Middle-East Journal of Scientific Research 11 (6): 740-747, 2012
ISSN 1990-9233

Mobile Advertising Acceptance Model: Evaluation of Key Effective Factors in Iran

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Abstract: In this paper, mobile phone capabilities in advertising are introduced and mobile advertising acceptance from the receivers' perspective in Iran is investigated. In the research, the process of accepting mobile advertising is explained too. Based on this process, the key influential factors affecting mobile advertising acceptance in Iran are identified and a relevant novel model is presented. The evaluation of the model is accomplished by applying Structural Equation Modeling. Furthermore, the impact degree for all of the identified factors is assessed. Findings show that perceived usefulness, perceived control, and attitude toward using mobile phone advertising are recognized as the most important factors affecting mobile phone advertising acceptance in Iran. In addition, the effects of various demographic variables on perceived usefulness and perceived control are investigated.

Key words: Mobile Advertising · Technology Acceptance Model (TAM) · Structural Equation modeling · Iranian Mobile Phone Users

INTRODUCTION

One of the major applications of mobile phones is to be used for marketing purposes. Mobile with its special features has become a proper tool for electronic marketing and so far, various types of advertisements using mobile phone are presented. The diversity and range of mobile adverting is spreading [1].

Although the different applications of mobile phone in Iran have not yet spread widely, it's quite high penetration rate in the country, has made it possible to apply mobile phone capabilities and to become an appropriate medium for achieving advertising goals. Sending advertising messages without evaluating their effectiveness not only wouldn't lead to planned purposes, but also might lead to users' irritation; especially regarding mobile phone is a private property [2]. As a result, before choosing to employ mobile advertising, it's vital to identify variables which affect the acceptance of mobile advertising.

Different definitions for mobile advertising have been presented so far. Yuan mentions that:"Mobile advertising can complement Internet and interactive television advertising and make it possible for advertisers to create tailor-made campaigns targeting users according to where are their needs of the moment and the device they are using" [3].

People and organizations are key elements in accepting a novel technology. Technology acceptance, a part of the technology diffusion process, is the decision made by people and organizations whether to accept the new technology or not [4].

Receiving an advertising email, many of web users would delete it promptly without browsing. Also when television commercials start, many would change the channel for a while. While nearly all mobile users read the mobile advertising messages at least once. This implies that attitude toward using mobile advertising is higher than using advertisements mediated by other media. In this study, mobile advertising acceptance in Iran is investigated. Therefore the key variables which affect the acceptance are identified and a novel acceptance model is proposed.

The Concept of Acceptance and its Models: One of the most important acceptance models is the theory of reasoned action (TRA) which is proposed in the mid 1980s [5]. This model depicts the behavior chain (Figure 1).

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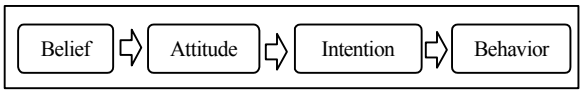

Fig. 1: TRA Model [5]

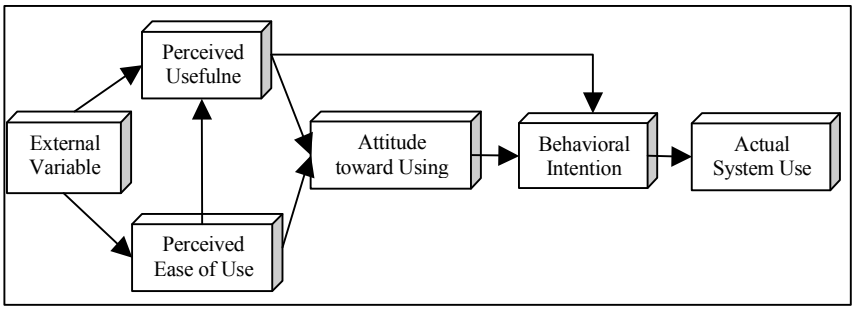

Fig. 2: Technology Acceptance Model [6]

Several years later, the well-known technology acceptance model (TAM) was proposed [6]. TAM introduces two fundamental factors in information technologies that are based on people's behavior in accepting and using technologies: Perceived Usefulness and Perceived Ease of Use. In TAM, perceived usefulness is defined as: "the degree to which a person believes that using a particular system would enhance his or her job performance" [6]. It also defines perceived ease of use as: "the degree to which a person believes that using a particular system would be free of effort" [6].

