

# Measuring the effectiveness of online advertising: the Tunisian context

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**Abstract-** *The development of the Internet tool was accompanied by a business turnaround which has deep effects on the rules of marketing and particularly company-customers relationships. The graphical interface that the Web can create between the company and its customers promotes its use as a medium of marketing communication. The advantages of e-communication are endless for companies, including timeliness, cost and interactivity. However, users are daily confronted with large masses of information which may affect the issue of effectiveness of this communication form. Therefore, it is necessary to know whether the information transmitted is accessed and if it achieves the objectives associated with it. In other words, to what extent the internet communication is effective. In this research, efficiency is studied through two indicators: the advertising memorization and the click on the pop-up advertising. The empirical study was conducted on a sample of 200 Internet users. The statistical analysis used is descriptive analysis and logistic regression. The main empirical results show that memory is largely affected by the location in the screen, size and animated banner advertising. As for the "click", it's related to the colors used in the banner, size and clarity of the message.*

**Keywords:** *E-advertising; Effectiveness; Pop-up; memorization*

## 1. INTRODUCTION

For long time advertising has been considered as a fertile field of research. Besides the very important technical improvements of advertising in its traditional forms, we are assisting to a relatively recent phenomenon whose importance is far from negligible: online advertising. Actually, the Internet advertising tends increasingly to upset the traditional rules of advertising. This new tool of communication upset the advertising giving of through traditional media (Kammoun, 2008). Indeed, the graphical interface that the Web could create between the company and its customers enhances its use as a media marketing communication (Sassi, 2001). Therefore, Internet advertising has increased dramatically, and that since 1994, when the first banner has been inserted (Chandon et al, 2002). Due to the remarkable strengths of the Internet in terms of targeting, inclusiveness, information richness and interactivity, the Web has become a medium with a high potential (Hoffman and Novak, 1996; Bezjian *et al.*, 1998; Lendrevie, 2000). However, debate still exists about the effectiveness of this new form of communication. Moreover, research in marketing are involved more and more to identify and test indicators of effectiveness of this new form of communication in order to scientifically prove its credibility and its capacity to persuade (Briggs and Hollis, 1997; Drèze and Zufryden, 1998; Hofacker and Murphy 1998; Lendrevie 2000). It is therefore useful to determine the necessary elements that managers must take into account when inserting a banner ad to increase its

effectiveness.

## 2. LITERATURE REVIEW

### 2.1 Theories of persuasive advertising

Studies on advertising effectiveness have long favored the primacy of the cognitive aspect (Wright 1973, Fishbein and Ajzen, 1975). The purely cognitive models assume that consumer preferences are related primarily to intrinsic attributes of the product contained in the message. Thus, advertising doesn't change preferences, but provides information that helps for reducing post purchase cognitive dissonance (Meyers, Levy and Malaviya, 1999; Vakratsas and Ambler, 1999). Therefore, the ad effectiveness is assessed from its ability to persuade (Kammoun, 2008). However, such models suffer from a significant limitation in their ignorance and total disregard of the feelings and emotions of the consumer which can influence his response to an advertising stimulus (Aaker and Douglass, 1989). In this sense, several studies have shown the importance of the mediating role of emotions expressed in an advertising exposure in the formation of favourable attitudes toward both the message conveyed and to the brand (Edell and Burke 1987, Holbrook and Batra, 1987). It should be noted here that the total exclusion of the cognitive dimension in such models remains difficult to demonstrate in the sense that the cognitive necessarily take place in the measurement phase of efficiency. The respective boundaries of these two trends have led researchers to identify relationships interdependence and interaction between cognitive and

emotional aspects and to develop models incorporating both directions simultaneously while integrating a third dimension of behavioral nature (intentions of purchase, consumption and experience). To be effective, advertising should be not only cognitive or even necessarily verbal. It should produce the same effects as emotional, visual or auditory and lead to a positive behavior.

