

Evaluating the Effectiveness of Advertising on the Web Space on Iranian Websites based on the hierarchy of effects model

Vahid Sharafian^{1,*}, Davood Feiz², Hosein Asghari², Fatemeh Hassan Poor Sandiani³

¹Department of Management, Islamic Azad University, Qeshm Branch, Qeshm, Iran

²Department of Management, Semnan University, Semnan, Iran

³Department of Computer Engineering, Islamic Azad University, Bandar Abbas Branch, Bandar Abbas, Iran

ABSTRACT

This paper tests 6 hypotheses using the hierarchy of effects model with the aim to examine the effectiveness of advertising in the virtual environment on Iranian websites. Statistical population of this study includes 400 students and staff in the state and Islamic Azad University of Semnan. Data collection has been done by questionnaire, and in that Internet users are asked to respond whether the advertisement in that space can increase their information, encouragement, preference and ultimately tendency to buy or not? Demographic data analysis has been conducted by software Spss, and the hypothesis test conducted by software lisrel. In order to analyze the hypotheses, the structural equation and confirmatory factor analysis models have been used and finally all hypotheses been confirmed.

KEYWORDS: Advertising; Internet; effectiveness; impact hierarchy.

INTRODUCTION

Nowadays, according to the new electronic technologies, not only the companies should ask themselves "how can we get our customers?" but also they should ask themselves: "How can we achieve a way through which the access to our customers will be achievable?" [6]. Communication between companies and customers include numerous components including: public relations, personal sale, direct marketing, sales promotion and advertising and advertising is an important component of marketing communications especially the electronic marketing [16].

In general, advertising is done by two ways:

1. Offline advertising through the traditional media (television, radio, magazines, and...)
2. Online advertising through the "websites, emails, banner ads and..." [16].

Considering that advertising spends much time, energy and cost and it is generally a complex and expensive activity, it should be justified [18]. In addition, beyond the creativity and other activities involved in advertising, the evaluation and research about its effectiveness appears essential [13]; and in general, answering to this question whether the advertising is able to help us reach the aims of organization or not is essential.

Marketing and the importance of online advertising

Marketing is a process of planning, implementing, concept processing, pricing, promotion and distribution of ideas, goods and services in order to create the exchanges which meet the individual and organizational goals [10]. Marketing is a part of overall business plan [15]. Promotion is one of four variables (4P) of marketing and this integrated marketing communication (promotion) is composed of five main communicational methods including advertising, sales promotion, public relations, personal selling and direct marketing. Coordination and consistency among the components of promotion is one of the most important integrated aspects of promotion [3]. Advertising is the supplement but relatively small part of marketing plan. [15]

Advertising means any impersonal display and promotion of goods, services or ideas in return for which the money is paid by a sponsor [15]; in addition, it is a tool for developing the brand, increasing the market share and profits of organization in the long run. Advertising needs the media in order to convey its message. Radio, TV, magazines, newspapers, Internet and... are some of these media [4].

Nowadays, the effect of information technology and especially Internet cannot be ignored in the individuals' lives. The average annual growth of Internet use is increasing annually and it had a 10 percent increase in 2011. Official statistics indicate that the number of Internet users in Iran in 2011 have been increased to thirty-six million and five hundred thousand people compared to the last year. Number of Internet users in Iran in 2011 has been estimated thirty-six million five hundred thousand people, and the penetration factor of this communication protocol has been announced about 47 percent in March 2011 [23].

These statistics indicate that the interest in this medium has been grown in Iran day after day and has had the increasing growth. The nature of Web technology is in a such way under which the Internet is identified and

*Corresponding Author: Vahid Sharafian, Department of Management, Islamic Azad University, Qeshm Branch, Qeshm, Iran.
E-mail: vshmarketing@gmail.com

introduced as a rich medium in the field of marketing in a short time alongside the traditional media like newspapers, radio, television and ... [14], so this new medium has a significant importance in the commercial communications and advertising and can have great effects on customer behavior; and in this case measuring the effects of advertising will be essential.

Hierarchy of effects model

There is no universal consensus on a reliable method for measuring the online advertising effectiveness [11] however, based on this fact that advertising can have variant effects on the consumers' thoughts, attitudes, feelings and behaviors [18], the researchers have found that the effects of advertising are linked together as a successive chain (Reply to a variable results in another variable); such a chain of successive responses is called the hierarchy of effects [3], and by measuring the effective variables, the effectiveness level of advertising can be measured. Researchers have proposed different successive models which all have three cognitive, emotional and behavioral stages. In the cognitive stage, user identifies the product, and in the presented study it is assessed by the informative and information-based variables. In the emotional stage, user makes an emotional communication with goods (by watching its advertisement) and its measurable variables include: like, preferring the good, being persuaded and convinced and we will test it as follows; final stage is the behavior stage under which the user buys the goods by watching the advertisement.