Over the previous researches, the validity and reliability of TAM comparing other technology acceptance models is approved. TAM investigates personal and voluntary acceptance of the technology [7] (Figure 2).

Since mobile phone is a personal property, the user is free to accept or reject the advertisement. Regarding this subject, TAM which is in accordance with these characteristic of the mobile phone, is applied as the technology acceptance model in the current study.

Attitude toward using mobile advertising is one of the factors important in the success of mobile phone advertising. But it isn't the only one; Persistence in advertisement using is the other key factor. Mobile advertising should be managed in a way that the advertisements' receiver not only does not get irritated, but also is satisfied with receiving advertising messages in the future continuously. In other words, attitude toward using mobile advertising is the user's attitude toward observing advertisements are received via mobile phone. For instance, a user's decision for receiving text messages, Bluetooth advertising files and installing advertising games on the phone might enhance the attitude toward using mobile advertisements in the future [8]. Dickinger *et al*. mention that mobile advertising acceptance includes satisfaction from receiving ads, using ads and the tendency to continuously receive them [9].

Therefore, the process of mobile advertising acceptance consists of two stages: attitude toward using mobile advertising and mobile advertising acceptance.

The proposed Mobile Advertising Acceptance Model in Iran: Advertisement value is one of the advertising performance measuring factors that can be used as a criterion for evaluating user satisfaction about his/her advertising communication with the advertising organization[10]. In fact Advertisement value is a mental evaluation that assesses user attitude toward advertisement usefulness and its value [11].

Based on the previous researches the value of web-based advertisements has a significant effect on the attitude toward web ads and its acceptance [12]. In addition, value is a key factor in mobile application acceptance such as mobile internet [13] and tourists' applications [14].

Previous studies show that advertisement usefulness and its being enjoyable would create value in mobile advertising [10]. On the other hand, using mobile entertaining services could enhance value creation and users' persistency [15].

Sadeghi and Farokhian propose that usefulness is positively correlated with user satisfaction of online banking services in Iran [16].

Haghirian suggests awareness, entertainment and validity, which are some of the value creation factors in mobile advertising, lead to the attitude toward mobile advertising acceptance[10]. Also information value and entertainment value are introduced as significant factor in mobile advertising acceptance [8].

Accordingly, it seems that mobile advertising value has direct effect on the attitude toward using mobile advertising and mobile advertising acceptance. Subsequently, hypotheses one and two are:

H1: *A high mobile advertising value is positively correlated with a positive attitude toward using mobile advertising.*
H2: *A high mobile advertising value is positively correlated with mobile advertising acceptance.*

Since a mobile phone is a personal tool, having the possibility to control mobile advertisements (such as the number of advertising messages received in a period of time) is the mobile phone user's right. It has a significant impact on mobile advertising acceptance [17]. So, the perceived control over mobile advertising that is the degree in which the user believes he/she has control over receiving advertisements, can be assumed as one of the mobile advertising acceptance factors. Confidence is one of the main items affecting the perceived control over mobile advertising [10]. Receiving inappropriate advertising content, security threats due to installing advertising applications or games, concerns about losing important personal data on a mobile phone and threatening the privacy of the user, loosing mobile phone memory, etc., are all of the concerns which highlight the attitude toward using mobile advertising as an effective factor [2].

A study about Iranian users' confidence on Bluetooth advertising shows that more than 75 percent of Iranian recipients of the advertising Bluetooth messages (about 2/3 of all recipients) were suspicious about the received files [18].

The number of mobile mediated advertising messages is one of the factors affecting mobile advertising value [19]. Information and entertainment value of advertising has an inverse correlation with the number of times that ads are sent [11]. And mobile advertisement exposure frequency leads to a decrease in the mobile advertising value and in the attitude toward using mobile advertising [10]. Additionally, the quality of the promoted messages and their effectiveness on the users are decreased by an increase in the number of times that an advertising message is sent and in turn it diminishes users' attention to advertisements [12]. A study about Bluetooth advertising in Iran suggests that sending more than three advertising files via Bluetooth would undermine users' confidence and they subsequently avoid receiving any more advertising files. The study shows that being successful in attracting the users' trust to mobile advertising would lead to accepting more Bluetooth adverting files [18]. Choosing proper time and location for sending mobile ads is another feature of displaying mobile advertisement that affects mobile advertisement perceived control.