## 2.2 The Online Advertising Effectiveness

Unlike traditional media, exposure to web advertising doesn't occur accidentally; it's a deliberate and desired action by the consumer who determines the nature and duration of his exposure. Several effectiveness indicators have been developed specifically to measure the persuasive power of e-advertising. According to Raman and Leckenby (1998), the degree of the visitor's interaction with advertising is the best measure of the value and effectiveness of an electronic ad. The effectiveness of interactive media can also be measured in terms of exposure assessment and commitment in terms of time spent viewing the advertising (Bezjian, Calder and Iacobucci, 1998). Other researchers propose measures of awareness and memory (Briggs and Hollis, 1997), assessments of emotional responses in terms of attitude (Raman and Leckenby, 1998; Cho Lee and Tharpe, 2001; Chtourou et Chandon, 2002 ; Shura Abida and Ben Dahmene Mouelhi, 2003) and behavioral responses measured by direct click-through rate (Briggs and Hollis, 1997; Hofacker and Murphy, 1998; Lendrevie 2000, Broussard, 2000; Cho Lee and Tharpe, 2001) and indirect in terms of intent and effective purchase behavior (Briggs and Hollis, 1997, Singh and Dalal, 1999). However, it should be noted that the pop-up click rate is a measure widely adopted by researchers to evaluate the effectiveness of e-advertising. That advertising is a tool of attraction through the animation of logos and attractive colors. However, this measure presents the limit of being an immediate action that does not reflect a genuine commitment and effectiveness of advertising (Briggs and Hollis, 1997; Zufryden and Drèze, 1998; Chtourou et Chandon, 2002). These limitations have led researchers to develop integrative models to explain the process of persuasive e-advertising incorporating other dimensions to assess its effectiveness (Cho, 1999; Rodgers and Thorson, 2000). In this sense, Kiani (1998) considers three possible levels of effectiveness measurement. The first level is tied to the memorization of the brand and advertising. It is the *cognitive* level. The second level focuses on changing the image or fidelity. It is the *emotional* level. The third level is the most difficult to assess. It is simply the level related to the behavioral dimension of intent to purchase or actual purchase. In one sense, the main objective of the banners is to attract users who browse other sites. The click rate expresses the percentage of users who click on it to go to the advertiser's site. This indicator has quickly established itself as a major indicator and often misconstrued as the

exclusive measure of the effectiveness of e-advertising. In this research, we adopt the perspective of Hussler (1999) who consider that the e-advertising effectiveness can be measured through the *click rate* and degree of *memorization* of the advertising banner. The first measure refers to the *affective* component, while the second is *cognitive*.

## 2.3 The memorization

Regarding the human mechanism of information storage, Dussuart (1983) recognizes that the individual has two types of memories; one short-term and long-term memory. The short-term memory is characterized mainly by a limited capacity, and therefore, a short period of storage. Given its functions, the user should be able to judge the quality and relevance of received information (Friestad and Thorson, 1986). If the judgment is negative, the information will be rejected. If the judgment is positive, treatment can continue using the secondary memory whose capacity is virtually unlimited and information is stored permanently. With this last memory, the Internet user will have a wealth of information enabling him to analyze and interpret information received in full. The Internet user will be able to remember several banners in which he found information that it deems appropriate in its search for information (Coubet and al., 2013). The concept of memorization is commonly used for measuring the advertising effectiveness. According to Carat (2002), the Internet proves to be the third medium in terms of memorization just after television. According to him, the calculation of beta memory allows the integration of Internet in the traditional media plans. Studies conducted by IAB France and Sofres (1999) also focused on memorization measures. These studies conclude that memory increases after exposure. This finding is still approved by Briggs and Hollis (1997) and Hussler (1999). Hop (2001) showed that the memory is very important in the context of online advertising. According to Bergkvitz et al. (2001) the exposure to advertising pop-up improves the visibility, branding and purchase intent. Similarly, Kompella (2001) showed that exposure and recognition enhance the brand image significantly. Finally, Lendrevie (2000) considers that users memorize well the structure of the pages they visit regularly.

