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The Effect of Three-Dimensional Advertising Technology on Internet Shopping Trust and Intention

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Abstract

The aim of this paper is to determine the effect of three-dimensional advertising on internet shopping trust and intention. Considering the purpose of the present study, it can be defined as a practical and developmental and in respect of research design, it is considered as a correlation research. Convenience sampling has been used as the sampling strategy. The sample contains 60 people who are divided into two 30-member homogenous groups using random sampling. Sample groups contain people who have tried online shopping at least once. The first sample group has been examined providing three-dimensional (3D) advertisements and the second sample group has been examined supplying two-dimensional (2D) advertisements. A five-point Likert scales questionnaire has been chosen for data gathering. The gathered data have been analyzed through an equality of two-means test. Based on the findings, it can be concluded that all mean scores derived from three-dimensional advertisements are higher than mean scores from two-dimensional advertisements. On the other hand, through checking variables relationships, it is apparent that the ease of use variable does not affect entertaining and attitude in the same way about three and two-dimensional advertisements. Moreover, among the cases providing indistinguishable, positive and meaningful results for both two and three-dimensional models, a different amount of variables' impact on each other is observable.

Keywords: Attitude, Intention, Online Shopping, Sensory Marketing, Three-Dimensional Images, Trust, Two-Dimensional Images

1. Introduction

Nowadays, among common marketing instructions, electronic commerce, e-marketing, and online marketing are the most commonly used ones in different related books, articles, and studies. As in[1] is maintained another Copernican revolution is occurring. Company directors used to consider their firms as the core of trading procedure which all producers and costumers cared about, but these days internet is significantly transforming the state. Today, consumer is paid attention as the heart of trading world. Taking consumer behavior within shopping procedure and the way of processing data into consideration, beside focusing on confrontation as the first step of data processing, if confrontation is assumed as consumer sensory organs stimulus in order to reduce the risk and increase the trust and subsequently, increase shopping possibility, the point is that in online territory where consumers are deprived of some senses such as taste, smell, and touch and some other senses like sight and hearing play the crucial role in data processing procedure, can providing product's images in a different way which offer more information affect trust and eventually purchase?

Hence, the objective of this research is to compare 2D and 3D advertisements to investigate if 3D ads supply more information about the products and therefore increase trust which leads to online purchase. As another point, the word "advertisement" is used to determine the

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effect of data provided by 3D ads to persuade consumers to purchase, in spite of lack of physical checking. In this regard, first literature of research will be reviewed, then research method will be described and finally results will be provided.

2. Literature Review

2.1 Sensory Marketing

Data processing is a procedure in which customers, while facing the products pay attention to them, understand them, keep them for future utilizations. If within the selecting procedure enough information is not provided or the supplied information is not paid attention enough or understood, product and given information scanning process will not be completed and led to shopping intention. As the matter of fact, organization try to provide necessary information through advertising in order the persuade them to buy. Consumers receive the information through sight, sound, scent, touch, and taste and then process them. As in[2] maintains in their research book "Sensory marketing has become a synthesis of what contemporary society demands from a firm and what a firm can do to create sensory experiences with the help of the five human senses".

The primary sensory marketing frame is based on the assumption of accessing to five human sense rather than mass marketing and relationship marketing. In this regard, sensory marketing is not about effecting a transaction with customers through traditional advertising, as mass marketing emphasizes. Nor it is about persuading customers to start or maintain a relationship, as relationship marketing emphasizes, even if it is possible to have a personal relationship with a brand[3]. Instead, sensory marketing is about treating customers through sensorial strategies to accomplish a supreme sensory experience.

2.2 Five Human Senses

In[4] is claimed marketing planners will use spatial aesthetics as consciously and skillfully as they now use price, advertising, personal selling, public relation and other tools of marketing. In[4] investigated work place and pointed out that "We shall use the term atmospherics to describe the conscious designing of space to create effects in buyers. More specifically, atmospherics is the effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase proability".

Work place has been understood through sense. In[4] it is claimed that the main sensory channels for atmosphere are sight, sound, scent, and touch:

- The main visual dimensions of an atmosphere are: color, brightness, size and shape.
- The main aural dimensions of an atmosphere are: volume, pitch.
- The main olfactory dimensions of an atmosphere are: scent, freshness.
- The main tactile dimensions of an atmosphere are: softness, smoothness, temperature.
- The fifth sense, taste, does not apply directly to atmosphere. An atmosphere is seen, heard, smelled and felt, but not tasted. At the same time, certain artifacts in an atmosphere can activate remembered tastes.

