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THE IMPLEMENTATION OF VIRTUAL REALITY (VR) TECHNOLOGY IN REAL ESTATE INDUSTRY

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Abstract

COVID-19 pandemic impact has accelerated the real estate industry to adopt technology evolution quickly. Due to the normalisation changes from the pandemic, all the physical real estate selling processes, including housing tours, sales, and purchase agreements, could not be effectively done as before. In this situation, Virtual Reality (VR) has become a prominent approach for real estate agents to improve their marketing strategies. This prospective study was designed to investigate the potential activities needed in VR implementation and to explore the importance of VR in influencing real estate marketing. Primary data was gathered from 60 real estate respondents using purposive sampling and descriptively analysed using SPSS software. The findings indicate that VR tours of the property, 360-degree visualisations, and visualisations of room furniture are the most potential activities needed in VR implementation. While VR is important because it indicates detailed information about the property, provides high-quality photos, and is a good investment opportunity. Overall, this study provides insights into how VR technology can help realtors survive in the evolving real estate industry.

Keywords: Virtual Reality (VR), Real estate marketing, Estate Agents

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INTRODUCTION

COVID-19 pandemic is a phenomenon that has been spreading all over the world and Malaysia being the one of the countries that is included to be affected by this virus causes a crisis which have led to pain and death (Shanmugam et al., 2020). Sonja A. Rasmussen, MD, MS (2020) said that the real estate industry is facing great uncertainty due to COVID-19 especially, in the housing selling process since house views are the critical part. However, everything was interrupted due to social distancing precautions where they must reschedule their meeting, and sellers must convince themselves that the healthiness of potential buyers visits to view properties is good. Real estate players must take immediate action in this transformative change to improve in business performance including considering the risk that will happen in the future (Equity & Practice, 2020).

Virtual and Augmented Reality (VAR) are technologies that have been familiar especially in the past couple of years. These technologies have become more approachable to the public now (Pope, 2018). According to the American Heritage Dictionary, a common definition of virtual is existing or resulting in the presence but not in real form, fact or name also can be created, simulated, or carried on by means of a computer or computer network while Fernandez (2017) state that it is the action to induce a targeted behaviour in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference (Lavalle, 2020). Besides, the VR also has been used in gaming, entertainment, education, marketing, communication and now considerably used in other businesses (Barnes, 2017). Deaky & Parv (2018) reveals that real estate market has been chosen as one of many application areas of VR technology through assorted companies which develop applications, so Bluemind Software has developed an innovative idea named VR4RE (Virtual Reality for Real Estate). Many realtors and homeowners consider staging a home as a crucial part to increase potential buyers of the home where they must fill with furniture and decorations (Brenner, 2017).

If we look at it from real estate agency point of view, there are few challenges must face especially during this crisis; one of the challenges is pending of home-buying process which has interrupted their work to proceed housing tours and force them to rearrange appointment with their client to follow Movement Control Order (MCO) that stated by government in Malaysia (Sulaiman et al., 2020). Next difficulties in preparing home staging which most estate agents and homeowners see as a core part of the selling process. Home staging is the process of adding decor, rearranging furniture, and expertly dressing up the home to make it look stunning for listing photos and walkthroughs (Mahardi, 2020). As an estate agency company, they still must do this process to gain attention and impress buyers when visiting their property. Although staging does not give effect to the housing price according to Lane et al. (2011), most realtors and homebuyers wrongly believe that proper staging can

lead to a higher selling price.

As the property price gets higher, people realise that the traditional methods of property sales involve high costs, especially advertising and marketing (Felli et al., 2018). Marcus T. Allen, Anjelita Cadena, Jessica Rutherford (2015) found that there is significantly different price between houses sold by agents or homeowners. While marketing budgets are wasted just to decorate their property to feel bright, energetic, and homey, real estate agent companies can use virtual reality technology as a medium of staging which is an effective marketing tool and communication for the real estate industry. The VR machine can provide a multi-sensory condition, which enables users to encounter the vibe of sight, hearing, smell and even touch (Abrar, 2019).

In general, the nature of the real estate industry, especially in marketing, has changed due to the outbreak of COVID-19. Therefore, there is a need to explore the potential activities needed in VR implementation and acknowledge the importance of VR in influencing real estate marketing.

