

## RESEARCH ARTICLE

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## The Impact of Virtual Reality Technology on Creating the Attitude and Understanding of Customers towards the Property and Service Provider in the Real Estate Consulting Division

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### Abstract

The increasing progress of technology has affected all aspects of human life. One of the new technologies for which various applications have been created today is virtual reality technology. Virtual reality seeks to create a sense of reality in an unreal environment. The aim of this research is the effect of virtual reality technology on the creation of customers' attitudes and understanding of property and service providers in the real estate consultant department in Shiraz. The statistical population includes all real estate clients and those who refer to the real estate sector in Shiraz, and since the population is considered, it is unlimited; the number of statistical sample is 384 people. In this research, the standard questionnaire of Pleyers and Ponsin (2020) were used to collect research data. Structural equation modeling approach and PLS3 software were used for data analysis. The results showed that virtual reality technology has a significant effect on creating the attitude and understanding of customers towards the property and the service provider in the real estate consultant sector. The combination of virtual reality technology with augmented reality is one of the measures that can significantly improve the attractiveness and efficiency of using virtual reality in the field of real estate.

**Keywords:** *Virtual reality technology, attitude, Customer perception, Service, Behavioral intention*

### Introduction

Today, technology and advances in the field of information technology have brought about tremendous changes in the daily life of people. These developments are happening so fast that all aspects of human life are affected by these technologies. One of the relatively new technologies that has undergone many changes in the last decade is virtual reality technology. In virtual reality technology, using computer tools, humans will be able to place themselves in a virtual space that simulates all the capabilities of the real environment. Today, this technology is used in various areas such as aerospace, medicine, computer games and many other areas. But one of the new applications of this technology is in the real estate market. Where buyers and visitors of different properties can

visit the desired location without having to physically visit the property and decide whether or not to buy the desired property.

The real estate sector is particularly promising in terms of the potential benefits of adopting an experiential approach, i.e., a sector where large consumer demand can be met. A distinctive feature of the real estate industry is the product dimension, which is accompanied by the important service dimension. In fact, a real estate agency has to advertise and promote its products (i.e., real estate) to potential buyers. Trading firms must provide buyers with sufficient information that allows them to imagine themselves interacting with the product and to form positive reactions to the products and services associated with them. The effective performance of this global service is

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inextricably linked to the development of digital tools that have dramatically impacted the industry in recent years. Among these tools, virtual reality (VR) technologies are important. These technologies create an interactive and interactive virtual environment that simulates a real-life experience and allows users to control and navigate their actions in the virtual world (Zeng & Richardson, 2016; Lai et al, 2013). In real estate, these technologies can allow customers to connect themselves from anywhere (in virtual reality) directly to properties for sale or rent; Therefore, by easily referring to a wide range of properties before visiting, they save time and money. Therefore, these technologies can revolutionize this service-based industry by creating customer experience (Rose et al, 2012).

However, there is little research on whether virtual reality, in an easy-to-use form, can improve customers' perception of real estate products. This research investigates the impact of non-immersive virtual reality visits (including interactive 360° view) on customers' visiting experience as well as their attitudes towards products (i.e. apartments) and service providers (i.e. real estate agencies). The term "non-immersive virtual reality" used in this study refers to technologies that display virtual content through a computer screen without the need for additional equipment. Users communicate with non-immersive virtual reality using old interfaces such as mouse and keyboard. This type of virtual reality with immersive virtual reality, which is mainly based on head-mounted displays that track users' movements and show screen changes accordingly, so that users are completely surrounded by enclosed virtual environments. And, the difference is (Suh & Prophet, 2018).

This study examines non-immersive virtual reality and the real estate sector to provide a multifaceted contribution. The purpose of this research is to contribute to the literature related to customer experience by examining the effect of how to experience a non-immersive virtual reality technology on

the customers' feeling of being in the virtual environment (i.e. in-person), the state of psychological immersion (i.e. escape from reality) and enjoying attitude and intention. It is a behavior towards the product and an attitude towards the service provider. Additionally, this study can show that how the use of these technologies can improve customers' attitudes towards products and service providers. Therefore, the main question of the research is whether the visit through virtual reality has an effect on creating the attitude and understanding of the customers towards the property and the service provider and the behavioral intention in the real estate consultant sector?