Research Questions

The main objective of present study is examining the effectiveness of advertising on the Iranian Web sites on the web space; and according to the proposed model of advertising effectiveness test, these questions should be answered in order to achieve this goal "whether the advertising on the web space can affect the users' (customers') information or not? And whether the advertising on the web space can affect the interest, preference and eventually buying the product? And finally, whether the advertising in the cyberspace can affect the Iranian sites or not?"

Research Hypotheses

1. According to the research questions, the research hypotheses were formulated as follows:
2. Commercial advertising on the web space and Iranian websites has a significant and considerable effect on creating the subjects' information towards the product.
3. Commercial advertising on the web space and Iranian websites has a significant and considerable effect on encouraging the subject to gain the information about the product.
4. Commercial advertising on the web space and Iranian websites has a significant and considerable effect on subjects' interests about the product.
5. Commercial advertising on the web space and Iranian websites has a significant and considerable effect on preferring the product.
6. Commercial advertising on the web space and Iranian websites has a significant and considerable effect on convincing the subjects.
7. Commercial advertising on the web space and Iranian websites has a significant and considerable effect on subjects' deciding to purchase.

Statistical Population

Statistical population in this study includes the students and staff of state and Islamic Azad universities of Semnan in the academic year 88-89.

Sampling and data collection methods

Sampling method of this research is a random cluster sampling so that the society has been divided into groups in terms of Internet users (students, University professors and...) and then we have sampled these groups by a random or systematic method.

If the ratio of population success (p) is considered 50%, the error level (α) equal to 0.05 and the accuracy of estimate 5 percent, the minimum sample size will be 384 according to the following formula.

$$n = \frac{(z_{\alpha/2})^2 \times p \times (1-p)}{\varepsilon^2} = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{0.05^2} = 384$$

In order for collecting usable questionnaires based on the total number of samples, 450 questionnaires were distributed and finally 400 usable questionnaires were extracted.

Questionnaire designed for this study includes twenty-three questions and the Likert scale is used for designing it, and the dispersion of research variables in the questionnaire is presented in Table 1:

Table 1: Table of distributing the questionnaire questions in the research variables

No.	Variable	Number of questions
1	Creating the information	3 questions
2	Persuasion	2 questions
3	Interest	3 questions
4	Preferring the product	4 questions
5	Convincing	3 questions
6	Deciding to purchase	4 questions
7	Effectiveness	4 questions

Research validity and reliability

Validity of designed questionnaire in this study was approved by a number of university professors, senior experts and marketing professionals; and its reliability was calculated equal to 0.91 by calculating the Cronbach's alpha by the software SPSS.15 and was approved. (It should be noted that the Cronbach's alpha for all variables was calculated separately and was accepted.)

Estimating the model and relationship between the research variables and hypotheses test

Demographic factors

First part of questionnaire is related to the demographic factors including the age, gender, educational level, and income, exposure to the Internet advertising, taking the Internet advertising into account, the level of Internet usage, and visiting the Internet websites. Findings related to the demographic features are presented in Table 2:

Table 2: Descriptive results of statistical population

Demographic factors	Age		Gender		Education		Income	
Sample size	400		400		400		400	
Descriptive Statistics	20 years old and under	14.3%	Male Female	63% 37%	Diploma or lower Associate Degree	10.3%	Less than 150 thousand	18%
	20 to 30	48%			bachelor degree	21.5%	150 to 300 thousand	33.8%
	30 to 40	26.3%			MA degree or higher	48.2%	300 to 450 thousand	28%
	40 years old and more	11.5%				20%	450 to 600 thousand	13%
						More than 600 thousand	7.3%	
Demographic factors	Exposure to online advertising		Taking the Internet advertising into account		Using the Internet		Visiting the websites	
sample size	400		400		400		400	
Descriptive Statistics	So high	28.5%	Less than 1 hour 1 to 2 hours 2 to 3 hours 3 to 4 hours More than 4 hours	13.5% 20.8% 33.5% 18% 14.3%	Less than 1 hour	11.3%	Scientific Entertaining recreating Political/News All	10.5% 14.3% 17% 58.3%
	High	40%			1 to 2 hours	26.3%		
	Partly Low	14.5%			2 to 3 hours	25%		
	Low	10%			3 to 4 hours	20%		
	Very low	7%			More than 4 hours	17.5%		