2.3 Technology and Online Shopping

Technology semantically means devices, machines, materials and using them to solve the human being problems. Technology has a great impact on all human being aspects of life and indubitably, one of the affected areas by technology is internet and online environment. The web is not only a simulation of a real-world environment but also an alternative to a real-world environment. It also changes the ways to companies interacting with consumers[5].

In spite of present limitations, internet environment has become a great opportunity for different businesses. Websites and shops diversity leads to kind of unreliability for customers. Lack of vendors' encounter, not being beneficial by stores' stimulants, not being able to use all five senses to investigate and analyze the product strengthen the customers feeling of hazard.

3. Research Theoretical Framework

3.1 Sensory Enabling Technology (SET)

In[6] view visual sensory enabling technologies can deliver product information that is similar to the information obtained from direct product examination, thus reducing product risk. As a result, some online retailers are turning to sensory experience enabling technologies that provide sensory input in the online shopping environment as a proxy for the sensory experiences encountered in direct product examination. In addition to reducing perceived

risk, the interactivity and customer involvement created by SET can enhance the entertainment value of the online shopping experience. Hedonic motivations exert powerful influences on shopping behavior in both traditional and online shopping environments[7].

3.2 Technology Acceptance Model (TAM)

In[6] has used TAM to improve their research. TAM enjoys wide support in the information system literature as a tool for investigating and predicting user acceptance of information technology[8–13]. Based on TRA, TAM focuses on the role of ease of use and usefulness in predicting attitudes toward using a new technology[9].

In[6] the effect of SET on risk reduction and making the internet environment more attractive for customers has been studied. They have addressed SET about clothes online shopping in three different steps. In one step the usage of 2D images in large sizes which were applicable and effective, in another step the usage of 3D images which were applicable an entertaining and in last step using virtual clothes fitting which was extremely entertaining and enjoyable were analyzed. Their research findings have shown that each of above mentioned methods, sometime through risk reduction, sometime through entertaining growth, has effected online shopping exclusively.

In[14] the original TAM to suit a web site context is adapted. In the e-TAM framework, the concepts of perceived relative usefulness and perceived relative enjoyment are identified as strong influential variables to usage. Whereas perceived usefulness and perceived enjoyment are strong indicators of web site revisit intentions, perceived ease of use indirectly affects Web site revisit intentions by influencing the perceived relative usefulness and perceived relative enjoyment[14].

4. Research Implication and Expressions Definition

Usefulness: Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her task-related performance[9]. In[6] some indexes such as shopping effectiveness, fruitful on useful measurement of a shopping method technology are considered..

Ease of Use: Ease of use is "the degree to which a person believes that using a particular system would be free of effort[9]". In[6] some indexes such as transparence, comprehensibility, and the amount of needed mental effects are taken into consideration in measuring if a technology is easy to use.

Entertaining: In[15] point of view, the satisfaction due to experiencing something enjoyable (without considering the operation results) leads to intention. As in[6] believes, some indexes like being exciting, enjoyable, and interesting can affect this notion.

Attitude: Based on in[16] attitude is the level of passivity or agreement or disagreement toward a motive.

Trust: In[17] it is maintained that trust is a psychological situation continuing tendency toward vulnerability acceptance based on positive expectation from another person's behaviors and preferences. In[18] some indexes like hazard, unreliability, and vulnerability efficient on measurement are considered.

Shopping Intention: According to in[19] shopping intention can be considered as one of the consumers' cognitive components which illustrate someone's manner to by a brand or specific product. He takes inferred data from the product by the customers an index to measure shopping intention.

5. Research Hypotheses

With regard to the issues mentioned in theoretical framework, present study aims to examine the following assumption:

H1: Ease of use of 3D images has a positive and meaningful impact on their usefulness.

H2: Ease of use of 3D images has a positive and meaningful impact on their state of being entertaining.

H3: Ease of use of 3D images has a positive and meaningful impact on the attitude toward them.

H4: Usefulness of 3D images has a positive and meaningful impact on the attitude toward using them.

H5: Being entertaining of 3D images has a positive and meaningful impact on the attitude toward using them.

H6: The attitude toward using of 3D images has a positive and meaningful impact on trust on product.