### Literature Review

Communication researchers have spent many years analyzing people's communication behaviors and understanding their behavior. The resulting theories have provided hundreds of different ways of viewing the world and humanity in the academic world. Although the leap in digital communication is innovative, and not as fully explored as traditional communication methods, humans have not changed throughout history. The researcher believes that communication theory provides researchers with sufficient knowledge and insight to exploit the power and potential of virtual reality. The researcher also believes that real estate agents and brokers can reach their peak when promoting their business through social reality and understand how posts are processed by users. To achieve this goal, the researcher used a systematic exploratory model to identify preference motivations, virtual realities, and pointed out why some users show no interest in posts related to real estate agencies. Real estate brokers can show potential buyers a substantial space, even if it is empty, using virtual reality software. Some real estate agencies use virtual tours to enable their agents to market properties with almost no investment, either in terms of plans or assets. Computer-generated reality allows Earth organizations to market work done before

development takes place. This innovation allows professionals to show the interior and exterior of properties that have yet to be built and allows buyers to see their home through this space (Vadlamudi, 2015).

Yu (2011), according to the different forms of users participating in virtual reality and different degrees of immersion, classified virtual reality technology into four types: desktop virtual reality: desktop virtual reality from PC and low-end workstation to simulate uses, the computer screen is used as a window to view the virtual environment for users. Immersive Virtual Reality: A high-end virtual reality system can create a fully immersive experience that makes users feel like they are in a virtual environment. Virtual reality with augmented reality: Virtual reality with augmented reality means that virtual reality technology is used not only to simulate the real world, but also to enhance the feeling of the real environment for users. Distributed virtual reality: The distributed virtual reality system means that many users are connected by a computer network to participate in a virtual space at the same time and experience the virtual environment together (Yu, 2011). The virtual environment is an interactive visual simulation created by a computer, in which users feel immersed with the help of the senses of sight, hearing and touch. The virtual reality environment is a large-scale integrated systematic environment consisting of computer graphics, image processing, pattern recognition, multi-sensor and audio processing, and network technology. The features of this system are: (1) Immersion: by using computer graphics, the 3D virtual space is very similar to the real world (Mardani, 2021). (2) Interaction: virtual reality is a user-oriented system and the user can interact with real objects in the environment (3) Imagination: virtual reality system is not a real system and only reflects the idea of designers (Wang & Hu, 2009). Today, many large-scale image and graphics processing software such as 3DStudioMAX are the basic technology of virtual reality. The main application of virtual reality in the real estate industry in fields such as: virtual reality

technology in building design, virtual reality technology in structural analysis testing, virtual reality technology in the project auction process, virtual reality technology in real estate display, virtual reality technology in management Real estate is virtual reality technology in interior decoration. (Wang & Hu, 2009).

Behavioral intention refers to the intention to use a person's willingness to actually visit the property (Pleyers & Poncin, 2020). Researches have shown that the seven items of expectation of performance improvement, expectation of effort improvement, social impact, improvement of working conditions, hedonic motivation, price value and habit affect the intention to use (Adegoke et al, 2021). Virtual reality and augmented reality have a positive impact on the home buying process, bringing both home buyers and real estate agents great convenience in time, for example, allowing buyers to easily experience different homes in different geographic locations. Also, virtual reality facilitates the visualization of houses under development or under construction, especially for houses that are purchased through a pre-construction sales scheme (Sihi, 2018). In addition, in home ownership, emotions and satisfaction play an important role in evaluating a home for purchase (Andrew & Larceneux, 2019). Therefore, when using virtual reality as a home evaluation tool in the residential real estate sector, it is important to understand the emotional influencing factor apart from the price and location of the property in the decision making process. Although previous research (Suh & Prophet, 2018) shows the promising benefits of virtual reality application for visualization and user experience for the built environment, this study believes that it is necessary to evaluate how the virtual environment in virtual reality affects user behavior, to Especially if it is to be used effectively for real estate marketing. Research on the impact of this technology on users' emotions and behavior seems to have been neglected. There is a lack of input and feedback from the end user (e.g. home