Estimating the model

As mentioned before, 23 questions have been used in order to assess the effectiveness of advertising on the web space and Iranian websites. The structural equation model and software LISREL 8.54 have been used in order to design the model, and the confirmatory factorial analysis has been used in order to investigate the validity of variables proposed in the model of study (Explanation level of each variable by the questions raised in the model of study); and the standard coefficient, Significant factor, and explained variance have been calculated and since the meaningful number of all questions in the questionnaire was higher than 1.96, its validity was confirmed.

When the sample group data is converted into the correlation or covariance matrix and is described by a series of regression equations, that model can be analyzed in order to investigate its fitness in the population which the sample is derived from. Several estimates of that model parameters and numerous sizes for its fitness

are resulted with the sample data [9]. In Figure 1 the structural equation model, which is obtained using the software Lisrel, is shown.

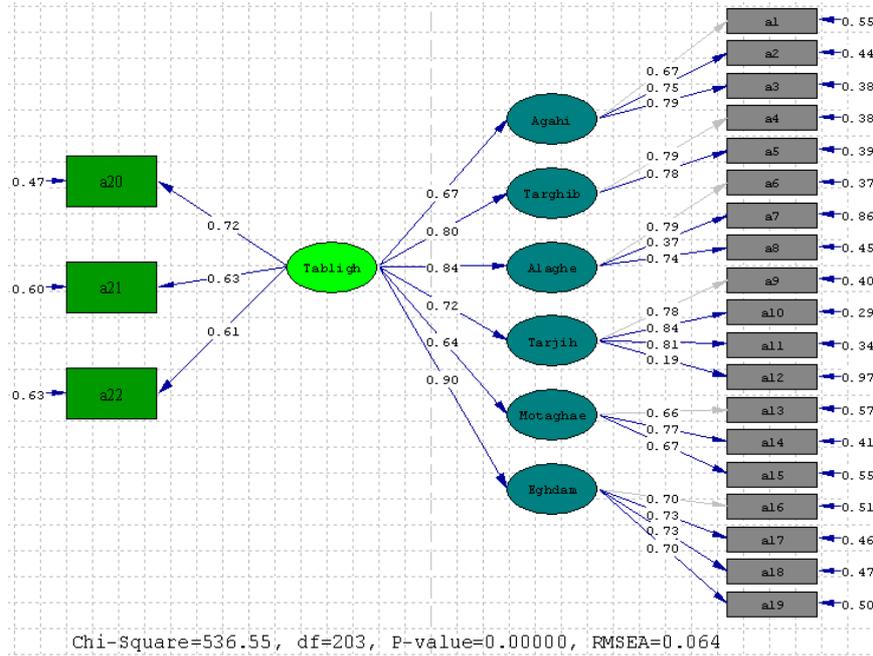


Figure 1: Structural equation model (standardized coefficients)

As it can be seen in Figure above, in this model 7 latent variables (advertising, information, persuade, creating the interest, preference, being persuaded, and deciding to purchase) and their measuring parameters are clearly shown. Additionally, to the variables a1 to a21 are related to the questions of questionnaire.

Results of hypotheses Test

In this section, we examine the significance of numbers obtained from the model; about the significance of numbers it should be noted that since in this study we have aimed to test the hypotheses at significant level 0.95 or error 0.05, numbers, which are higher than -1.96 and +1.96, will be significant for T-test. This means that if a number in t-test is between -1.96 and +1.96, it will be meaningless. In Figure 3 the numbers obtained for the t-test are shown for evaluating the causal relationships of variables.