VIRTUAL REALITY IMPLEMENTATION

Virtual Reality (VR) is an information processing system use in a computer which could help people to create and experience virtual world, it can form a multidimensional information space in which people can immerse in, transcend and interact using uses 3-D glasses, sensing gloves and a series of auxiliary sensing equipment (Kun & Zong, 2009). According to Pope (2018), Virtual Reality means an experience that symbolises an alternative to reality where someone can feel most of the senses like actual reality and the concept of VR came from the idea of putting two photographs side by side with mirrors in an optic device to manipulate the brain into seeing three dimensions, called a stereoscope, developed by Charles Wheatstone in the 1830s.

A study done by Singh et al. (1996) has defined VR as a system to transport and immerse users into a virtual space. Usually, it can be achieved by using a headmounted display system but sometimes for non-immersive forms of VR, can bring users for immersing from virtual space within their real environment. VR has become more effective when scientific and simulation data can create the visualisation from multidimensional data and high volume to enable an interaction between users. Thus, it can empower them to analyse things that are limited to the human sensory system (Juan et al., 2018). Besides, Pantano et al. (2017) outlined that VR can certainly influence people's intention to buy products based on the way they gain the product details, consequently, it is very important for providers to ensure that the quality of virtual visualisations is great. Based on these relevant studies, it can be concluded that VR needs to be widely used in the real estate industry as one of quality marketing approaches since it can enhance potential property sales by using the application of VR based visualisations.

VIRTUAL REALITY IN REAL ESTATE INDUSTRY

Typically, in traditional marketing strategy, estate agents will be entering the property's details such as location, condition of the building and many more. However, technology's advance is increasing over the time until VR was developed (Marcus et.al, 2015). The idea to develop Virtual Reality for Real Estate (VR4RE) began in 2008, when discussions between real estate developers wanted to make a prototype of a 3DCar that could be used to present real estate. After having several attempts to complete a simple prototype, finally the first good looking prototype came out during a Startup Weekend event in Brasov, Romania, in 2013 (Deaky & Parv, 2018).

The applications of VR have been widely used in real estate because it can afford marketers the opportunity to give potential consumers the most realistic experience of a product, service, or place without necessarily being there. Wang et al. (2014) mentioned that having access using VR to under construction and walkthrough is the key-points to encourage clients to buy property and boost property sales. In 2017, the virtual tour was a very trendy marketing approach by VR to get brand experiences. This statement shows that virtual reality photography had a positive impact in supporting the real estate market where mental imagery or also known as the perceptual representation of nonverbal information in memory (Kim et al., 2020). Virtual Reality (VR) Technology might be the perfect solution as the viewer can control any position and angle to view around the house with a 360-photography digital tour (Sulaiman et al., 2020).



Figure 1: Matterport 3D Virtual Tour
Source: <https://www.novoreperio.com> (2022)

According to Shults et al. (2019), the communications between estate agents can be improved by implementing VR. The author reports that misleading

advertisements by agents can lead to vacancy rates as high as 80-90% within the first 10 months of occupancy. Park et al. (2014) stated that the construction industry is always concerned about construction defects, as a result, VR technology can overcome the fear by creating 360 videos during the construction process. According to Crowston & Wigand (1999), even though virtual tours cannot be perfect as on-site visits, it clearly can shorten the time spent for the housing tour and improve the search process such as neighbourhoods and accessibilities. As property becomes more expensive, people realise advertising and marketing will be the main costs (Lane et al., 2011).

While Hou & Wu (2020) emphasised that the use of VR will assist the potential buyer to make better purchase, usage, changes, and reconstruction decisions that are connected to their properties through an immersive environment. As highlighted by Poushneh (2018), VR can assist customers to capture their interest and increase the product's expectations. He also mentioned VR can be used to collect a variety of viewing elements to observe the property from any angle of a three-dimensional display. Yuen et al. (2011) argues that designers, workers and clients can use VR to allow them to walk through a real world site and imagine like they are in a building under construction in real time. This marketing method can let the users feel connected to the project and enable them to inspect multiple areas around the sites. Pantano & Servidio (2012) suggest that communication between their clients can improve by utilising visualisation techniques because clients will imagine their presence at the site or property and lead them to having some experience like in the real world, therefore they tend to buy the property.