buyers) about the impact of this technology on their emotions and behavioral response (Azmi et al., 2021). Attitude is the readiness to react in a particular way towards a person, object, thought or situation. The characteristic of all attitudes is that they classify and organize the complex environment around a person. Attitudes may be utilitarian or in the service of fulfilling higher level psychological needs such as expressing values, social adaptation and reducing threats or reducing internal conflicts. The strength of attitudes is influenced by characteristics such as intensity, certainty, availability and lack of ambivalence. Attitudes are of interest to social and cognitive psychologists since they can influence behavior, information processing, and social relationships and are a part of a person's self-concept (Bonner & Wank, 2011).

Adegoke et al. (2021), In the research that "DEMATEL Method for Analyzing Factors Affecting the Decision to Adopt Virtual Reality Technology by Real Estate Companies in the Lagos Real Estate Market" showed that this study identified the factors influencing the decision of real estate companies and analyzed the real estate (REFs) for adoption of virtual reality (VR) technology using the Decision Making and Evaluation Laboratory (DEMATEL) method. This was done in order to increase the performance of real estate agency in Nigeria. The results showed that intention to use is influenced by performance expectations, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit. Also, facilitating conditions, habit, and intention to use do not affect usage behavior. In general, six constructs, which include price value, behavior, social influence, facilitating conditions, performance expectancy, and effort expectancy, were significant predictors of factors affecting real estate companies' decision to adopt virtual reality. Among these constructs, price value has the most impact.

Toudeh Bahambari et al. (2022), in the research that Identifying and Validating the

Factors Affecting Online Social Media Marketing about Consumer Buying Behavior. The statistical population of this study consists of online social media users from all over Iran. In this study, 9 key factors has been identified, modeled and analyzed. According to the MICMAC analysis results, perceived security (with the highest driving power) is identified as the driving indicator, and value co-creation (with the highest dependence) is identified as the result or target indicator.

Azmi et al. (2021), In the research that "More accurate real estate marketing using virtual reality to influence the emotions of home buyers and purchase intention" showed that the purpose of this article is to investigate the potential of virtual reality (VR) for residential real estate marketing, which It affects the intention to buy a house. Based on the consumer behavior literature, this study hypothesized the relationships between space with feelings of arousal and arousal and the subsequent effect of emotions on home purchase intentions in a virtual environment. A within-subjects experimental design was conducted with 60 real homebuyers to test the hypotheses. The results showed that there is a significant difference in space and intention to buy a house between real and virtual environments. On the other hand, feelings of pleasure and arousal evoked in real and virtual environments did not show any significant difference. The results show that atmosphere significantly affects enjoyment and arousal, where enjoyment, in turn, has a significant effect on purchase intention and arousal has an insignificant effect on purchase intention in the virtual environment.

Pleyers & Poncin (2020), In the reaserch that "Unusual virtual reality technologies in real estate: how customer experience creates attitudes towards real estate and service providers", showed that although previous research had shown that virtual reality technologies (VR) can enhance the customer experience, but the effectiveness of virtual reality technologies in real estate is still unclear. Therefore, this study examines the effects of providing consumers with a non-

immersive virtual reality experience through pervasive technology that allows them to view real estate products. Participants accessed a real estate agency's website that offered apartments through static photos or interactive 360-degree tours. The latter condition was associated with better "visit" experiences and more positive attitudes toward products and dealerships. This study highlights the benefits of such technologies in enhancing customer experience and attitudes, especially in the highly competitive real estate industry.

