The Effectiveness of Internet Advertising through Memorization and Click on a Banner

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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 the 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 form of communication. It is therefore 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 banner 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 is related to the colors used in the banner, size and clarity of the message.

Keywords: internet advertising, efficiency, memory, click

1. Introduction
Advertising has long constituted a fertile field of research. Besides the very important technical improvements made to advertising in its traditional forms, we see a relatively recent phenomenon whose importance is far from negligible. It is the Internet advertising, which tends increasingly to upset the traditional rules of advertising. This new tool of communication risk of upsetting the giving of advertising 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 (Chandon et al, 2002). Of course, due to the remarkable strengths of the Internet in terms of targeting, inclusiveness, unparalleled in richness of information and above interaction, 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 leaders must take this 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 does not change preferences, but provides information that helps for reducing post purchase cognitive dissonance (Meyers, Levy and Malaviya, 1999; Vakratas 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 a stimulus advertising (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 favorable 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 of 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 has to be not only cognitive, or even necessarily verbal. It can produce the same effects as emotional, visual or auditory.

2.2 Effectiveness of Advertising on the Web

Unlike traditional media, exposure to advertising on the Web does not occur accidentally but deliberate and desired by the consumer who determines the duration of his visit and his exposure. Several effectiveness indicators of advertising on the Internet have been developed specifically to measure the persuasive power of this form of communication. 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 electronic communication. 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 purchase behavior (Briggs and Hollis, 1997, Singh and Dalal, 1999).

However, it should be noted that the click rate is a measure widely adopted by researchers to evaluate the effectiveness of advertising on the web. 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 communications (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 advertising on the Web incorporating other dimensions to assess the effectiveness of advertising on the Internet (Cho, 1999; Rodgers and Thorson, 2000). In this sense, Kiani (1998) considers three possible levels of measurement of advertising effectiveness. 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 that takes the behavioral dimension of intent to purchase or the 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 Internet advertising.

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

2.2.1 The Memorization

Regarding the storage of information, all authors agree in recognizing that the individual has two memories, one short and one long-term (Dussart, 1983). The first 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 information given by the banner advertising. If the judgement is negative, the information will be rejected. If the judgement 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.
The concept of memorization is commonly used for measuring the effectiveness of advertising. 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 the Internet in traditional media plans.

Studies conducted by IAB France and Sofres (1999) also focused on memorization. These studies conclude that memory improves after exposure and are consistent with those of Briggs and Hollis (1997) and Hussher (1999). The study of Hop (2001) showed that the memory is very important in the context of online advertising. In addition, Bergkvitz et al. (2001) showed that exposure to banner advertising 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.

2.2.2 The Click

The click rate on banner is considered a key indicator and a measure used to judge the effectiveness of advertisements on the Web. This axiomatic finding is found by some researchers like Hofacker and Murphy (1998), Chtourou and Chandon (2002). According to Chtourou and Chandon (2002), the click rate is the number of times a visitor clicks on a banner over the number of times the support page of the banner is loaded on the computer screen of the user. This is actually an observable behavioral response to indicate an immediate interaction with the brand communicated (Briggs and Hollis, 1997).

The measure click-through 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 banner. 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 Internet advertising is not always evident to the extent it does not reflect the true value of exposure to banner advertising. In addition, the click rate on banner advertising does not always translate into a buying behavior. Finally, Lendrevie (2000) proposes conditions to verify the banner to be viewed by the user. Indeed, there is a trend towards less click banners deemed unattractive and lacking credibility.

3. Conceptual Framework and Research Hypotheses

In this research, the effectiveness of advertising on the Internet is measured through two indicators: the memorization and the click rate on banner advertising. Regarding memorization, it is evaluated in relation to 7 factors: the position of the banner, animation, size, profession of the visitor, the duration in terms of user experience, the images used, and colors (see Figure 1).

Figure 1. Determinants of memorization

Figure 2 shows the click model. In this model, the click is explained by the same variables mentioned in the first model of memorization. Thus we could identify a set of determinants of the effectiveness of Internet advertising through memorization and click.
3.1 The Position Effect

In this research, we distinguished two levels of location. The first concerns the location on the page, the second concerns the choice of the page under which the banner is inserted. The advertiser can negotiate so that the banner is placed at top, right, left, bottom center etc. Generally, the place that advertisers prefer is on top of the page. This seems to be the best place in that, whatever the screen size of the Internet user, 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). Hence the following Hypothesis:

H1a: the memory is stronger when the banner ad is at the top of the screen when it is at the bottom.
H1b: the user more likely to click on the banner ad at the top of the screen.