H7: Trust on product due to using 3D images has a positive and meaningful impact on shopping intention.

H8: Ease of use of 2D images has a positive and meaningful impact on their usefulness.

H9: Ease of use of 2D images has a positive and meaningful impact on their state of being entertaining.

H10: Ease of use of 2D images has a positive and meaningful impact on the attitude toward them.

H11: Usefulness of 2D images has a positive and meaningful impact on the attitude toward using them.

H12: Being entertaining of 2D images has a positive and meaningful impact on the attitude toward using them.

H13: The attitude toward using of 2D images has a positive and meaningful impact on trust on product.

H14: Trust on product due to using 2D images has a positive and meaningful impact on shopping intention.

H15: There is no significant difference between 3D images usefulness and 2D images.

H16: There is no significant difference between 3D images ease of use and 2D images.

H17: There is no significant difference between 3D images state of being entertaining and 2D images.

H18: There is no significant difference between the attitude toward using 3D images and the attitude toward using 2D images.

H19: There is no significant difference between trust on product due to using 3D images and trust due to using 2D images.

H20: There is no significant difference between shopping intention due to using 3D images and shopping intention due to using 2D images.

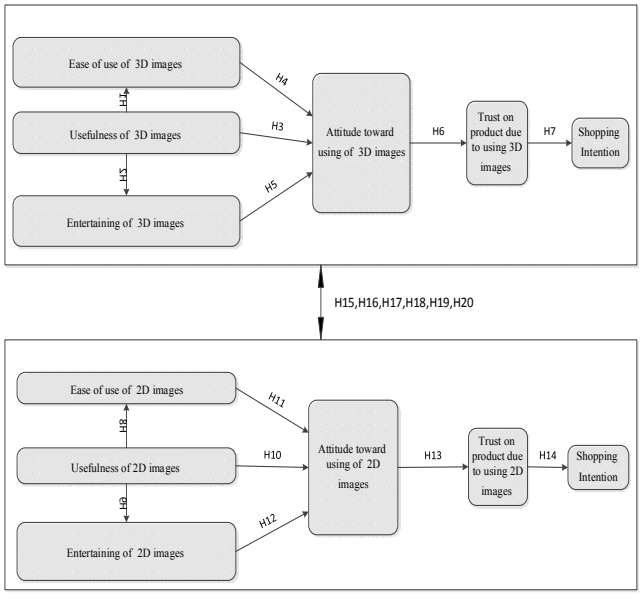

Figure 1. The research conceptual model derived from[6].

6. Methodology

6.1 Method

In respect of research purpose, present study is considered as an applicable and development one and in terms of research design it is a correlation research. An ordinal measure is used for data measurement, collected by a questionnaire. To do the research, two homogenous focus groups are randomly selected. Moreover, this study is conducted in a specific section of time. Each conceptual model element is questioned using a set of five-point Likert scale closed questions.

Based on the research nature, the focus group is a set of people who have tried online shopping at least once before. Since it is a semi experimental research, it was not possible to examine so many subjects, so convenience sampling was selected. Each focus group contains 30 subjects which has been made homogenous using random sampling. To arrange the focus groups, researcher has made a list of 100 accessible subjects to select 60 of them who have bought a product online at least once before and then divided them into 30 subjected randomly.

Two groups were asked to fill in a questionnaire about the same product, one group after watching some 3D images and another group after watching some 2D images. To minimize the effect of intervening variables, two groups have been arranged homogenously and only distinction among two groups is the matter of providing 3D or 2D images, so it was expected to get the most reliable result of the effect of supplying 3D and 2D images.

In the present study a service has been considered as the product and to obtain the result, two hotel websites (http://www.abbasihotel.ir and www.telecabinramsar.com) were chosen among many service providers considering the images resolution. The Equality of Two Means Test is used to compare two focus groups means from H15 to H20 using SPSS20 software and to test the model fitting and other hypotheses Smart PLS software has been used.

7. Reliability and Validity

Content and construct validity are used to test the reliability and validity of the questionnaire. Some experts have been asked to evaluate the content validity of the primary questionnaire. Convergent and divergent validity were used to compute the construct validity.

Cronbach alpha coefficient has been used to test the questionnaire reliability. Based on the preliminary study, 2D images questionnaire's Cronbach alpha is 87.9% and 3D images questionnaire's is 88.1% which prove the questionnaires' high reliability.