Kang et al. (2020), In the reaserch that "How 3D VR Stores Can Shape Consumer Purchase Decisions: The Role of Informative and Entertaining," showed that the recent emergence of consumer virtual reality (VR) hardware questions It raises an important question in the field of online marketing: what makes 3D virtual reality more informative and entertaining than conventional 2D media such as still images and movies, and how it affects the online purchase decision. The results of the study provide two significant insights. First, interaction and visual-spatial cues significantly increase perceived information and entertainment. However, the role of graphics quality is much more important for 2D displays than for 3D virtual reality environments. Second, being informative and entertaining affect the purchase decision process in distinct ways. Specifically, an entertaining interface may increase consumers' preference for pleasurable product benefits (eg, stylish and attractive design), while informative information is a more important explanatory variable for subsequent purchase intentions.

Behzadpour et al. (2021), in the research that "Examination of the role of building information modeling along with virtual reality technology in the design of sustainable buildings" state that: the construction industry has one of the most negative and destructive effects on the environment. This has led the countries of the world to seek to solve this issue and the problems that indicate it. New technologies in the construction

industry are one of the solutions to solve this crisis. Technologies that monitor the work of designers, structural engineers, accountants, and project managers in all stages of construction optimize the project in all stages of construction. The advanced technology of building information modeling is one of these new technologies that is able to carry out the basic design of the building accurately by multi-dimensional modeling of all building information and correctly consider the process of changes in documents during the implementation of the construction project. Slow In this research, the importance of using sustainable buildings to reduce negative and destructive effects on the environment has been discussed with regard to building information modeling as well as virtual reality and augmented reality technology. Considering the emerging nature and virtual reality in Iran, it is necessary to know its capabilities and applications in the field of architecture, which have been less discussed and investigated. In this scientific vacuum, the research method is descriptive-analytical and the research method is review of texts and sources. The results show that the use of virtual reality and augmented reality in buildings can lead to more and better realization of the goals of sustainable architecture in order to preserve natural resources.

Soltani and Abadian (2021), in the research that "Research on the effectiveness of using virtual reality in construction transactions" state that: virtual reality as one of today's technologies is capable of simulating the real visual experience for users. However, there is little empirical evidence to prove the effectiveness of this system in the virtual context. Based on this, the aim of this research is to investigate the effectiveness of the virtual reality system in the field of construction transactions through a comparative comparison of the perception of the environment in two direct ways and the use of virtual reality technology by DCATALOG3 software. Based on the findings, it can be concluded that virtual reality is reliable at the emotional,

interpretive and cognitive levels, but it cannot help at the brand recall level. Finally, this research shows that if this technology is implemented properly, it can not only be used as a complementary tool to reduce the costs and mistakes of the sales team, but it can also be used as a considered as an alternative to normal sales.

Soltani et al. (2021), in the research that "Examining the strengths and weaknesses of using virtual reality tools for digitalization, management and virtual presentation of construction plans in Iran" state that: although it is possible to design a map from an architect's point of view but cannot provide this space perception to the user in a real way. The use of virtual reality can provide users with designs on a real scale, quickly and cheaply. The design can be immediately transferred to the virtual world, and with a good quality simulation, users can walk inside what is being designed, see the details, and keep up with changes in the moment of the design. Despite these excellent facilities, the providers of this service in Iran have generally produced a variety of customized content, which lacks the necessary flexibility for architects and medium and small companies, and also involves high costs. It is also often difficult to

find an augmented reality developer, and business owners' ideas may not be implemented properly.

Nozadi and Mirshjaaian Hosseini (2021), In the research that "Application of virtual reality in architectural design" state that: virtual reality is a kind of technology to create interaction between human and computer by which complex data is converted into image, sound And the factors stimulate the person's senses so that the real presence in the virtual environment is induced to him. One of the advantages of virtual reality is to use it as a new tool in the field of architectural art to simulate the building before construction. Negahdari Nia(2020), In the reaserch that to Designing and Explaining the Impact Pattern of Online Advertising on Actual Purchasing in Atieh Saba Holding. The results of experts' responses showed that indicators such as print media and television advertising, social media, search engine advertising, banner ads, advertising websites, online text ads, advertising panels, online video ads, mobile ads, email ads, and online video ads have an impact on actual purchasing. Therefore, according to the conducted studies, the conceptual model of the current research is presented as follows based on the research of Players and Ponsin (2020).