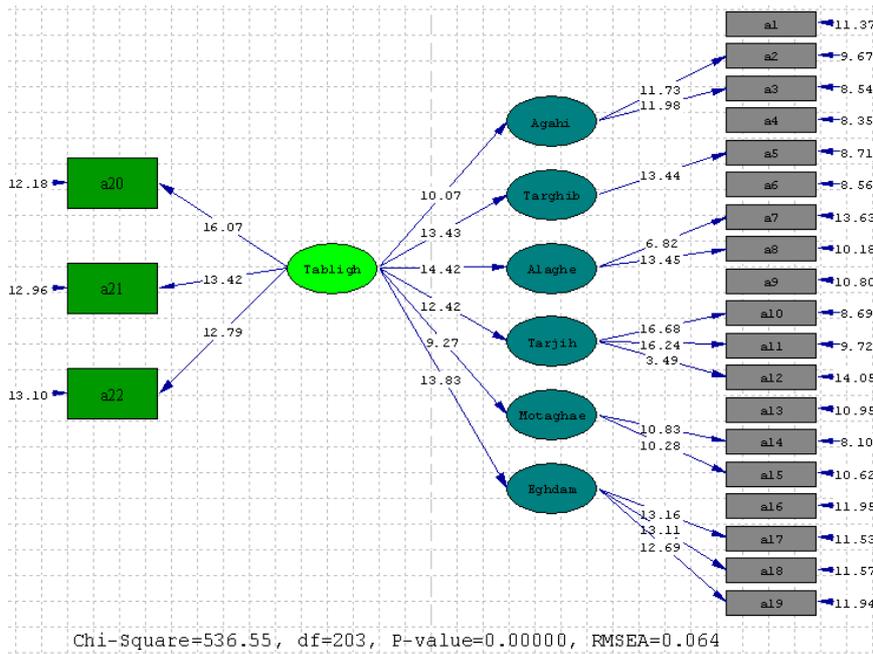


Figure 2: Structural equation model (significant coefficient)

Thus, according to the model, we are going to examine the sub-hypotheses of study in the significant numbers mode (Fig. 2) and standard estimate model (Fig. 1). According to the Figure 1 and 2, the standardized factor between two variables is 0.67. The significant factor (10.07) between these two variables (more than 1.96) indicates that this relationship is meaningful. Thus, the null and alternative hypotheses are approved. In Table 3 the hypotheses test are provided:

Table 3: standardized factors and significant numbers of model and Hypotheses test

Route	Standardized factors	Significant numbers	Result
Commercial advertising on the web space on Iranian web sites has a significant effect on creating the subjects' information towards the product.	0.67	10.07	Approved
Commercial advertising on the web space on Iranian web sites has a significant effect on encouraging the subjects to acquire the information towards the product.	0.80	13.43	Approved
Commercial advertising on the web space on Iranian web sites has a significant effect on subjects' interest towards the product.	0.84	14.42	Approved
Commercial advertising on the web space on Iranian web sites has a significant effect on preferring the product.	0.72	12.42	Approved
Commercial advertising on the web space on Iranian web sites has a significant effect on convincing the subjects towards the product.	0.64	9.27	Approved
Commercial advertising on the web space on Iranian web sites has a significant effect on subjects' decision to purchase towards the product.	0.90	13.83	Approved

Evaluating the fitness of model

After modeling and estimation of its parameters, the first fundamental question which is raised is whether the measurement model is a proper measuring model or not. When a model is precisely defined has the similar features, and its estimation and testing are possible, then there will be numerous indicators for evaluating its fitness; the most important ones are presented in the following table (No. 3):

Table 4: Fitness of research model

Fit index	Acceptance criteria	Statistic of main hypotheses model
χ^2 (Chi square)	$\chi^2 / df \leq 3$	2.6
RMSEA (Root Mean Square Error of Approximation)	RMSEA < 0.08	0.064
NFI (Normed Fit Index)	NFI > 0.90	0.88
CFI (Comparative Fit Index)	CFI > 0.95	0.93
GFI (Goodness of Fit Index)	GFI > 0.90	0.89
AGFI (Adjusted Goodness of Fit Index)	AGFI > 0.85	0.86

The presented Indices and comparing them with the optimal value for a fit model indicate a proper fit of research model. According to the structural model of research the Table 3 is approved.

DISCUSSION AND CONCLUSION

The results of this study include the demographic factors and data analysis. The results are as follows:

- In terms of age, the highest frequency is related to the ages 20 to 30 which 192 people from the 400 individuals in the statistical population; and it should be noted that this age group contains the young ones who allocated the large number of Internet users. The age group 30 to 40 years old with a frequency of 105 ones from 400 has the second frequency.
- Based on the gender, 63 percent of respondents are males; and this number is almost fifty percent higher than females.
- Based on the education, the highest frequency is related to users who have a bachelor degree. Therefore, it can be concluded that there is a direct relationship between the literacy and Internet use; and according to the data frequency about the education both diploma and under diploma groups have had the lowest frequency in the statistical population.
- According to the income status, most of the users have between 150,000 to 300,000 tomans income. Based on the status of data distribution, it can be expressed that the more the users' income is, the less they visit the cyberspace in order to buy their goods. As presented in Table 2, the income between 450, 000 and 600,000 tomans allocates 13 percent of date to itself and over 450,000 tomans allocates 7.3% of data.