As Cronbach is a kind of traditional measure to determine the instruments' reliability, composite reliability (CR) is presented by PLS as a more modern one. As in[20] based on[21] believe CR above 0.7 indicate a proper internal consistency for instruments and according to[22] CR below 0.6 illustrates lack of reliability for an instrument.

Average Variance Extracted (AVE) was used to check convergent validity and Fornel and Larker matrix, based on[23], was used to check divergent validity. In[20] considers above 0.4 AVE as an acceptable convergent validity. When the inserted numbers in the main diameter, AVEs' square for each variable, are more than their underside values, correlation coefficient between variables, Fornel and Larker can be the divergent validity acceptability indicator.

Based on Table 1, high reliability for 2D and 3D models can be concluded. Moreover, AVE measure indicates a proper convergent validity for these models.

Table 2 indicates 2D and 3D models' high divergent validity.

8. Findings

Structural equation model outputs obtained from Table 3 indicate that all hypotheses except than H9 and H10 considering t above 1.96 and confidence level above 95% are accepted. On the other hand, Table 4 presents mean comparing of two sample groups and H15 to H20 checking. As this table shows, Levene test Sig. is less than meaningfulness level of 5% for H15 to H19 and variance equality assumption will be rejected. Furthermore, the Sig. of mean equality test assuming variances inequality is less than meaningfulness level of 5%; consequently, a considerable difference between 2D and 3D images about all variables (usefulness, ease of use, entertaining, attitude, and trust) is approved. The last hypothesis, assuming the variances equality, is accepted; as a result, there is a significant difference between shopping intention due to using 3D images and shopping intention due to using 2D images. Additionally, as in each six mean compare cases, upper and lower limit is positive, all first sample variable means (3D images) are greater than second sample's (2D images).

9. Discussion and Conclusion

9.1 Research Results

- Based on the obtained results it can be concluded that 3D images ease of use affects their usefulness positively and meaningfully. The research findings are congruent with[9] based on TAM and his findings about the effect of technology ease of use on its usefulness, in[24] findings about customers' tendencies prediction in online shopping, in[25] findings about user online shopping admission prediction, and in[26] findings about electronic commerce admission assessment. The present findings are also in agreement with[6] findings about sensory technology implementation for clothes online shopping. They have conducted a research about 3D and 2D images and tried to investigate their effect on clothes online shopping and the present study findings have the effect of 3D and 2D images ease of use on their usefulness in online shopping, about different products (clothes in[6] research) to service shopping (hotel reservation in the present study) in common with their research.

Table 1. Cronbach alpha coefficients, CR and AVE for 2D and 3D models

Variables	Cronbach Alpha (2D)	CR (2D)	AVE (2D)	Cronbach Alpha (3D)	CR (3D)	AVE (3D)
Usefulness	0.87	0.912	0.725	0.62	0.769	0.464
Ease of Use	0.80	0.876	0.703	0.33	0.662	0.421
Entertaining	0.85	0.900	0.692	0.84	0.893	0.677
Attitude	0.81	0.889	0.729	0.73	0.846	0.647
Trust on Product	0.86	0.936	0.880	0.66	0.847	0.735
Shopping Intention	0.81	0.914	0.841	0.77	0.897	0.813

Table 2. Fornel and Larker matrix to measure 2D and 3D questionnaire divergent validity

Variables	Attitude	Entertaining	Ease of Use	Shopping Intention	Trust on Product	Usefulness
Attitude (2D)	0.854					
Entertaining (2D)	0.563	0.832				
Ease of Use (2D)	0.474	0.045	0.839			
Shopping Intention (2D)	0.587	0.349	0.487	0.917		
Trust on Product (2D)	0.483	0.256	0.259	0.629	0.938	
Usefulness (2D)	0.678	0.388	0.547	0.663	0.434	0.851
Attitude (3D)	0.804					
Entertaining (3D)	0.582	0.649				
Ease of Use (3D)	0.625	0.517	0.823			
Shopping Intention(3D)	0.422	0.239	0.482	0.901		
Trust on Product (3D)	0.421	0.264	0.452	0.914	0.857	
Usefulness (3D)	0.627	0.420	0.479	0.595	0.645	0.681