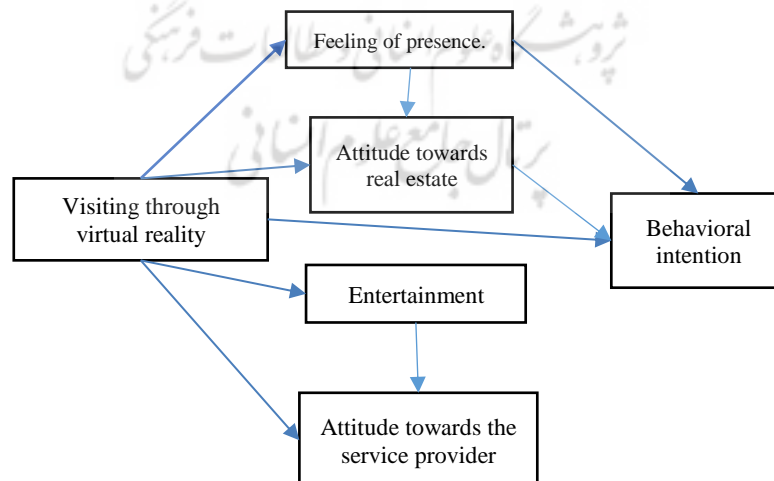


Figure 1. *Conceptual model of research*

The research assumptions are formulated as follows according to the research model:

- Visiting through virtual reality has a significant impact on the feeling of presence.

- Visiting through virtual reality has a significant impact on the attitude towards real estate.
- Visiting through virtual reality has a significant effect on behavioral intention.
- Visiting through virtual reality has a significant impact on entertainment.
- Visiting through virtual reality has a significant impact on the attitude towards the service provider.
- Feeling of presence has a significant effect on behavioral intention.
- Attitude towards real estate has a significant effect on behavioral intention.
- Sense of presence plays a mediating role in the relationship between virtual reality visit and behavioral intention.
- Attitude towards real estate mediates the relationship between virtual reality visitation and behavioral intention.
- Sense of presence plays a mediating role in the relationship between visiting through virtual reality and attitude towards real estate.
- Attitude towards real estate plays a mediating role in the relationship between virtual reality visit and attitude towards service provider.

### Research Methodology

Since the results of the current research can be used practically, it is a practical research. Also, this research is part of descriptive-analytical research in terms of data collection method. The tool used is the standard questionnaire of Pleyers & Poncin (2020), which was approved by several university professors, which confirms the content validity of the research tool. The questions are arranged in two parts, demographic characteristics include gender, marital status, education, age; and the second part includes questions to measure research variables, which includes 20 items. The statistical population of this research consists of all real estate customers and those who refer to the real estate sector in Shiraz, which according to the current conditions of housing prices, an unlimited population of people can be in this spectrum, hence the statistical population of the research. The present is considered

unlimited. Considering that the statistical population of the present study was considered unlimited, using Cochran's formula for unlimited populations, a sample size of 384 people is considered as a sample for the present study, which were selected based on the non-random and accessible sampling method. Structural equation modeling (SEM) using Smart PLS software was used to analyze the data. PLS is a variance-oriented structural equation modeling technique, which is a type of soft modeling. PLS is not sensitive to the default assumption of normality and allows the simultaneous examination of theory and metrics.

### Research Findings

The results of descriptive statistics showed that out of 384 respondents, 280 (72.9%) were men and 104 (27.1%) were women. Also, 91 people (23.7 percent) were single and 293 people (76.3 percent) were married. On the other hand, 56 people (14.6%) have less than 30 years old, 171 people (44.5 percent) were 31 to 40 years old, 102 people (26.6 percent) were 41 to 50 years old, 55 people (14.3 percent) were 51 years old and older.

**Sampling Adequacy and Bartlett's Test:** Sampling Adequacy (KMO) Cerni and Keyser (1997) believe that factor analysis can be performed when the value of (KMO) is greater than 0.6 (Homan, 2001). In Bartlett's test, rejecting the null hypothesis indicates that the correlation matrix has significant information and there are minimum conditions necessary to perform factor analysis (Ghiathvand, 2019). The results of KMO and Bartlett analysis for the research are mentioned in Table No. 1, which shows the results of the appropriate value of this test for the research.