3.2 The Size Effect

The size of banner advertising creates a gap between the online ads. Engel et al (1995) suggest that a number of factors related to the stimulus are likely to attract attention as the size, motion and contrast with the background. Chandon et al (2000) showed that the size of the banner increases spontaneous and aided awareness and purchase intent. By cons, Lendrevie (2000) reports that no final results can be retained on the effect of the banner size on the effectiveness of Internet advertising. Indeed, when the banner is larger, the file size (and therefore download time) also increases. This view is inconsistent with the finding of Nacarato and Neundorf (1998) who assume that the banner whose size is small leads to a negative effect on interactivity and therefore a low click rate. Paradoxically, banners with large size causes of reluctance on the part of users to click them (Lendrevie, 2000). Thus, the medium format banners act positively on research information from the Internet users (Kely and Hoell, 1991). Hoan and Chang (1999) showed in the sense that the size of the banner is acting positively on the intention to click for most users. We therefore stipulate:

H2a: the memory is stronger when the banner ad is large.
H2b: the Internet is more likely to click on the largest banner.

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 in the work of Li and Bukovac (1999). Hence the following assumptions:

H3a: the memorization is stronger when the banner ad is animated.
H3b: the user is more likely to click on the animated banner 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, the main Internet users are practically Americans and Canadians. Internet is used by students, young professionals and academics. Internet has more than 112.75 million regular users (Barro, 1998). It is therefore legitimate to explain the effectiveness of Internet advertising by focusing on the user profile. In reality, the Internet has gained ground among companies then individuals (Xardel and Deboul, 1997). These reflections will be translated from these two assumptions.
H4a: the memorization is stronger among students than others.
H4B: Students click on the banners more than others.

3.5 The Duration Effect
By we duration Means the user experience with the web. According to Lendrevie (2000), when the user is more experienced with Internet, unless he clicks on the banners. Usually the user has a specific purpose and wants access as quickly as possible to his navigation target. Regarding memorization, studies still agree that repeated exposure to an advertisement makes a better memorization. Hence the following assumptions:
H5a: The memory is great if the browsing experience is great.
H5B: The clickthrough rate is low if the browsing experience is great.

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 print media, users pay much more attention to fixed images than texts. We announce the following hypothesis:
H6: memory depends on the existence of images in the banner advertising.

3.7 The Effect of Colors
At the end of achieving an Internet presence, it is important or essential to choose colors (Stern, 1997). The variable color has caught the attention of researchers in the context of the effectiveness of Internet advertising (Valdez, 1997). We will try to arrange the colors according to their brightness dimension (bright and clear). Hence, the following hypotheses:
H7a: the memory is stronger when the colors of the banner is clear.
H7b: the user is more likely to click on the banners whose colors are bright.

4. Research Methodology
In this research, we opted for the experimentation that took place in whole Net cafes in the region of Bardo. Through experimentation, and unlike other methods of research, the researcher chooses to observe the people by manipulating certain variables. For the choice of banners we have tried to respect the presence of explanatory 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. Our target population for any person (user) meeting the following criteria:
He often navigates on the Internet
He often visits Internet café
He has been exposed to banner ads
He is able to navigate without the intervention of another person.
The final sample consists of 200 Internet users: 100 persons for each model (memory model and click model). Regarding the method for sampling we opted for a non-probabilistic convenience method. Thus, those selected are contacted at the scene of the investigation.

5. Search Results
5.1 The Descriptive Analysis
• Relationship between the position of an ad banner 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 banner 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 of a banner ad and its size on the webpage. The memory is stronger when the banner is large.
• Relation between the animated banner advertising 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 \( H_0 \) of independence. The memorization is stronger when the banner ad is animated.

• Relationship between User occupation and memorization: From the test results of Chi-square, we note that the \( \chi^2 \) calculated is less than 3 (asymptomatic sig = 0.177> 0.05) where we accept the null hypothesis \( H_0 \) of independence. So, there is any relationship between user’s professions and advertising memorization, hence our hypothesis \( H_{4a} \) is reversed. Memorization does not depend on occupation of the Web user.

• Relationship between the duration and memorization of a banner ad: According to the test of Chi-square, we note that the \( \chi^2 \) calculated is less than 3 (asymptomatic sig = 0.105> 0.05) where we accept the null hypothesis \( H_0 \) of independence. There is an independent relationship between the memorization of a banner ad and duration in terms of surfer experience with the Web. Therefore, our hypothesis \( H_5 \) is reversed. Memorization does not depend on the duration.

• Relation between images of a banner ad and memorization: According to test results of Chi-square, we note that the \( \chi^2 \) calculated is less than 3 (asymptomatic sig = 0.546> 0.05) where we accept the null hypothesis \( H_0 \) of independence. There is an independent relationship between memorization and the existence of images in a banner ad. Memorization does not depend on the existence of images in a banner ad.

• Relationship between colors and memorizing a banner: 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 \( H_0 \) of independence. There is a relationship of dependency between the memory of banner advertising and the nature of color on the webpage. The memory is stronger when the color of a banner is clear.

• Relationship between the position of a banner ad 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 \( H_0 \) of independence. There is a relationship of dependency between the click on a banner ad and its position on the webpage.

• Relationship between the size of a banner ad and click: From Chi-two, we note that the calculated \( \chi^2 \) equal to 6.250 is greater than 3 (asymptomatic sig = 0.012 <0.05) where we reject the null hypothesis \( H_0 \) of independence. There is a relationship of dependency between the click on a banner ad and its size on the webpage.

