

Extended TAM to Explain Intention to Join Virtual Tour in an Emerging Country during the Pandemic Era

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Abstract Due to the COVID-19 pandemic, government and tourism operators offer virtual tours to promote the destination as an alternative income source. Unlike people in developed countries, those in emerging countries are not familiar with virtual technology for tourism purposes. However, there are not many studies about virtual tours in developing countries. This paper aims to extend TAM by integrating perceived presence and enjoyment to understand tourists' intention to join virtual tours in an emerging nation. This study employs a quantitative research design by conducting an online survey to 182 respondents to investigate the stated hypotheses. The virtual tours' perceived presence and ease of use remained exposed to a substantial beneficial stimulus on perceived enjoyment and usefulness. The most significant finding was that perceived enjoyment had a higher impact on perceived usefulness than perceived ease of use. It had a higher impact on intention to use virtual tours than perceived usefulness. This research is one of the few studies extending TAM by integrating perceived presence and enjoyment in the tourism context, particularly in emerging economies. The findings are expected to give insights to tourism operators about the most significant elements to attract tourists to join virtual tours.

Keywords: Perceived Enjoyment, Perceived Presence, TAM, Virtual Tour, Indonesia

INTRODUCTION

In 2019, the overall travel and tourism industry's contribution amounted to 10.4 percent of global GDP (Statista, 2021). However, COVID-19, a new coronavirus discovered in China and subsequently spread worldwide, struck the tourist sector at the end of 2019. As the WHO determined the Covid-19 as a pandemic, almost all governments in the world implemented travel restrictions and closed their national borders to minimize the spread of the virus. This policy severely hit the tourism industry as the revenues from global tourism in 2020 were predicted to fall over \$1 trillion, and more than 120 million people's jobs in this industry were at risk (Richter, 2020).

Implementing travel restrictions for long periods stimulates boredom among those who like travelling. Consequently, they seek alternatives, such as virtual tours, to relieve their boredom. At first, virtual reality was used as a marketing tool for tourist destinations (An et al., 2021; Vishwakarma et al., 2019). Virtual tours provided new experiences and insights about a tourism destination. When taking a virtual tour, customers can find information about the destination, such as the recommended tourist attractions, cuisine, tourism spots, and iconic and exciting places. Local tour guides deliver all information. Even though this innovation cannot replace the customer experience when directly visiting the destination, it creates an opportunity for tourism operators to keep going during the pandemic.

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Previous research has discussed the desire to use virtual reality technology (VR, hereafter) to support tourism activities (Kim & Hall 2019; Vishwakarma et al., 2019). The application of VR in tourism can bring and provide unique experiences (Barnes, 2016), increase the ease of accessibility to a tourist place (Guttentag, 2010), and increase enjoyment which results in higher pleasure for a tourist destination (Tussyadiah et al., 2018). A theory is needed to see an individual's intention to use virtual tours related to their willingness to adopt the technology. Among several technology adoption theories, the technology acceptance model (TAM, hereafter) has been widely used in various contexts (e.g., Moslehpour et al., 2018; Cho, 2015). The suitability of TAM to clarify customer attitudes in computer technology-mediated situations is evident in many studies (e.g., Koufaris, 2002; Liu et al., 2009; Huang et al., 2016). Therefore, TAM will be suitable to be used to determine the willingness of consumers to use technology in the field of virtual tours.

TAM can be applied to various fields and research contexts, such as using mobile technology (Schierz et al., 2010) and virtual technology (Casaló, 2010; Holsapple & Wu 2007). TAM is used in tourism to explain how virtual tour technology can encourage tourists to visit destinations (Kaplanidou & Vogt 2006; Kim et al., 2008; Koufaris, 2002). Huang et al. (2016) found that the individual's intention to visit tourism places was significantly influenced by perceived usefulness and ease of use factors. An application of TAM to explain the use of VR for travel planning by Disztinger et al. (2017) reported that the intention to use VR technology for travelling was influenced by perceived usefulness but not perceived ease of use.

However, the use of TAM to describe the intention of customers to take virtual tours is insufficient. Previous research has found that perceived presence and perceived enjoyment encourage individuals to use VR. The 360° and 3D technology in VR enable users to feel their presence in the virtual environment, enhancing their enjoyment and benefits of virtual tours (Tussyadiah, 2018). Kim and Hall (2019) include perceived enjoyment in TAM and discover that it substantially influences the desire to continue using VR. Lo and Cheng (2020) included perceived presence to understand customers' response toward VR tourism advertising. They detailed that perceived presence had a substantial positive impact on consumers' minds and intentions towards the tourism product. The encounter of nearness impacted the effect of the general VR encounter. The utilization of VR innovation in publicizing empowers shoppers to feel their presence within the virtual environment. As a result, it creates a favourable demeanour toward the promoted item.