In overall, VR applications over time have become an innovative method to reduce costs and benefit from higher volume Benefield et al. (2019). According to Boga et al. (2017) many real estate players including estate agents, property managers and developers can gain a benefit from the implementation of VR to boost their real estate services at the same time increasing competition between them. In conclusion, technology affordability that applies in VR technology can achieve its main purpose which is to increase property sales.

METHODOLOGY

This study will identify the extent of the implementation of VR technology in the real estate industry to facilitate the method of knowing real estate virtually by conducting a systematic literature review from previous studies and identifying the importance of VR in the real estate industry holistically. The researcher has explored the importance criteria through the literature review. The purpose of literature review is to find the main variables and establish familiarity on the VR technology in real estate. All variables that gained from literature review such as definition, uses, effect, application and case study has been determined in this stage.

Next, the sampling design has been selected. This study uses a non probability sampling technique. The type of non-probability sampling that is used in this research is purposive sampling, also known as judgmental, selective, or subjective sampling towards the experts in real estate industry. The questionnaire was distributed to sixty (60) respondents who are related and involved to the real estate industry. The data were analysed using the frequency and descriptive statistics approaches to identify the main importance variables that show the potential of the implementation of VR in the real estate industry in the era of Industrial Revolution (IR) 4.0.

FINDINGS AND DISCUSSION

This section addresses the analysis of the survey outcomes and summarises the findings based on the potential activities needed in VR implementation and the importance of VR in the real estate industry.

Potential Activities Needed for Virtual Reality (VR) Technology Implementation in Real Estate

Researchers have identified the application of VR in real estate activities and identified the dominant and important variables to emphasise the importance of VR in stimulating and facilitating business in the real estate industry effectively.

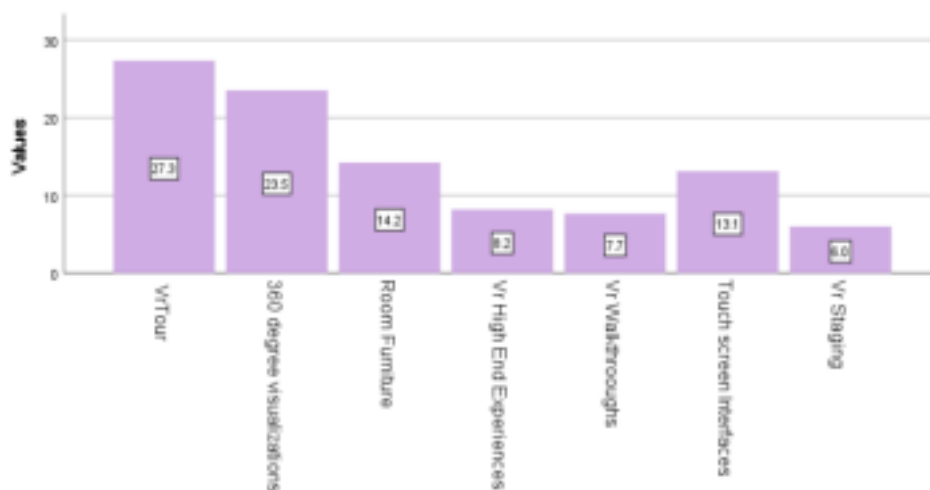


Figure 2: Virtual Reality of Real Estate Activities

Source: Questionnaire Survey (2022)

Based on Figure 2, 27.3% respondents are familiar with the VR tour of property, followed by 360-degree visualizations with 23.5% and visualizations of room furniture at 14.2%. The least selected activities are VR High-End

Experiences, VR walkthroughs and VR staging which have recorded at 8.2%, 7.7% and 6% respectively.

The importance of Virtual Reality (VR) Technology Implementation in Real Estate

The purpose of descriptive analysis is to summarise and organise characteristics of responses collection or observations from a sample or entire population (Bhandari, 2022). Besides that, this analysis is used for measures of central tendency which consists of mean and measures of variability that include standard deviation and variance. Standard deviation is the dispersion of data in a normal distribution Lee et al. (2015) meanwhile, variance is the average squared deviations from the mean.