Table 3. T meaningful coefficients and accessing H1 to H14 results

	Hypothesis	Path coefficient	T statistic	Test result
H1	The effect of 3D images ease of use on their usefulness	0.420	3.363	accepted
H2	The effect of 3D images ease of use on their entertaining	0.517	4.350	accepted
H3	The effect of 3D images ease of use on the attitude toward using them	0.268	2.011	accepted
H4	The effect of 3D images usefulness on the attitude toward using them	0.365	2.681	accepted
H5	The effect of 3D images entertaining on the attitude toward using them	0.311	2.120	accepted
H6	The effect of the attitude toward using 3D images on trust product	0.421	3.558	accepted
H7	The effect of the trust on product toward using 3D images on shopping intention	0.514	4.079	accepted
H8	The effect of 2D images ease of use on their usefulness	0.547	4.164	accepted
H9	The effect of 2D images ease of use on their entertaining	0.045	0.311	rejected
H10	The effect of 2D images ease of use on the attitude toward using them	0.235	1.581	rejected
H11	The effect of 2D images usefulness on the attitude toward using them	0.406	2.220	accepted
H12	The effect of 2D images entertaining on the attitude toward using them	0.367	2.404	accepted
H13	The effect of the attitude toward using 2D images on trust product	0.484	3.407	accepted
H14	The effect of the trust on product toward using 2D images on shopping intention	0.629	6.612	accepted

- 3D image ease of use has a positive and meaningful effect on their state of being entertaining. In[9] primary TAM entertaining has not been mentioned as an effective variable but whereas the present study aim is achieving shopping intention, this variable is considered. In[14] has introduced enjoyment, entertainment, and usefulness perception as effective variables on using technology and emphasized on indirect effect of using technology on being entertaining which is in agreement with the present study findings. In[6] the effect of entertaining variable on clothes online shopping has also been mentioned. So, their research and the present study have some findings in common. Accordingly, it can be concluded that about all online

Table 4. t-test to compare two samples' means

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Means Difference	Std. Error Difference	%95 Confidence Interval of the Difference	
									Lower	Upper
usefulness	Equal variances assumed	10.729	0.002	4.157	58	0.000	0.75833	0.18242	0.39317	1.12349
	Equal variances not assumed			4.157	42.764	0.000	0.75833	0.18242	0.39038	1.12628
Ease of use	Equal variances assumed	19.105	0.000	3.566	58	0.001	0.67778	0.19006	0.29734	1.05822
	Equal variances not assumed			3.566	40.345	0.001	0.67778	0.19006	0.29376	1.06180
entertaining	Equal variances assumed	5.035	0.029	3.131	58	0.003	0.59167	0.18895	0.21344	0.96989
	Equal variances not assumed			3.131	52.028	0.003	0.59167	0.18895	0.21252	0.97082
attitude	Equal variances assumed	50307	0.025	4.077	58	0.000	0.72222	0.17717	0.36759	0.7686
	Equal variances not assumed			4.077	46.055	0.000	0.72222	0.17717	0.36562	1.07883
trust	Equal variances assumed	5.655	0.021	3.635	58	0.001	0.85000	0.23385	0.38191	1.31809
	Equal variances not assumed			3.635	54.967	0.001	0.85000	0.23385	0.38136	1.31864
Shopping intention	Equal variances assumed	1.698	0.198	3.789	58	0.000	0.76667	0.20233	0.36165	1.17168
	Equal variances not assumed			3.789	52.205	0.000	0.76667	0.20233	0.36069	1.17264

products including goods and services, 3D images ease of use has a positive impact on being entertaining. These findings are not in agreement with the present findings about positive and meaningful effect of 2D images ease of use on the state of being entertaining. It can be inferred that 3D images ease of use unlike 2D images, appears this technology more entertaining for consumers. In other words, if entertaining way of checking and buying products can be considered as one of the encouraging factors to buy them, according to above mentioned findings 3D images state of being entertaining can be emphasized.

- 3D images ease of use affects the attitude toward using them positively and meaningfully. It is congruent with in[9,24,25] findings. To prove it, in[6] findings about the positive effect of 3D images ease of use on the attitude toward using them for clothes online shopping can be mentioned. Positive and meaningful effect of 3D images ease of use on usefulness and entertaining directly and indirectly, based on prior hypothesis findings, can be considered as a sign of this technology significance and its importance in forming attitude toward using them. Through reviewing attitude definition as the level of passivity or agreement or disagreement toward a motive and adjustment to the present assumption, 3D images ease of use in products checking in online shopping can be taken as the source of positive feeling toward this sensory motive. On the other hand, present findings indicate absence of positive and meaningful effect of 2D images ease of use on the attitude toward using them. Although the present findings are in agreement with in[6] findings

about 2D images, in the present writer point of view 2D images ease of use is one of their advantages and as a positive point can affect the attitude toward using them. The writer believes the absence of effect of 2D images ease of use on attitude is probably because of user preference about checking images rather than ease of use; because the user ultimate goal is consumption and device ease of use cannot affect attitude on its own and cannot create a positive feeling in user by itself.