A research about purchasing online music shows that perceived usefulness is positively related to perceived value in online music setting [20]; Ease of mobile advertising use is another factor that affects perceived control and enhances mobile advertising value and attitude toward using. So

Furthermore, ease of mobile ads transmission, is an impressive factor in faster dissemination of the message in mobile Viral Marketing [21].

Considering the above points, these Hypotheses are proposed:

H3:*High mobile advertising perceived control is positively correlated with mobile advertising value.*
H4:*High mobile advertising perceived control is positively correlated with a positive attitude toward using mobile advertising.*

Mobile advertising acceptance is a personal and voluntary affair; hence factors like age, gender, education, user experience of using mobile advertisement and etc. could be impressive in users' acceptance.

Young users tend to use commercial advertisements more than elders and they pay more attention to advertisements too. This group of users would be more satisfied after watching advertisements. Additionally, among users that show positive attitude toward using mobile advertising, elder users act more cautiously and Control is more important for them [22].

Previous researches show that as the education level enhances, negative attitude toward mobile advertising increases [23]. In addition, a study on online advertising acceptance suggests that for more educated users that follow work goals on the web, web advertising usefulness is more important, while enjoyment is more significant for those users seeking entertainment on the web [24].

Furthermore, previous studies suggest that in general male users show a more positive attitude toward advertisement than females. Meanwhile female users are more cautious in using mobile advertising and mobile advertising control is more significant for them [18].

User experiences in applying other new or similar technologies and the knowledge that he/she has acquired about the technology systems, give her/him a positive perceive about the technology's ease of use and usefulness [25].

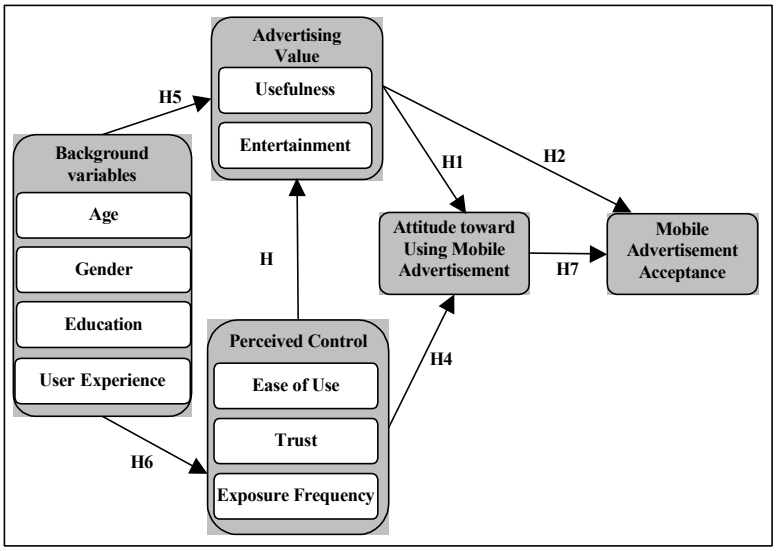

Fig. 3: Proposed model for mobile advertising acceptance in Iran

Therefore, the following hypotheses are proposed:

H5:*Background variables are significantly correlated with mobile advertising value.*
H6:*Background variables are significantly correlated with perceived control.*

Since TAM is considered in this research as the suggested base model, hypothesis 7 concerning the correlation between attitude toward using and acceptance, is proposed here after a generalization of TAM concepts in mobile advertising:

H7:*High positive attitude toward using mobile advertising is positively correlated with mobile advertising acceptance.*

The hypotheses expressed above have shaped the proposed model of mobile advertising acceptance in Iran which is presented in Figure No.3.

MATERIALS AND METHODS

In this research, survey was applied as the research method and a questionnaire was designed as the tool for information gathering about the mobile advertisement users. In the questionnaire with Close-ended Questions, 5-point Likert scale with the following items has been used:

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

We conducted our survey using the in-person delivery technique and electronic e-questionnaires.

In order to assessing the validity of the model, we have used the views of 20 elites. In choosing elites, we have tried to take advantage of specialists who are expert in information technologies, marketing and advertising and have enough knowledge about these fields. The results related to the investigating data extracted from the elites' views confirm the accuracy of planning for the mobile advertising acceptance process.

In the elites' point of view, age is the most important factor that affects mobile advertisement value and perceived control but there wasn't any consensus among elites about the correlation between gender and mobile advertisement value or between gender and perceived control.