## 2.4 The pop-up click

The pop-up click rate is considered a key indicator and a measure used to judge the effectiveness of e-advertisements (Bergkvitz et al., 2001). This axiomatic finding is validated by many researchers like Hofacker and Murphy (1998), Chtourou and Chandon (2002). According to Chtourou and Chandon (2002), the pop-up click rate is the ratio of times the Internet user clicks on a banner to times the support page is loaded. This is actually an observable behavioral response indicating an immediate interaction with the advertised brand (Briggs and Hollis, 1997). The measure of pop-up click rate is an operation

technically easier to achieve in the sense that we can easily know the number of times the Web page is loaded and the number of times one has clicked on the pop-up. But the click is not an end in itself insofar as it captures only a single action and not a long term commitment. Empirical work, such as those of Briggs and Hollis (1997) and Drèze and Zurifden (1998) showed that the exclusive use of the click rate as a determinant of the effectiveness of online advertising isn't always evident because does not always reflect the true will and commitment of the user. In addition, the click rate does not always translated into a buying behavior. Finally, Lenderevie (2000) proposes main conditions related to the pop-up to be viewed by the user; fewer clicks deem unattractive and incredible pop-up.

### 3. CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

In this paper, the online advertising effectiveness is measured through two indicators: the memorization and the pop-up click rate. Memorization and click are both measured through seven antecedents: the position of the pop-up, animation, size, profession of the visitor, the user familiarity with Internet, the images used, and colors (see Figure 1 in Annexure).

#### 3.1 The position effect

In this paper, pop-up location means its position on the downloaded web page. After choosing his advertising support, the advertiser negotiates the pop-up position: at right, left, bottom center etc. Generally, the place that advertisers prefer is on top of the page. The advertiser is practically certain that his banner will be seen. A footnote position seems risky to the extent that users have a tendency not to scroll pages (King et al., 1998). We propose so the following Hypotheses:

**H1a:** The message memorization is stronger when the pop-up is at the top screen.

**H1b:** The click rate is higher when the pop-up is at the top screen.

#### 3.2 The size effect

The size of advertising pop-up is not always a consensual subject regarding its effect on effectiveness advertising. Engel et al (1995) suggest that a number of factors related to the stimulus are likely to attract attention as the size, motion and background contrast. Chandon et al (2000) showed that the pop-up size increases spontaneous and aided awareness and purchase intent. By cons, Lendrevie (2000) reports that no final results can be retained regarding the effect of the banner size on the effectiveness of online advertising. Indeed, when the banner is larger, the file size (and therefore downloading time) also increases. This view is inconsistent with the finding of Nacarato and Neundorf (1998) who assume that the small pop-up leads to a negative effect on interactivity and therefore leads to a low click rate. Paradoxically, banners

with large size causes of reluctance of users to click them (Lendrevie, 2000). Thus, the medium format banners acts positively on interactivity, research information and so memorization (Kely and Hoell, 1991). Hoan and Chang (1999) showed that the medium size of the banner is acting positively on the intention to click and leads to memorization. We therefore propose the following hypotheses.

**H2a:** The memorization is stronger when the banner ad is medium.

**H2b:** the Internet user is more likely to click on the medium pop-up.

#### 3.3 The animation effect

Advertisers are beginning to increasingly adopt drastic methods to attract users. Among these methods, we find the animation of the banner as a very successful option (Burke, 2000). Indeed, animation has added an undeniable attraction to web pages. For Chandon (2000), animated banners can improve significantly the memorization and reputation. The positive effect of animation banners on memorization was also confirmed through the study of Li and Bukovac (1999). Hence the following hypotheses:

**H3a:** The memorization is stronger when the pop-up ad is animated.

**H3b:** the user is more likely to click on the animated pop-up ad.

#### 3.4 The user occupation effect

When a new technology appears in a market, it is gradually being adopted by different categories of the population; first the precursors and finally all the public. Currently, Internet is used by students, young professionals and academics. Internet has more than 112.75 million regular users (Barrox, 1998). It is therefore legitimate to explain the effectiveness of online advertising by focusing on the user profile. In reality, the Internet has gained ground among companies then individuals (Xardel and Deboul, 1997). These reflections are translated from these two hypotheses:

**H4a:** the memorization is stronger among students than others.

**H4b:** Students click on the pop-up more than others.

#### 3.5 The familiarity with Internet

By familiarity we mean the user experience with the web. According to Lendrevie (2000), paradoxically when the user is more experienced with Internet, less he clicks on the banners. Usually the user has a specific purpose and wants access as quickly as possible to his navigation target. He is actually not discovering the web. Regarding memorization, studies still agree that repeated exposure to an advertisement makes a better memorization. Hence the following hypotheses are proposed:

