With visuals it is easy to quickly and easily highlight findings, lessons, and actions to be taken out of the considerable amount of data provided. Well-designed graphics highlight the facts and reveal opportunities. Indeed, the presentation of results should lead to decisions and actions. The audience must be convinced by the demonstration based on facts and figures and leave the presentation with the idea of implementing the recommendations made.

Data Collection Plan

For each Google Analytics Report it is possible to export data as a CSV (Comma Separated Value) format (and possibly be used in Excel) and reviewed for insights. At the present time, results are not available yet for presentations.

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