In this research, the Cochran theorem is applied to determine the size of the representative sample for analyzing the model in Iran. Based on the Cochran theorem, 227 respondents were determined as the sample size. In the end of the information gathering, overall 246 questionnaires were gathered. After a primary investigation and assessing the answers, 9 responses were recognized as invalid and therefore in the final 237 valid responses were analyzed used.

To assess the questionnaire reliability in this research, Cronbach's Alpha Coefficient was applied. Using SPSS Software version 18 the amount of the

Coefficient for the model was estimated 0.808. Cronbach's Alpha Coefficient states that an amount more than 0.70 implies that the test is reliable, so the mentioned amount implies the high reliability of the model. We have applied two statistical software's namely SPSS and LISREL to analyze the gathered data.

Data Analysis: Demographic characteristics of the research Respondents show that about 60 percent of all the Respondents are male and the rest of them (40%) are female. More than half (57%) of all 237 surveyed men and women are students, about 20 percent don't have a university degree and in total 22 percent have at least a bachelor's degree (12% bachelors and 10% masters and higher). The respondents' age is between 14 to 64 years old, most of them are under 25 with 33 percent under 20 and 38 percent are between 20 to 25. About 19 percent of respondents are between 25 to 30 years old and the remaining 10 percent are more than 30 years old.

Hypotheses Testing: Regarding the nature of the research Hypotheses, they are categorized into two groups:

Co-relational Hypotheses: Hypotheses number 5 and 6 are categorized in this group because they represent the impact of demographic variables on the mobile advertising value and the perceived control. Since the variables are Categorical Variables, we have used Spearman's rank Correlation Coefficient for the analysis using SPSS software- version 18.

Causal Hypotheses: hypotheses number 1, 2, 3, 4, and 7 are categorized in this group in order to assess Causal relations between the variables. These hypotheses form a Structural Equation. For the assessment, Structural Equation Modeling is applied. Hence LISREL8.53 is used. The results of the statistical tests for both groups are explained hereafter:

Table 1: Correlation Coefficient between Background Variables and Mobile Advertising Usefulness

	Usefulness		Entertainment	
Correlation Coefficient	Information Value	Information Applicability	Entertaining Content	Favorite Content
Gender	.165(*)	.227(**)	.145(*)	.075
Education	.050	.139(*)	-.016	.081
Age	.211(**)	.179(**)	.035	.160(*)
Experience	.084	.094	.087	.122

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level

The Results of the Co-Relational Hypotheses Tests

Hypothesis 5 Test: Table No.1 shows the Correlation Coefficient between demographic variables and mobile advertising value. The Coefficient implies that males valorize mobile advertising more than females. This is specially seen about the information Applicability aspect that shows users' interest in receiving advertisements with useful information (Coefficient 0.227). This result is accordant with Dedeoglu's research that suggests females and males have a different perception about mobile phone and its applications [23].

The positive correlation between education and Information Applicability (The Correlation Coefficient rate equals 0.139) is considerable. The Coefficient implies that people with higher education level have more interest in receiving advertisements with information value. Ozhan confirms in his research that negative attitude toward mobile advertising increases when education level increases and users (with a higher education level) attach less value to mobile advertising and therefore are interested in receiving advertisements with more information value [23]. The above Correlation Coefficient rates show significant correlation between age and factors that create mobile advertising value. The rates suggest elder users are more interested in information with more

Table 2: Correlation Coefficients between Background Variables and Mobile Advertising Perceived Control

	Trusting Mobile Advertising					
Correlation Coefficient	Trusting the Content	Trusting the Sender	Trusting the Safety	Trusting the Privacy	Exposure Frequency	Ease of Use
Gender	-.102	.062	.012	-.105	.015	.172(**)
Education	.195(**)	.061	.030	.002	-.035	.072
Age	.221(**)	.021	.006	.098	.059	.268(**)
Experience	.031	.045	.095	-.030	.163(*)	.107