- Based on the level of exposure to advertising, it can be pointed out that 40 percent of users are less exposed to advertising and they have allocated the highest frequency to themselves.
- If the level of users' consideration to the Internet is determined with the Hour index, according to the questionnaire the highest frequency is related to the users who their have had between 2 to 3 hours consideration and the lowest frequency is related to the ones with an hour consideration. It should be noted that the extracted frequency from the statistical population is the highest consideration between 2 to 3 hours which has an acceptable mean.
- According to the questionnaire data, using the Internet in our country is too low, and about 26% of people use the Internet between 1 to 2 hours and they have allocated the highest percentage to themselves.
- According to the websites data, about visiting the websites all websites and then the news and political websites have been allocated the highest frequency with 17 percent; thus it needs thinking and advertising on these websites will have a good return.
- According to the data questionnaire, since the users between 20 to 30 years old, who are young ones with the bachelor degree and have income about 150,000 to 300,000 tomans, usually use the Internet between 1 to 2 hours a day on average, take the publicity into consideration partly and their attention to the Internet is not significant.

In the second part of questionnaire, the focus is on the hypotheses test, therefore the significant relationship between each of dependent variables with the independent variable are obtained and the hypotheses are tested by providing a model for this study.

According to the analysis of data extracted from the questionnaire and hypotheses test, it has been founded that there is a considerable and significant relationship between the variables of information, encouraging to purchase, interest in product, preferring the product, convincing, deciding to purchase, and advertising in the virtual space and virtual users, and this relationship is the advertisers' consideration in the virtual space.

RESEARCH RESULTS

It should be noted that users in Iran visit various websites, and the news websites are the most visited ones compared to different websites. This point is also important that based on the global statistics the Internet usage in our country is too low and this is reflected in the questionnaire and can be inferred; therefore, it can be concluded that the advertisement on the Iranian websites has been very limited and less discussed scientifically in the conferences. Second, usually those with bachelor degree or higher educational level are in the Internet environment, thus the advertiser should design the advertisements based on this point. And it is recommended that if the advertisement is shown in the news and entertainment websites, it can be more likely to be visited by users. On the other hand, individuals with lower educational level (diploma or under) use the Internet less than others; in addition the click rate on the scientific websites is lower than other ones with various topics and this is significant, therefore advertising on these websites is less effective. It should be considered that these implications are from the descriptive data and each one requires more research and is not conclusive.

- Advertisements, which are seen by consumers and Internet users in cyberspace, usually provide information about the optical features of goods for user, and the user receives a partial knowledge about the optical and technical features of goods.
- According to the data analysis of questionnaire, when a user is exposed to the advertising in the Internet space, he is encouraged to purchase the goods; and according to the significant factor analysis of questions which are very close together, we conclude that users react towards the specific mark and brand and are encouraged with them.
- Advertising in the Internet space causes that users be interested in the product and purchasing it, and think about buying the goods.
- In the current study we have found that when users decide to purchase a good, they usually refer to the Internet and do research on similar brands, then compare them and select the best ones. The important point is that based on the data analysis in these cases, the cost is usually less considered and it is possibly among the last comparisons.
- Convincing factor of advertising on the Internet is stronger than other media. When Internet users see the advertisement, they will be convinced to purchase the good because they have received the more comprehensive information about the product or service. The problem of this topic is creating the belief in the promotion and for this problem the study and research are needed.
- The main purpose of advertising is sale of goods or services. If the user is confronted with the advertising in the virtual space, based on this fact that the advertisement give information to the user, the user will be encouraged to the goods or services, convinced, and interested in the good or service. However, the best purchase is not done in this environment and this issue has its own different reasons. One of these reasons is probably because the user has not seen the good, seller, and cannot trust. When the user wants to purchase that

good, he is frightened of non-conformity of good, not being sent by the seller and..., so he prefers to purchase that good in person. Therefore, the advertisement can introduce the product or service to the customers and provide comprehensive information for them, but it cannot guarantee to sell a commodity or service.

- Internet user certainly read the advertisement after it is seen, and this point is very important for the advertiser; and the whether the advertising can be remained in the clients or users' mind is something that needs the advertiser's art.

According to the conclusion of descriptive and quantitative data, it can be concluded that the advertisers in Iran have been weak on "exposing the advertisement" and this could be so important. It is important in advertising that the target market are people who are more educated and have less income, so based on the users' educational level and income, the advertising should be designed which is resultful and understandable for the user both in terms of price and perception.