• Relation between the animated banner ad 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 \( H_0 \) of independence. There is a very significant relationship of dependence between the click on a banner advertisement and animation.

• Relationship between clicking on a banner ad and occupation of the Internet user: From the test results of Chi-square, 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 \( H_0 \) of independence. There exists an independent relationship between the profession of the Internet user and click on banner advertising. Click on a banner ad does not depend on the profession of Web user.

• Relationship between duration and click on a banner ad: 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) where we accept the null hypothesis \( H_0 \) of independence. There exists an independent relationship between the banner advertising click and duration in terms of experience with the Web surfer. The click does not depend on the duration.

• Relationship between the click of an ad banner 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) where we reject the null hypothesis \( H_0 \) of the independence. There is a relationship of dependency between click on a banner ad and the nature of colors on the web page.
5.2 The Explanatory Analysis

Table 1. The memorization: global analysis model

<table>
<thead>
<tr>
<th>Model</th>
<th>Constant</th>
<th>Quality adjustment</th>
<th>R²</th>
<th>dll</th>
<th>Calculated $\chi^2$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorization</td>
<td>11,822</td>
<td>94%</td>
<td>53.1%</td>
<td>6</td>
<td>32,314</td>
<td>0</td>
</tr>
</tbody>
</table>

According to results of binary logistic regression, we note that the model has a goodness of fit close to 94%. According to the chi square test can be seen that 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 explanatory variables. Arguably therefore the following expression for our model:

$$\pi(x) = \text{Probability of Memorization/ Probability of non Memorization} = \frac{P(Y=1)}{P(Y=0)}.$$  

$Y= 1 \rightarrow$ Memorization  
$Y= 0 \rightarrow$ Non Memorization  
$\pi(x) = \frac{P(Y=1)}{P(Y=0)}$  
$\pi(x) = \exp(11,822 - 2,647 \text{ size} - 2,148 \text{ profession} + 2,470 \text{ Duration} + 3,216 \text{ Colors}).$

Table 2. The click: global analysis model

<table>
<thead>
<tr>
<th>Model</th>
<th>Constant</th>
<th>Quality adjustment</th>
<th>R²</th>
<th>dll</th>
<th>Calculated $\chi^2$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorization</td>
<td>12,683</td>
<td>89%</td>
<td>38.8%</td>
<td>5</td>
<td>20,519</td>
<td>0.001</td>
</tr>
</tbody>
</table>

According to results of binary logistic regression, we note that the model has a goodness of fit close to 89%. According to the test of Chi-two is noted that 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 explanatory variables. Arguably therefore the following expression for our model:

$$\pi(x) = \text{Probabilité de clic / Probabilité de non clic} = \frac{P(Y=1)}{P(Y=0)}.$$  

$Y= 1 \rightarrow$ clic  
$Y= 0 \rightarrow$ no clic  
$\pi(x) = \frac{P(Y=1)}{P(Y=0)} = \exp(12,683 - 1,808 \text{ colors} - 2,335 \text{ animation}).$

6. Conclusion

Through our research we are interested in studying the effectiveness of Internet advertising through clicking on an ad banner or through memorization. In this research two steps have been taken. We first conducted a literature review on the effectiveness of Internet advertising. In this first step we tried to demonstrate the importance of interactive advertising in the marketing mix. We have also highlighted the relationship between advertising effectiveness and web tool as a new dynamic and interactive media. We also verified the existence of several elements of quantitative and qualitative measures of the effectiveness of Internet advertising. These measures have enabled us to identify a certain set of determinants that may explain the effectiveness of advertising across the Internet tool. In a second step, we tried to verify all theoretical findings on the Tunisian context. a survey experiment was conducted to achieve this goal. The analysis and interpretation of data from this survey has yielded the following results:

On a descriptive level we note that:

The memorization is stronger when the banner is at the top of the screen compared to below position, but it is not quite strong when the banner ad is animated. The memory is stronger when the banner is large. It does not depend on occupation of the user's web nor the existence of images in a banner ad.
The memory is stronger when the colors of the banner are clear. It does not depend on the experience of the user with the web. The individual is more likely to click on a banner ad placed at the top that when placed in the bottom of the page.

The individual clicks on an ad banner large. He does not necessarily click on an animated banner ad. The click does not depend on occupation of the web. Click on a banner ad does not depend on the duration in terms of user experience with the World Wide Web. The user is more likely to click on the banners whose colors used are clear.

On the explanatory level we note that:

The profession of the visitor, the duration in terms of user experience with the Web, color and size are variables that explain the behavior of the cyber consumer clicking or storing a banner advertisement. Through this study based on an experiment, we tried to test the relationship between banner memorization and click on the one hand and the size, position, animated images, color, occupation the Internet and the duration of the other. 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 Internet advertising. We can therefore say that the size, position, animation, color, occupation of the user and the duration in terms of user experience of the Web, are determinants of advertising effectiveness Internet. Therefore, any company that uses the Internet must necessarily take into account these dimensions in order to succeed at best tools for customer relationship and increase their Internet advertising effectiveness.

References