- 3D images usefulness has a positive effect on the attitude toward using this pictorial technology. It is in agreement with obtained results about 2D images. In[9,24,25] it has been achieved earlier; therefore, considering all findings, technology usefulness significance, with regard to its impact on user attitude, can be emphasized. On the other hand, in[6] has known 2D and 3D images useful to scan clothes and assessed their impact on user positive attitude keeping attitude definition in mind, positive effect of 2D and 3D images usefulness on creating user accordant feeling and considering as a significant motive can be concluded.
- 3D images state of being entertaining affects the attitude toward using them positively and meaningfully on the one hand, 2D images state of being entertaining has the same effect on attitude toward using them. In[27,28] the significance of usefulness and entertaining in is formerly mentioned. In[28] it is maintained that some purchases can happen with the aim of pleasure; in these cases motivational aspect of entertaining can be highlighted. Considering this inference and awareness of similar finding out of in[6], 2D and 3D images state of being entertaining can be known as an effective motivational motive on user attitude. Taking the present study findings into consideration, based on hotel reviewing using 2D and 3D images, effectiveness of 2D and 3D images state of being entertaining even about interesting products and using them to increase pleasant feeling during checking products can be concluded. As a matter of fact, the writer believes that user expands the pleasure obtained from checking product to real joy of using product which affects the attitude.
- Attitude toward using 2D and 3D images has a positive and meaningful effect on trust on product. In[9] has examined the effect of attitude on behavioral tendencies in hid technology admission model and maintained it effective. In[24] has also scanned users tendencies based on TAM and has found a positive and meaningful effect. In the present study, trust on product has been examined as an aspect of user behavioral tendencies which can indicate the person's liking toward accepting vulnerability that is in agreement with prior findings. In this way it can be inferred that attitude obtained from scanning products using 2D and 3D images affects trust on product positively. If lack of product scanning during online shopping can be considered as a risky factor, it can be said that both 2D and 3D images, through affecting attitude positively, enable users to scan products more carefully, so it leads to consumer trust on product.
- Trust on product due to 2D and 3D images using has a positive and meaningful effect on shopping intention. The finding is in agreement with[29] findings about the effect of trust on shopping intention and in[30] findings about assessing the impact of trust on repurchase intention. Accordingly, it can be concluded that trust on product as a result of more product scanning using 2D and 3D images leads to shopping intention. The writer believes lack of trust on product due to not using other senses and not enough products scanning can be one of the reasons of failure to obtain the ultimate result in online shopping. As a matter of fact, choosing products, only based on their images, is one of the most important reasons in distrust of users who scan the products using internet. Therefore, according to above mentioned findings, the writer infers that using 3D images enables users to scan products more and besides the feeling of trust on product, their shopping intention has been strengthened, although 2D images are also effective on product scanning and trust creation.
- Findings have shown mean scores of usefulness, ease of use, entertaining, attitude, trust, and shopping intention using 3D images are greater than their mean scores using 2D images. These findings are congruent with other studies' findings about the effect of physical environment on customers' behavior. In[31] the pleasure available in store settings as an important element in predicting and recognizing people's tendencies and staying in store has been known. They also believe physical environment, through sings, creates an area in which customers perceive via their senses. They mention that store setting is connected to different sensory signs such