Table 1.

*KMO test results*

0.886	KMO
5641.426	The value of $2\chi$
496	Degree of freedom
0.000	Sig

Reliability and validity in partial least squares method are checked in two parts: a) the part related to the measurement model. b) The section related to the structural model.

The first stage of measurement model evaluation is determination of the measurement model through the results of confirmatory factor analysis. To check the fit of the first part, that is, the fit of measurement models, three items are used: index reliability, convergent validity, and divergent validity. The reliability of the index is measured by three criteria: 1) Cronbach's alpha, 2) composite reliability and 3) factor loading coefficients.

**Cronbach's alpha:** It is considered as a criterion for evaluating internal stability (internal consistency). Cronbach's alpha value higher than 0.7 indicates acceptable reliability. **Composite reliability:** This criterion was introduced by Verts et al. (1974). If its value is above 0.7 for each

structure, it indicates the internal stability suitable for measurement models.

**Measurement of factor loads:** factor loads are calculated by calculating the correlation value of the indicators of a structure with that structure, if this value is equal to or greater than 0.4, it confirms that the variance between the structure and its indicators is the variance of the measurement error. The acceptance of that structure is more and the reliability of that model is acceptable.

**Convergent validity:** AVE shows the degree of correlation of a construct with its indicators (Azar et al., 2013).

With the investigations, questions 9 and 18 were removed because their factor loadings were below 0.4, and then the model was re-run, which was confirmed in terms of factor loadings, and its results are shown in Table No. 2. Also, the results of research data analysis for AVE, CR, R2 and Cronbach's alpha criteria are shown in Table No. 3. All the indicators are acceptable, so they show the validity and reliability of the research tool and the indicators of the measurement model at the desired and acceptable level. And it is possible to measure the external model and the structural model and test the hypotheses.

Table 2.

*Factor loads*

questions	entertainment	feeling of presence	attitude towards real estate	Visiting through virtual reality	attitude towards the service provider	behavioral intention
Q1	0.922					
Q2	0.922					
Q3	0.920					
Q4		0.938				
Q5		0.939				
Q6		0.906				
Q7		0.618				
Q8			0.589			
Q10			0.935			
Q11				0.886		
Q12				0.935		
Q13				0.915		
Q14					0.921	
Q15					0.934	
Q16					0.425	
Q17					0.514	
Q19						0.978
Q20						0.979



Table 3.  
Cronbach's alpha, CR and AVE and R2

Variable	(AVE)	Composite Reliability	Cronbach's alpha	R2
feeling of presence	0.741	0.918	0.877	0.526
Visiting through virtual reality	0.832	0.937	0.899	-
entertainment	0.849	0.944	0.911	0.616
behavioral intention	0.957	0.978	0.955	0.584
attitude towards real estate	0.611	0.733	0.718	0.496
attitude towards the service provider	0.541	0.810	0.723	0.703

Hypotheses test: Path coefficient and significance of relationships: Path coefficients should be examined in terms of sign, magnitude and significance. Positive path coefficients indicate direct relationships; and the negative sign indicates the inverse relationship between the two constructs. Regarding the significance of the coefficients of the path, the value of the t statistic is between the interval (1.96, -1.96) of non-significance and non-acceptance of the path

between the two constructs. (Azar et al., 2013). The output results of the software for the intensity of the significant effect (magnitude) and the sign are shown in Figures 2 and 3, and the confirmation and rejection of the hypotheses are summarized in Table 4. According to the results obtained from the values of path coefficient and t-value, all research hypotheses were confirmed.