**H5a:** The memorization is great if the user is familiar with the web.

**H5b:** The pop-up click rate is low if the user is familiar with the web.



### 3.6 The images effect

A web image is a file that resembles the text of any CGI (Common Gateway Interface) on this page. Visitors can see images and icons representing sound and video. It is interesting to study the impact of images on the effectiveness of Internet advertising. Harley (2003) considers that in Internet, unlike for printed media, users pay much more attention to images than texts. Regarding the link between images and click rate, we didn't find studies in this field. We propose so the following hypothesis:

**H6:** memorization is higher when pop-up contains images.

### 3.7 The effect of colors:

Color is an important factor when browsing a web page (Stern, 1997). This factor has caught the attention of researchers in the context of the online advertising effectiveness (Valdez, 1997). We will try to arrange the colors according to their brightness dimension (bright and clear). Hence, the following hypotheses are proposed:

**H7a:** the memory is stronger when the colors of the banner are clear.

**H7b:** the user is more likely to click on the banners whose colors are bright.

## 4. RESEARCH METHODOLOGY

The experimentation study was conducted with Internet users in many Net-cafes in the region of Bardo (Tunisia). Through experimentation, and unlike other methods of research, the researcher chooses to observe the people by manipulating certain variables. The final sample consists of 200 Internet users. For the choice of banners we have tried to respect the presence of our proposed variables: position (top and bottom), size (large and small), animation (exist or not), color (clear and sharp) and images (exist or not). We conducted a design matrix for each experimental model. Regarding the sample, we opt for convenience sampling. It's a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. For trial reasons, respondents are asked about the following point:

- He/she often navigates on the Internet
- He/she often visits Internet-cafe
- He/she has been exposed to banner ads
- He/she is able to navigate without the intervention of another person.

The statistical analysis used is descriptive analysis and logistic regression. Descriptive analysis is used to explore relationships between antecedents and explained variables (memorizations and click). For this reason we use the chi-square test. Logistic regression is used to verify the presence of significant relationships between independent variables (memorization and clicks) and online advertising effectiveness (dependant variable).

## 5. SEARCH RESULTS

### 5.1 The descriptive analysis

• *Relationship between the pop-up position and memorization:* According to the Chi-square test, we note that the  $\chi^2$  calculated is equal to 4.223 greater than 3 (asymptomatic sig = 0.035 < 0.05). We can therefore confirm that our hypothesis H1a is verified. The memorization is stronger when the pop-up is at the top of the screen.

• *The relationship between the size of a banner ad and memorization:* From Chi square test, we note that the  $\chi^2$  calculated is equal to 5.705 > 3 (asymptomatic sig = 0.017 < 0.05). So, the null hypothesis H0 of independence is rejected. There is a relationship of dependency between the memorization and its pop-up size on the webpage. The memory is stronger when the banner is large.

• *Relation between the animated pop-up and memorization:* According to the Chi square test, we note that  $\chi^2$  calculated is equal to 10.417 above 3 (asymptomatic sig = 0.001 < 0.05) where we reject the null hypothesis H0 of independence. The memorization is stronger when the banner ad is animated.

• *Relationship between User occupation and memorization:* we note that the  $\chi^2$  calculated is less than 3 (asymptomatic sig = 0.177 > 0.05), so we accept the null hypothesis H0 of independence. Therefore, there is any relationship between the user occupation and memorization. Our hypothesis H4a is not accepted. Memorization does not depend on user occupation.

• *Relationship between familiarity and memorization:* According to the Chi-square value, we note that the  $\chi^2$  calculated is less than 3 (asymptomatic sig = 0.105 > 0.05) where we accept the null hypothesis H0 of independence. So, an independent relationship between the memorization and the user familiarity with the web. Therefore, our hypothesis H5 is not accepted. Memorization does not depend on the user familiarity with Internet.

• *Relation between images in the pop-up and memorization:* According to the Chi-square test, we note that the  $\chi^2$  calculated is less than 3 (asymptomatic sig = 0.546 > 0.05) where we accept the null hypothesis H0 of independence. There is no relationship between memorization and the existence of images in a pop-up. Memorization does not depend on the existence of images in a pop-up.