In this study, TAM is used as the underpinning theory to examine the effects of the information technology environment on behavioural intention. We integrate TAM

with perceived presence and perceived enjoyment for virtual tourism as there are not many studies examining these variables simultaneously. Hence, the purpose of this study is to investigate the impact of perceived ease of use, perceived presence, perceived enjoyment, and perceived usefulness on customers' intentions to usage VR technology for travel. Moreover, to identify the crucial constructs that stimulus customers' intentions to use virtual tour technology during the COVID-19 pandemic.

Previous research on virtual tours was conducted in technologically advanced places, such as the US (Huang et al., 2016), South Korea (Kim & Hall, 2019), and Hong Kong (Lo & Cheng, 2020). Due to the lower level of technological advancement and adoption, people in developing countries may show different reactions toward virtual tours. Currently, there is still a limited number of research on virtual tours in underdeveloped nations. Hence, this study will look at this phenomenon in the Indonesian market, the fourth most populous country globally. The country became an upper-middle-income country in 2020 (The Strait Times, 2020) and is expected to be in the top five world economies in 2045 (The Indonesia-Australia Centre, 2019; The Jakarta Post, 2019). Middle-class consumers increased by 20 percent (The Jakarta Post, 2020). The growing middle-class population is a potential market for the domestic and international travel industry as this segment has more disposable income that can be allocated for travelling (Oxford Business Group, 2015). The overall involvement of the travel and tourism industry in GDP in 2019 was USD 9.17 billion, but it is expected to fall to USD 4.67 billion in 2020 (WTTC, 2021). Since the pandemic restricts mobility, virtual tours can be an alternative for middle-class Indonesian tourists to visit destinations without leaving their homes.

LITERATURE REVIEW

Technology Acceptance Model (TAM)

VR is a sophisticated technology that can simulate the real world so that users can see the virtual world from various angles (Zheng, 1998). The key feature of VR is real-time interactivity, as the computer graphics can create simulations and a realistic virtual world that enables users to interact. VR technology has been employed in various sectors, including health and entertainment (Burdea, 2003). VR is used in tourism as a new method to create natural tourist attractions on a computer using 3D models that enable a dynamic way to visit tourist sites (Disztinger et al., 2017).

As virtual tourism uses quite sophisticated technology, customers need to be familiar with and use this technology. Many theories explain why people want to utilize new technologies. Some of these theories are the theory of

reasoned action (TRA), theory of planned behaviour (TPB), TAM, unified theory of acceptance and use of technology (UTAUT), UTAUT2, and diffusion of innovation (DOI) theory (Hillmer, 2009; Taherdoost, 2018). Among these theories, TAM has received widespread acclaim and widespread empirical support. TAM has already been proven to be a conceptual basis for explaining behaviour in a computer-mediated context (Venkatesh & Davis, 2000; Huang et al., 2016). Because of its simplicity and context neutrality, it is one of the most often used models (Davis, 1989).

Davis (1989) described that an individual's acceptance of a new technology depends on his perception toward the usefulness and ease of use. The perceived usefulness discusses the technology's capability to aid individuals to increase their accomplishments. In contrast, the perceived ease of use of technology relates to how comfortable it is to utilize it. Individuals are more inclined to adopt technology if it is simple to use and helpful (Davis, 1989; Venkatesh et al., 2003; Teo, 2009). Disztinger et al. (2017) and Vishwakarma et al. (2019) used TAM to explain individuals' interest in using VR for travelling. When an individual can use the technology with ease and without mental effort and perceive it as beneficial, he is keen to adopt the virtual tour. The application of VR technology in tourism may cause the individuals to feel guided by new information and knowledge provided by the local guide that finally helps them choose a travel destination in the future.

According to Domina et al. (2012), customer impression of ease of use when browsing the virtual site influences travel inclinations. The use of the 3D tourism site enables individuals to explore the destination and to collect more information. Thus, the easier the 3D tourism site is to access and operate, the more beneficial it is to travellers. It may encourage them to continue using the virtual tour sites before they visit the tourism destination. Several studies show that perceived ease of use through the 3D tourism sites positively affects individuals' travel intentions (Huang 2011; Huang et al. 2016; Vishwakarma et al. 2019). They may experience a destination before the actual visit (Vishwakarma et al., 2020).