Table 1: Descriptive Statistics Analysis

Variables	Mean	Standard Deviation
1) VR uses in consideration	4.73	.548
2) Investing towards virtual reality technology	4.67	.572
3) VR enable to boost property sales	4.58	.671
4) VR enables buyers to access without cost and time.	4.43	.789
5) High quality photos can attract buyers.	4.42	.766
6) Detailed information in property is important	4.28	.804
7) Visual experience can stimulate physical presence in places in the real world.	4.55	.746

Source: Questionnaire survey (2022)

Based on Table 1, the researcher has listed the result according to a descending score of mean. There are 7 variables that are tested in the descriptive statistics above to get its mean, standard deviation and variance scores. The variable that has the highest mean value is detailed information such as measurement, labelling the space and the item in every location in the property is important, it has recorded a mean value of 4.73 which indicates that precise data or figures of property is crucial. The standard deviation is 0.548 and the variance is 0.301 shows that the data is well spread and dispersed. According to the research done by Xiong & Cheung (2021), agents, buyers and sellers prefer complete details to access which can provide accurate, timely and easy to search

related to the housing information.

The result from Table 1 has clearly shown that detailed information of property ranks the first in value of mean. The second variable that recorded a high mean value is high quality photos can attract buyers, the mean value is at 4.67 which indicates that the respondents agreed, high quality photos showcasing the property can make buyers interested. The standard deviation is 0.572 and the variance is 0.328 which indicates that the data is well dispersed and spread.

Next, the respondents admitted that real estate companies should invest towards virtual reality technology with the score mean value of 4.58. The standard deviation is 0.671 and the variance is 0.451 which indicates that the data is well dispersed and spread. VR in the real estate industry has been widely used all over the country. Thus, the question asks the respondents if they agree that real estate companies especially in Malaysia should invest towards this technology and they respond positively to this question.

VR enables buyers to access without cost and with less time is recorded high mean value in this study is consideration of using VR as future marketing strategy, it has recorded a mean value of 4.55 which indicates that most of the respondents have agreed that they had considered using virtual reality as marketing strategy in the future. The standard deviation is 0.746 and the variance is 0.557 which indicates that the data is well dispersed and spread. According to Juwai (2020), using VR as a marketing strategy has benefits as it can make a way to stand out from the pack as a tech-forward agent or developer that is in touch with current trends. It is also allowed global reach as it is not limited to a local buyer only.

VR also can produce high quality photos at the same time will attract buyers to purchase the property without a doubt. This variable that has a high mean value in this study is uses of VR can save cost and time, it has recorded a mean value of 4.43 which indicates that most of the respondent has agreed that the VR enables the potential buyer to access the model space online without any further cost and time commitment. The standard deviation is 0.789 and the variance is 0.623 indicates that the data is well dispersed and spread. Juwai (2020) also describes that VR has cost-effectiveness because it can replace some of the traditional marketing initiatives while eliminating the costs of staging a physical property. Normally, a lot of cost has been used to make the staging of the house where furniture and amenities have been included to portray the attractiveness of a property.

The following variable is the booster of property sales, the mean value is at 4.42 which indicates that the respondents agreed that virtual reality can boost their property sales. The standard deviation is 0.766 and the variance is 0.586 which indicates that the data is well dispersed and spread. This mean value is quite low because not too many respondents chose “strongly agree” regarding

this question as they might not agree that VR can really increase their property sales.

The last variable in this study is stimulation of visual experience. It has recorded the mean value at 4.28 which pointed out that the respondents do not really agree that visual experience can simulate physical presence in places in the real world. The standard deviation is 0.804 and the variance is 0.647 which indicates that the data is well dispersed and spread. This variable has the lowest mean score because Tareen (2021) argues that VR still has some disadvantages like the virtual tour still cannot be the same as physical tour as there is still lags behind because of complications in grasping the complexity of the technology. Although a VR headset offers the most realistic experience, the technology has failed to gather interest plus some people may be insecure to share headset gear of VR due to contamination fears.

CONCLUSION

The COVID-19 pandemic has caused many people to lose their jobs. Not only are businesses affected, but the real estate industry also has the impact too because all the appointments will be pending such as the buying process, sale and purchase agreement and housing tours must be done face-to-face. These research findings will benefit real estate agents to solve the problem because the potential homebuyers can attend a virtual housing tour which consumes less cost and time. This study recommends that real estate industry stakeholders to fully utilise the VR technology as a new real estate marketing strategy. Since it has also proven to ease the process of housing tours, enhance potential buyers' experience, and act as an advanced marketing tool, thus, VR technology can help realtors survive in the evolving real estate industry.

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