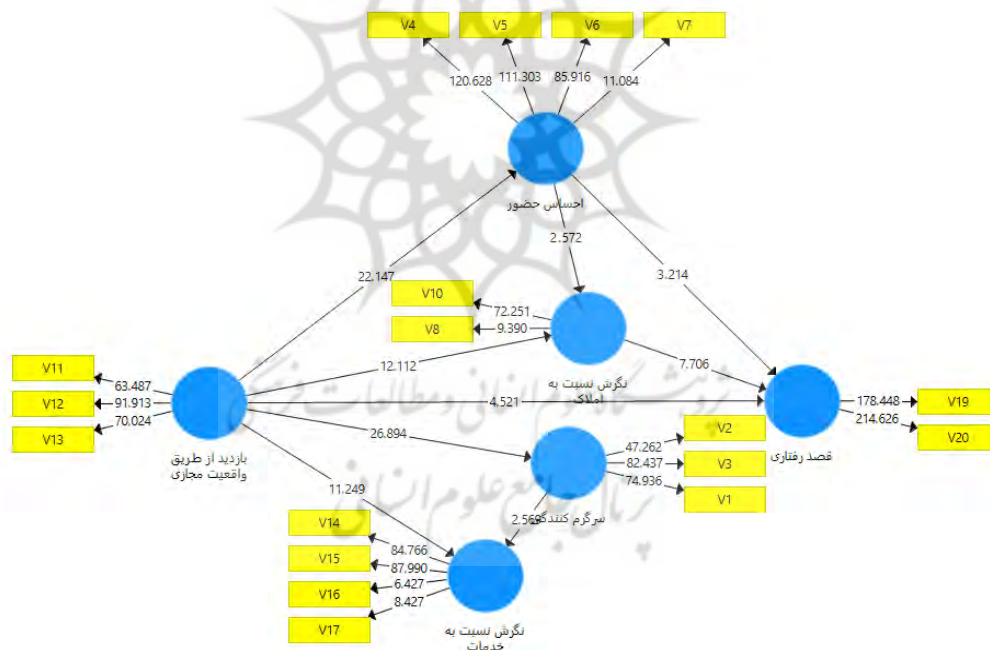


Figure 2. The structural equation model of research in the mode of significance estimation

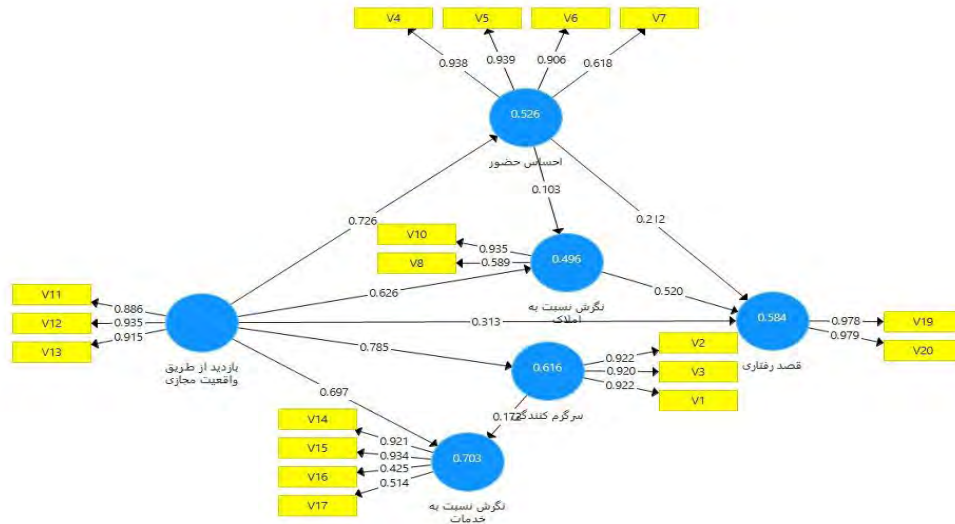


Figure 3. The structural equations model of the research in the path coefficients estimation mode