Perceived usefulness is hypothesized to directly influence individuals' intentions to use the technology (Park et al. 2014). In the virtual tourism context, perceived usefulness refers to an individual's belief that the utilization of VR to experience a destination would improve his/her ability to make decisions when selecting a tourist destination (Disztinger et al., 2017). Individuals can utilize virtual reality technology to experience a destination, which may help them better understand the destination and facilitate their decision-making. Since virtual reality is a technical intervention, the perceived usefulness of utilizing it to enjoy the place would increase the likelihood of using it (Disztinger

et al., 2017). Li and Chen (2019) and Disztinger et al. (2017) reported the importance of the VR technology's perceived usefulness for travel planning.

Despite its wide acceptance, TAM is criticized because it neglects the social influence and individuals' intrinsic motivations in explaining their intention to adopt the technology. Some external variables may be included in TAM to improve its explanatory power (Taherdoost, 2018). TAM2 is introduced to overcome the limitations of the previous TAM by adding social influence, cognitive factors, and computer anxiety. Although the extended model includes an affective component, like other theories of technology adoption, it ignores positive feelings such as pleasure, delight, and enjoyment from utilizing technology (Taherdoost, 2018). In the tourism context, several studies have extended TAM. For instance, Vishwakarma et al. (2019) adds perceived enjoyment and perceived immersion to see interrelationship with travellers' purpose to adopt virtual reality. Disztinger et al. (2017) include perceived immersion, interest, personal innovativeness, accessibility, skepticism, perceived enjoyment, and technology anxiety to test their influence on utilizing virtual reality technology for trip planning.

Perceived Presence

The context of presence helps to understand the audience's experience in the media, such as television, video games, and any virtual environment (VE, hereafter). For instance, the use of cartoon characters in the news perhaps amplifies the experience of the presence (Lo & Cheng, 2020). Perceived presence is the level at which audiences feel they are in a VR environment. It can also occur in a mental process where the audience perceives the moderated world as non-mediation and perceives a virtual object as a real thing (Lo & Cheng, 2020). Perceived presence is a person's emotional or rational sense of a situation where 'existing' inside the virtual scope (in the context of virtual reality, a mediated digital world), but they are physically somewhere else (not actually at the destination location) (Yung et al., 2020).

The application of VR in video games shows that players acknowledge the effectiveness of the VE and make them more interactive in the games. This environment enables them to sense the more fabulous presence in the VE, which results in higher enjoyment and stimulates them to continue playing the video game (Shafer et al., 2014). According to Yung et al. (2020), when there is an intense sensation of presence in the virtual environment (VE), the user creates the appearance of non-meditating perception. It means the user begins to perceive the VE as an actual physical place, puts off mistrust, and forgets that a computer system displays the VE. As a result, users remember VE as a place and not just an illusion of a collection of images.

Tussyadiah et al. (2018) found that a stronger impression of realism during a VR encounter enhanced enjoyment and emotions, produced positive attitudes, beliefs, and intentions, and improved performance. Similarly, Lo and Cheng (2020) showed that the level of presence and sensation of enjoyment were positively linked. Thus, it may be inferred that the impression of being there while participating in VR for tourism purposes allows for a greater appreciation of the VR experience itself. The stimuli that enhance the experience are more tangible through increased degrees of presence. It will have a more immediate impact and positive engagement, which benefits from the experience of using the media itself, including better moods and greater enjoyment (Hou et al., 2012).

Perceived Enjoyment

Kim and Hall (2019) describe perceived enjoyment as the ability of a system or technology to generate personal pleasure without considering the performance consequences of the system. Innovative technology may bring excitement to users apart from the expected performance outcomes (Vishwakarma et al., 2019). In the virtual tourism context, Huang (2011) defined perceived enjoyment as an individual's interest in and enjoyment of a destination. Perceived enjoyment is critical in determining customers' behavioural desire to visit a location after utilizing VR (Huang et al., 2016). Users accept that taking part in the action of investigating destinations through VR would be pleasant.

As technology may have different levels of complexity and benefits to users, it may affect an individual's feelings toward it. Hence, perceived enjoyment may be related to the components of TAM. In computer-mediated environments, perceived enjoyment, emotional involvement, and behavioural goals are connected to perceived usefulness and ease of use (Huang, 2011). These connections remain also predicted regarding data innovation and tourism (Huang et al., 2016). Increased user engagement in the virtual world will improve their enjoyment.