** Correlation is significant at the 0.01 level.* Correlation is significant at the 0.05 level

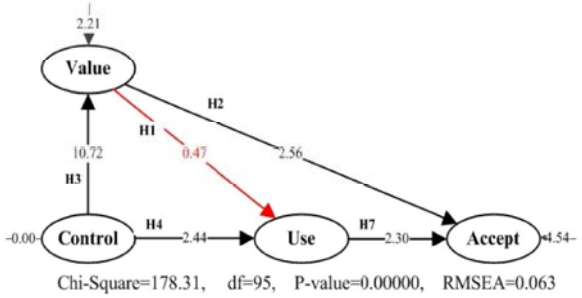

Fig. 4: T-Value Result

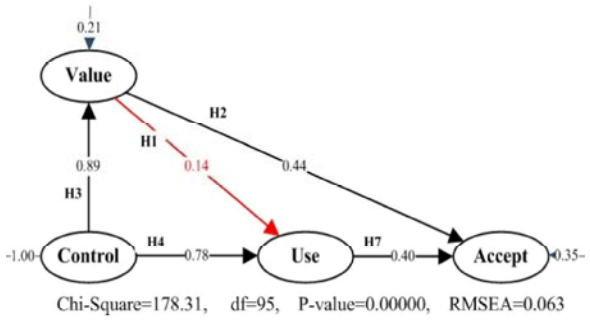

Fig. 5: Standard Coefficients Values

information value than younger users. This result is accordant with Hassanzadeh's research about SMS addiction that shows there is significant difference between SMS addiction in students of university with different ages [26]. As table no.1 shows there isn't a significant correlation between user experience and value.

Hypothesis 6 Test: Table No.2 shows the correlation Coefficient between demographic variables and mobile advertising perceived control. This table suggests that regardless of the mobile advertising ease of use aspect, there isn't any significant correlation between gender and perceived control. As mentioned before, there isn't any consensus among elites about the correlation between these variables. But the rates show the correlation between gender and ease of use is significant and males feel more comfortable to use mobile advertising in comparison to females. Furthermore, another research that investigates Iranian users' exposure to Bluetooth advertising suggests that females are more cautious in using mobile advertising and that mobile advertising control is more important for them [18]. Also, the rates show that as the education level increases, users' cognition about media and mobile technology would increase too. Based on the findings, more educated users may have more trust on mobile advertising.

Table 3: Variables Impact Degrees on the Attitude Toward Using and Acceptance

Variables	Attitude toward Using Mobile Advertising	Mobile Advertising Acceptance
Value	0.14	0.44
Control	0.78	(0.44*0.89+0.4*0.78) = 0.70
Use	-----	0.40

The table No.2 shows that Iranian elder users have more trust on mobile advertising. Also the results suggest that mobile advertising ease of use is more important for elders than youngsters.

The Result of Casual Hypotheses Tests: As explained, Linear Structural Relationships was applied for hypotheses number 1, 2, 3, 4 and 7. After constructing and implementing the model in LISREL 8.53, correlations between the models variables was investigated and analyzed. T-Value test is used on the hypotheses in the structural Equation model. If the obtained coefficient for a hypothesis is larger than 2 or smaller than -2, that hypothesis is confirmed. Figure No.4 shows the T test and coefficients for the hypotheses. Based on the figure, the coefficients of hypotheses 2, 3, 4 and 7 are larger than 2 therefore they are all confirmed but hypothesis number 1 is not confirmed (Figure 4).

In order to assess the variables impact degree on mobile advertising acceptance, standard coefficients are used in the LISREL8.53. Figure No.5 shows the coefficients.

Each variable's impact degree in the causal relations, is linearly calculated; therefore the impact degree is determined by the summation of the multiplications of coefficients in the different paths linking an impacting variable to an impacted one [27]. Table No.3 shows the impact degrees of the variables in the model, on the attitude toward using mobile advertising and mobile advertising acceptance.

As is observed clearly in table No.3, mobile advertising perceived control has the most impact on mobile advertising (0.70). Also the variable has great impact on the attitude toward using mobile advertising (0.78). This variables impact on mobile advertising value is significant too (0.89). Therefore, Perceived control has the greatest role in mobile advertising amongst Iranian users. After that, respectively, mobile advertising's value (0.44) and attitude toward using mobile advertising (0.40) are other variables that affect mobile advertising acceptance in Iran.

DISCUSSION AND CONCLUSION

This research shows that while attitude toward using mobile advertising is higher than other media, it is not enough per se because mobile advertising acceptance is a subject beyond just watching the received advertisements. It implies being gratified from mobile advertising and being interested in receiving advertisements continuously in the future.

Perceived usefulness, Perceived control and attitude toward using mobile advertising are the main variables affecting mobile advertising acceptance among Iranian users.

Demographic variables (age, gender, education level, and mobile advertising use experience) are significant factors affecting mobile advertising perceived value and perceived control. Among these factors, the gender has the most effect on the mobile advertising perceived value and age has the most effect on the perceived control.