Table 4. Summary of the results of research hypotheses

hypothesis	path coefficients	significance (t-value)	Confirm / Reject
Visiting through virtual reality---feeling of presence	0.726	22.147	Confirm
Visiting through virtual reality---attitude towards real estate	0.626	12.112	Confirm
Visiting through virtual reality---behavioral intention	0.313	4.521	Confirm
Visiting through virtual reality---entertainment	0.785	26.894	Confirm
Visiting through virtual reality---attitude towards the service provider	0.697	11.249	Confirm
feeling of presence---behavioral intention	0.212	3.214	Confirm
Attitude towards real estate---behavioral intention	0.520	7.706	Confirm
Virtual reality visit---Sense of presence---behavioral intention.	0.726 & 0.212	22.147 & 3.214	Confirm
virtual reality visitation--- Attitude towards real estate --- behavioral intention	0.626 & 0.520	12.112 & 7.706	Confirm
visiting through virtual reality--- sense of presence --- attitude towards real estate	0.726 & 0.103	22.147 & 2.527	Confirm
virtual reality visit---Attitude towards real estate---attitude towards service provider	0.626 & 0.520	12.112 & 7.706	Confirm

As can be seen in the table above, the results of path analysis (coefficients and significance) show that all hypotheses have significant path coefficients, and therefore all hypotheses are approved. Therefore, virtual reality technology has a significant impact on creating the attitude and understanding of customers towards property and service providers in the field of real estate consultants.

**Conclusion**

The increasing progress of technology has affected all aspects of human life. One of the new technologies for which various

applications have been created today is virtual reality technology. One of the newest application areas for virtual reality is real estate. This possibility is very useful for visiting houses or properties in other cities and even in other countries and has a great effect in reducing time and cost. This form of visiting properties can create the necessary enthusiasm for the customer to actually visit the property and make customers visit more properties in a short period of time and finally decide to choose one or more properties for the actual visit. . Therefore, the purpose of this research was to investigate the effect of virtual reality technology on creating the

attitude and understanding of customers towards property and service providers in the real estate consultant department in Shiraz. The results showed that virtual reality (VR) technology for residential real estate marketing has an effect on the customer's behavioral intention and leads to the purchase of a house, the results of the present research are in line with the research of Azami et al. (2021). The current competitive world has caused business owners to always look for new solutions to provide their services to customers. The more efficient and up-to-date these methods are, they can have a greater impact on the attitude of customers towards the service provider. Services that are based on modern technologies and customer demands can create a better attitude in customers and encourage customers to receive services. Virtual reality technology is always fascinating for users due to its novelty and intrinsic appeal. The use of this technology can affect the customers' view of the traditional methods of viewing properties and make them suggest introducing this method of property viewing to other people. The use of this technology to introduce and display properties can be effective in attracting and creating a positive attitude in customers, which is in line with the results of the research of Pleyers & Poncin (2020).

By using virtual reality technology, the customer can visit the desired building or property in real dimensions and in a very clear way without the need to be physically present at the property. This issue allows customers to check several properties in a short time and with high accuracy. Perception can significantly influence the customer's attitude towards virtual reality technology and prefer the virtual visit even to the real one. Because it is not possible to place decorations and home appliances before buying during a physical visit. Virtual reality technology has a positive and significant effect on the entertainment feature and increases the purchase rate. Among the features that are considered for virtual reality technology is the stimulation of imagination in the visitor. During the virtual visit, the

customer can make the most of his visualization and get a more accurate understanding of the desired property. On the other hand, virtual reality technology, because it is new and unknown, always arouses the curiosity of customers to check the property by means of this technology. Such facilities, which are available to customers through the use of virtual reality technology, change their perspective and attitude towards shopping. This change in attitude can lead to a stimulus for buying again or recommending it to others. The results are consistent with the research results of Kang et al. (2020), Pleyers & Poncin (2020). The use of new technologies such as virtual reality requires the proper use of information technology infrastructure, especially the Internet. Therefore, it is suggested to the real estate activists to consider the necessary measures regarding the improvement of the necessary technological infrastructure. The combination of virtual reality technology with augmented reality is one of the measures that can significantly improve the attractiveness and efficiency of using virtual reality in the field of real estate. Therefore, the use of software that can support such facilities can have a significant effect on the improvement and effectiveness of this technology. In future researches, it is suggested to investigate the intelligent marketing of real estate using virtual reality to influence the emotions and purchase intention of potential buyers, Also, the use of multi-criteria decision-making to identify factors influencing the decision to adopt virtual reality technology by real estate companies.

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