as color, shapes, music, and scent affecting consumers' senses with the purpose of customer positive responses stimulation and affects customer's behavior and their perception and feeling growth positively. In[32] has also pointed out people's tendencies toward an area where is motivational and pleasant; and the fact that individual behavior increases via motivation level is in agreement with present findings. In[33] some effects of sensory signs in IKEA retail market have been examined which are in agreement with present findings. He has also tested changes in visual sensory signs and emphasized on this sense. Based on present findings, the writer has inferred that via changing visual sensory signs in virtual environment, considering limitation in using other senses, all its benefits including ease of information access about products containing goods and services, being more advantageous for customers, being more entertaining due to affecting visual sense, positive attitude via positive feeling creation, and ultimately trust achievement can be used and in this way the final goal of using this device which is leading users to shopping intention can be achieved. According to the present findings, it can be concluded that in online area where visual sense has been used significantly, changing 2D images to 3D ones increases trust on product via strengthening users' attitude. In other words, 3D images users want to reach to trust on product trusting their visual sense and try to decrease the risk of inappropriate choices in the absence of senses like touch and finally acceding trust on product besides avoiding inappropriate choosing harms. Through comparing shopping intention obtained from 2D and 3D images, it can be inferred that shopping intention obtained from scanning 3D images is in higher level than shopping intention through scanning 2D images and according to this paper model it can be the result of trust on product in a higher level.

9.2 Research Limitations

- Whereas the present study has been conducted in a specific geographic area (Iran, Isfahan) and online shopping is not a really common shopping method, considering earlier online shopping precondition, accessing participants in a wide range was not possible and convenience sampling chosen; so, findings generalization should be done carefully.
- Having a large sample is one of the components of research validity; so, one of the present research limitations is the small sample containing 60 participants.
- Like the other researches using questionnaire as the data gathering instrument, this research also suffer from questionnaire limitations.
- The present study has been done in spring 2014 using available technology; considering research technology continual development, findings generalization to the former time and future should be done carefully.
- Since the present research has studied the effect of 2D and 3D images on a specific product of services, namely hotel, findings generalization to other products including goods and services should be paid attention.

9.3 Research Suggestions

9.3.1 Empirical Suggestions

- Considering increasing development of virtual business environment, organizations are suggested to apply images technology to expand their business environment beside their websites beautification to affect customers' senses in order to their goals. Using visual motives to provide more information to customers can be considers as one of most effective ways to influence customers' attitude. Taking the present study findings into consideration, business owners who use websites to present their product are highly offered to employ 3D images alongside 2D ones.
- Whereas ease of product data accessing is important, it is strongly suggested to make scanning websites and products easy alongside applying an attractive environment on customers' sight. Although 2D images ease of use does not affect users' attitude positively and meaningfully, considering 3D images ease of use effect on users' attitude in a positive way, the significance of using 3D images in order to affect users' attitude can be emphasized. It is also recommended to ease using 3D images as much as possible to economize product scanning time and enjoy a positive attitude.
- Since affecting visual senses can influence users' positive attitude providing an entertaining space besides making virtual environment more useful; so, business owners are suggested to affect visual senses indirectly in order to influence users' trust and ultimately their shopping intention. According to the present finding, although 3D images entertaining has a minor effect on attitude in comparison with 2D

images, comparing 2D and 3D images, 3D images are known more entertaining; so, using both kinds of image is offered to website owners to introduce their products.

- As all variable mean scores for 3D images are greater than 2D images' influencing visual senses, website beautification, using shapes and colors appropriately, and using 2D images gallery beside using 3D images to enable users to scan products more carefully is highly suggested.
- Using audio motives and introducing products orally in order to affecting customers' senses is recommended.
- Considering the effect of sensory motives in virtual environment obtained from the present study, retail markets are offered to use these motives to affect customers' five senses in physical environment. Taking the positive and meaningful impact of notice tools' ease of use, usefulness, and entertaining on customer attitude into consideration, it is important to keep it in mind about real setting to affect trust on product and subsequently shopping intention.
- Considering the important of enjoying customer' senses in real and virtual business setting and present study's case, hotels and tourism websites are encouraged to make their websites easier to use and more attractive and also to use 3D images in addition 2D images gallery in order to impact customers attitude, trust, and shopping intention more effectively.

9.3.2 Investigational Suggestion

- According to fast endless technology progress and different online sales methods appearance, it is suggested for upcoming researches to be conducted in other setting like social websites, using smart phones applying larger samples.
- Present study has tried to investigate the effect of one of the visual motive, 2D images conversion to 3D images, on customers' behavior while other visual motives such as color, light, space and products' shape and dimension, containing goods and services, in different websites can be investigated.
- Although other senses are applied less than visual sense in virtual settings, using audio motives or a combination of visual and audio motives in virtual settings can be studied.
- Taking the significance of human senses in retail, service, and virtual settings, products selling and branding and absence of enough related investigations into consideration, conducting new studies in those areas from different aspects is recommended.

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