REFERENCES

1. Gerami, M., 2010. Analysis of ICT Penetration in Iran and Middle East, in International Conference on Computer and Network Technology (ICCNT), bangkok.
2. Merisavo, M., 2008. An Empirical Study of the Drivers of Consumer Acceptance of Mobile Advertising, Helsinki: Helsinki School of Economics. M.Sc thesis.
3. Yuan, S.T. and E. Tsao, 2003. A recommendation mechanism for contextualized mobile advertising, Expert Systems with Applications, 24: 399-414.
4. Khosrow-Pour, M., 2005. Encyclopedia of information science and technolog, Hershey: Idea Group Reference.
5. Ajzen, I. and M. Fishbein, 1980. Understanding attitude and predicting social behavior, Englewood Cliffs: prentice-Hall.
6. Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology, MZs Quarterly, 13(3): 319-340.
7. Kieran, M., E. Peacock and W.W. Chin, 2001. Extending the technology acceptance model: the influence of perceived user resources, ACM SIGMIS Database, 32(3): 86-112.
8. Pura, M., 2005. Linking Perceived Value and Loyalty in Location-based Mobile Services, Managing Service Quality, 15(6): 509-538.
9. Scharl, A., A. Dickinger and J. Murphy, 2005. Diffusion and success factors of mobile Marketing, Electronic Commerce Research and Applications, 4(2): 159-173.
10. Haghirian, P., 2005. Consumer Attitude toward Advertising via Mobile Devices, An Emprical Investigation among Austrian Users, Vienna: Vienna University of Economics and Business Administration. M.Sc thesis.
11. Ducoffe, R., 1995. How Consumers Assess the Value of Advertising, Journal of Current Issues and Research in Advertisin, 17(1): 1-18.
12. Ducoffe, R.H., 1996. Advertising Value and Advertising on the Web, Journal of Advertising Research, 36(5): 21-35.
13. Kim, H.W., 2007. Value-based Adoption of Mobile Internet: An empirical investigation, Decision Support Systems, pp: 111-126.
14. Dae-Young, K., 2005. A Model of Tourist Acceptance for Mobile Technolog, in 11th annual conference of Asia Pacific Tourism Association, Goyang, S. Korea.
15. Dickinger, A. and P. Haghirian, 2004. An Investigation and Conceptual Model of SMS Marketing, 37th International Conference on System Sciences, Hawaii.
16. Sadeghi, T. and S. Farokhian, 2011. The Role of Behavioral Adoption Theories in Online Banking Services, Middle-East Journal of Scientific Research (MEJSR), 7(3): 374-380.
17. Leppaniemi, M. and H. Karjaluoto, 2005. Factors Influencing Consumers' Willingness to Accept Mobile Advertising: A Conceptual Model, International Journal of Mobile Communications, 3: 197-213.
18. Zare, M., M. Rabiei and A. Rahbari, 2007. Trust Evaluation of Users in Receiving Local Ads via Bluetooth, in 2th Internationan Conference of Marketing Management, Tehran.
19. Haghirian, P. and A. Dickinger, 2004. Identifying Success Factors of Mobile Marketing, in ACR Asia-Pacific 2004, Seoul.
20. Mohd Suki, N., 2011. Modelling Early Adopters' Purchase Intention Towards Online Music, Middle-East Journal of Scientific Research (MEJSR), 7(6): 827-836.
21. Pousttchi, K. and D.G. Wiedemann, 2007. Success Factors in Mobile Viral Marketing: A Multi-Case Study Approach, in Proceedings ofthe 6th International Conference on Mobile Business (ICMB 2007), Toronto.Canada.

22. Kaasinen, E., 2003. User Needs for Location-aware Mobile Services, Personal and Ubiquitous Computing, 7: 70-79.
23. Dedeoglu, O., 2004. The Symbolic Use of Mobile Technology among Turkish Consumer, Journal of Euro-Marketing, 2(3): 143-162.
24. Moon, J.W. and Y.G. Kim, 2001. Extending the TAM for a World Wide Web context, Information & Management, 38: 217-230.
25. Lucus, H.C. and V. Spitler, 1999. Technology use and performance a field study of broker workstations, Decision Sciences, 30: 291-311.
26. Hassanzadeh, R. and A. Rezaei, 2011. Effect of Sex, Course and Age on SMS Addiction in Students, Middle-East Journal of Scientific Research(MEJSR), 10(5): 619-625.
27. Byrne, B., 1998. Structural equation modeling with LISREL, PRELIS and SIMPLIS: basic concepts, applications, and programming, 1 ed., Psychology Press.