• *Relationship between colors and memorizing:* According to the results provided by the test of Chi-square, we note that the calculated  $\chi^2$  equal to 11.448 is greater than 3 (asymptomatic sig = 0.001 < 0.05) where we reject the null hypothesis H0 of the independence. There is a strong relationship of dependency between the memorization and colors used on the pop-up. The memory is stronger when the color of the pop-up is clear.

• *Relationship between the pop-up position and click:* According to the test of Chi-square, we note that the calculated  $\chi^2$  equal to 4.273 is greater than 3 (asymptomatic sig = 0.039 < 0.05) where we reject the

null hypothesis H0 of independence. There is a relationship of dependency between the pop-up click and its position on the webpage.

- *Relationship between the size of the pop-up and click:* We note that the calculated  $\chi^2$  equal to 6.250 is greater than 3 (asymptomatic sig = 0.012 < 0.05) leading to reject the null hypothesis H0 of independence. There is a relationship of dependency between the click on a pop-up and its size on the webpage. Here we choose the medium size as the best one.

- *Relation between the animated pop-up and click:* According to the test of Chi-square, we note that the calculated  $\chi^2$  equal to 9.091 is greater than 3 (asymptomatic sig = 0.003 < 0.05) where we reject the null hypothesis H0 of independence. There is a very significant relationship of dependence between the click and animation of pop-up.

- *Relationship between click and occupation of the Internet user:* We note that the calculated  $\chi^2$  equal to 0.653 is less than 3 (asymptomatic sig = 0.419 > 0.05) where we accept the null hypothesis H0 of independence. There exists an independent relationship between the occupation of the Internet user and click on pop-up. Clicking on a pop-up does not depend on the occupation of Web user.

- *Relationship between familiarity and click:* According to the test of Chi-square, we note that the calculated  $\chi^2$  equal to 0.945 is less than 3 (asymptomatic sig = 0.331 < 0.05) therefore we accept the null hypothesis H0 of independence. There exists an independent relationship between the pop-up advertising click and familiarity of the user with the Web.

- *Relationship between the click and colors:* According to the results provided by the test of Chi-square, we note that the calculated  $\chi^2$  equal to 8.319 is greater than 3 (asymptomatic sig = 0.004 < 0.05) therefore we reject the null hypothesis H0 of the independence. There is a strong relationship of dependency between click and the nature of colors on the pop-up.

According to results of binary logistic regression, we note that the model has a goodness of fit close to 94%. The calculated chi-square equal to 32.314 is greater than 3 (significance = 0 < 0.05) where our model is globally significant. The  $R^2 = 53.1\%$  tells us that memorizing can explain 53.1% of the variance of our dependant variable (e-advertising effectiveness). Arguably therefore the following expression for our model:

Memorization  $\chi^2 = 11,822 - 2,647$  size  $- 2,148$  occupation  $+ 2,470$  Familiarity  $+ 2,116$  Colors

According to results of binary logistic regression, we note that the model has a goodness of fit close to 89%. The calculated Chi-square equal to 20.519 is greater than 3 (significance = 0.001 < 0.05) where our model is globally significant. The  $R^2 = 38.8\%$  informed us that the click can explain 38.8% of the variance of our dependant variable (e-advertising effectiveness). Arguably therefore the following expression for our

model:

Click = 12,683 – 1,808 colors – 2,335 animation.

### 5.3 The results' interpretation and recommendations

The memorization is stronger when the pop-up is at the top of the screen compared to below position, but it is not quite strong when pop-up is animated. Also, the memorization is stronger when the banner is large. It does not depend on occupation of the user and the existence of images in a pop-up ad. The memorization is stronger when the colors of the banner are clear. It doesn't depend on the familiarity of the user with the web. The individual is more likely to click on a pop ad placed at the top that when placed in the bottom of the page. Also, he clicks usually on pop-up having the medium size. He does not necessarily click on an animated banner. The click does not depend on occupation of the web user. Click on a pop-up does not depend on the familiarity of the user. The user is more likely to click on the banners whose colors used are clear. The user occupations, his familiarity with the Web, color and size of the pop-up are the most important variables explaining the e-advertising effectiveness. Both descriptive and explanatory analysis showed that all determinants except "images" are likely to explain either the memory or click banner advertising and therefore the effectiveness of online advertising. Therefore, any company using Internet as an advertising support must necessarily take into account these dimensions in order to increase the degree of its advertising effectiveness.