There is not any research which is completely conducted in this case; and according to the library research, which the researcher has conducted, the studies have examined the effect of Web advertisement on purchasing behavior and decision to purchase, and in this regard this research has been so important and been conducted for the first time.

Suggestions

According to the results of research and the importance of researched subject, the following suggestions can be provided for advertisers including the advertising companies, producers, and business owners.

Advertisers are recommended that if the good or service, which they are going to promote, is not known, do not insist on purchasing the good on the Internet if possible because the buyer is willing to touch the goods and cannot trust because he doubt if the good will be sent or not. By this way, the vendors can advertise their product or service by introducing them and encourage the user to purchase; at this stage the user can go to the address, which the seller has presented on the Internet, and purchase personally. This issue has been resolved in the large companies, which all users are familiar with. For example, Iran Khodro Company sells some of its product on the Internet; and since the user is totally familiar with its brand and name, when sees the promotion, he will get the complete knowledge and information, and the promotion encourage the user to purchase the product by its own effectiveness and sells the product on the Internet environment; and the and due to the reasons stated earlier and based on all aspects, user will decide to pay the cost and purchase the product.

As was stated before, because most of Internet users have higher educational level (Bachelor degree and higher), the advertiser should design the promotions based on such this aim.

It is recommended that maximum publicity is designed for a product which its cost is consistent with the users' average income (150,000 to 300,000 Tomans).

Considering that users take the scientific websites less into account, therefore advertising on such these websites has been less effective, but this point is also important that if a good or service is used by scientific environments users, then it can be highly effective.

Since the user reads the advertisement as soon as he sees it, it is recommended that the advertisement should be short preferably and transfer the perception to the user; in addition, the promotion should be designed in a way that when the user read it, it can be retrieved in the future.

REFERENCES

1. Asadollahi, Ali, (1384), "Evaluating the effect of commercial advertising on the consumer behavior in making decision to purchase the home products", MS Thesis, Shahid Beheshti University.
2. Hassanzadeh, Ramezan, (1389), "Statistical methods in the behavioral sciences", Eleventh Edition, Virayesh publication.
3. Hassngholipour, Tahmoures, (1388), "Advertising Management", First Edition, Negahe Danesh publication.
4. Khodadad Hosseini, Seyed Hamid, (1389), "Advertising from theory to practice", First Edition, Horoufieh publication.
5. Abbasi, Abbas; Mohammadian, Moghadaseh, (1386), "The relationship between the consumers' attitudes to the websites and online advertising effectiveness", Iranian Journal of Management Sciences, second year, No. 7.
6. Cutler, Philip; Armstrong, Gary, (1386), "Marketing principles", Dr. Parsaeian, Bahman, eighth edition, Tehran. Jahane Nou (New World) Publication, Vol.2.
7. Mohammadian, Mahmoud, (1388), "Advertising Management", Forth Edition, Horoufieh publication.
8. Wells, William, (1383), "Commercial advertising, practical principles and practices", translated by Sina Ghorbanlou, Mobaleghan publication.

9. Hooman, Heider Ali, (1384), "Structural equation modeling using the software Lisrel", first edition, Samt publication.
10. Belch, & Belch, (2003) "Advertising and promotion: An integrated marketing communication perspective", 6th Ed.
11. Chen, Q. and Wells, W.D.(1999), Attitude toward the site, journal of advertising Research, September/October, pp. 27-37.
12. Collin, P.H (2003) . Dictionary of Marketing. Third Edition. Italy. Bloomsbury.
13. Farbey , AD (2002),"How to produce successful advertising" , 3th ed.
14. Kerin, Hartly (2006), Berkowitz, Redelius. Marketing. Mc Graw Hill Publishing.
15. Kotler, Philip, Keller, Kevin L.,"Marketing management", 12th ed, Prentice Hall, 2006.
16. Lan zhao (2008), "A network equilibrium framework for Internet advertising: Models, qualitative analysis, and algorithms", European Journal of operational research, p 456-472.
17. Strauss, J. and Frost, R. (2001), E-Marketing, NJ, Upper Saddle River: Printic Hall
18. Tellis, J. Gerard (2004),"Effective advertising", Sage publications.
19. Wells, William D (1997), "measuring advertising effectiveness" , Lawrence Erlbaum Associates.
20. www.emeraldinsight.com
21. www.wikipedia.com
22. www.irandoc.ir
23. www.internetworldstats.com