## 6. CONCLUSION

Despite e-advertising was considered as a revolution in term of commercial communication, many questions still posed about its effectiveness. Many conditions are to satisfy. Advantages of this new form of communication are numerous including especially gain of time and money and interactivity with customers. However, Internet could be considered as a double-edged weapon. Advantages must not obscure disadvantages especially in cases of counterfeit or rumor. Because of the speed of information circulation, advantages can be transformed to disadvantages.

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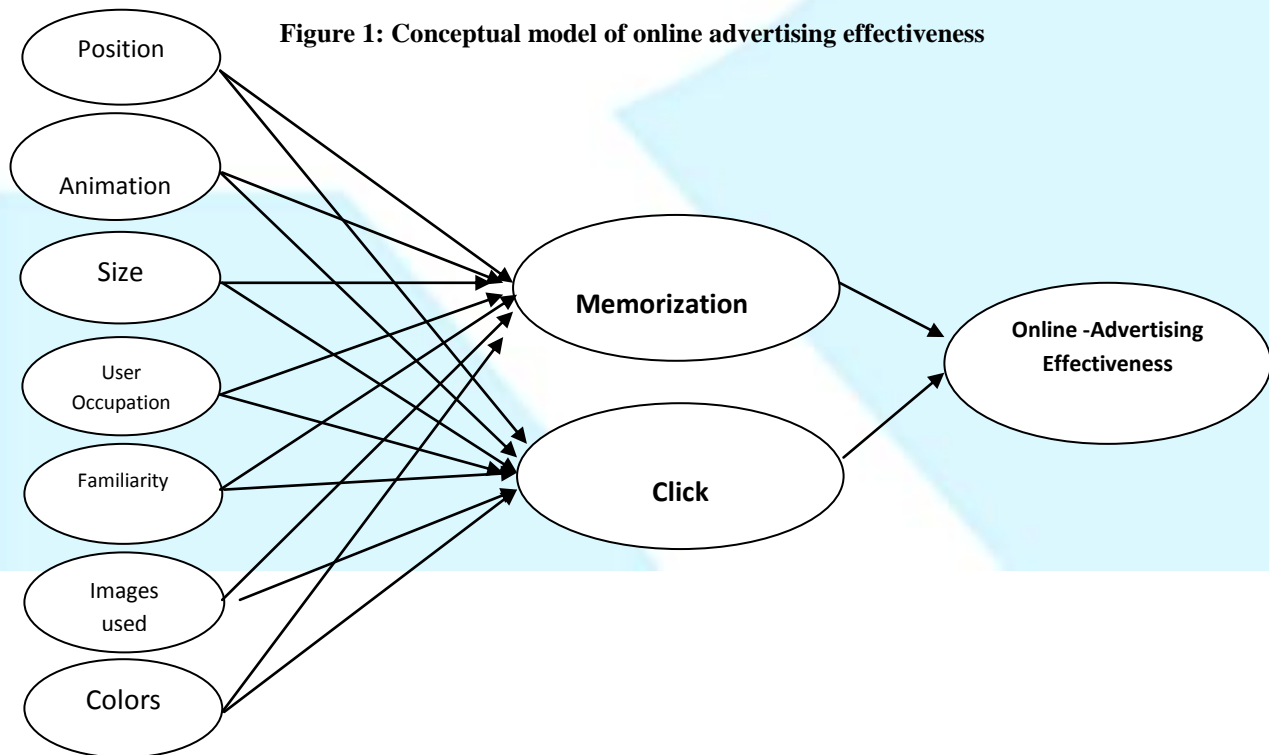
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## ANNEXURE

Figure 1: Conceptual model of online advertising effectiveness



**Table1: The Global Analysis Model for Memorization Variable**

Constant	Quality adjustment	R <sup>2</sup>	dll	Calculated cc <sup>2</sup>	Significance
11,822	94%	53.1%	6	32,314	0

**Table 2: The Global Analysis Model of Click variable**

Constant	Quality adjustment	R <sup>2</sup>	dll	Calculated cc <sup>2</sup>	Significance
12,683	89%	38.8%	5	20,519	0.001