Research has verified the influence of perceived enjoyment on perceived usefulness, justifying its inclusion in the expanded TAM model (Vishwakarma et al., 2019). When the audience enjoys the presented VR video, he can adapt the information and use it for travel decision-making. This perceived enjoyment may result in a state of mind toward and higher intention to utilize the innovation. Previous research in various situations has demonstrated a significant influence of perceived enjoyment on purposeful use (Praveena & Thomas, 2014; Park et al., 2014; Vishwakarma et al., 2019; Disztinger et al., 2017).

Hypothesis Development

Suppose audiences perceive the use of VR to experience a tourist destination as easy and beneficial. In that case, they are more likely to experience enjoyment and presence in the virtual tours that eventually increase their intention to use the virtual tour to help them make travel plans. Davis (1989) explained perceived usefulness of a particular technology could increase user performance. Meanwhile, the effectiveness of any technology system can be upgraded if it can be used easily by the users. Several kinds of literature confirm a linkage between enjoyment, perceived ease of use, and perceived usefulness (Li and Chen, 2019; Van der Heijden, 2004; Huang et al., 2016). For the virtual tour context, if users use the virtual tour technology effortlessly and efficiently, they may feel greater enjoyment from using that system. They can benefit from planning their trip and selecting the best fit destination after using the virtual tour. Thus, the following hypotheses are advanced:

H1: Perceived ease of use positively affects perceived usefulness of the virtual tours.

H2: Perceived ease of use positively affects perceived enjoyment of the virtual tours.

The experience of being in a VE, instead of the user's actual bodily location, relates to the psychological presence (Sanchez-Vives & Slater, 2005) that will affect the individual's virtual experiences (Lo & Cheng, 2020). In the latest research, perceived presence is conceptualized as the extent to which users feel that their existence and participation are in the VE, not their actual environment. Tussyadiah et al. (2018) suggested that the worth of VR experiences has favourable effects on attitudes, beliefs, and intentions. As a result, user's perceptions of the destination have shifted. This happens because users who feel immersed and present in the VR world can imagine definitively what the situation would be if they were at that destination and indicates that users get a lot of information or references about the destination and makes it easier for users to plan travel. The following hypothesis is proposed in this study:

H3: Perceived presence positively affects perceived usefulness of virtual tours.

The level from which users are aware of their presence in the VE is perceived presence (Disztinger, 2017). It is considered to enhance the individual's enjoyment of VR (Yung et al., 2020). When users watch the virtual tour video, they feel involved with it as if they are in the real world, which increases their enjoyment from using the virtual tour. According to Shafer et al. (2014), the most significant psychological consequence of felt presence is a sense of enjoyment. Sylaiou et al., (2010) and Tussyadiah et al. (2018) also reported that perceived presence gave the sensation of realism during VR encounters that boosted enjoyment. The relationship is presented as follows:

H4: Perceived presence positively affects perceived enjoyment of virtual tours.

Perceived enjoyment in virtual tourism may demonstrate how satisfied people are after using VR technology to visit tourism destinations. The more enjoyable the virtual tour to the travellers, the more likely they perceive it as beneficial to explore tourist destinations and get the information needed to make travel decisions. According to Pantano and Corvello (2014), when the tourist likes the VR experience and enjoys it, customers will be able to make proper travel decisions based on the information given in the virtual tour. Similarly, Vishwakarma et al. (2019) find VR is more valuable to Indian tourists while arranging a vacation. Therefore, the hypothesis can be put forward as follows:

H5: Perceived enjoyment positively affects perceived usefulness of the virtual tours.

According to William and Hobson (1995), the user can be influenced to plan their trip because of the visual elements of VR. If individuals enjoy technology, such as VR, they are more likely to have a favourable attitude toward technology and to want to use it (Praveena & Thomas, 2014). Guo and Barnes (2011) showed that perceived enjoyment influenced user's intentions in 3D virtual worlds. Tussyadiah et al. (2018) demonstrated in a tourism setting that enjoyment

affected the intention to go to the tourist attraction in VR. The following hypothesis is tested in this study:

H6: Perceived enjoyment positively affects the intention to use of virtual tours.

The most significant constructs of intention to use are perceived usefulness and ease of use (Vishwakarma et al. 2019). In a computer-mediated study, perceived usefulness is connected to behavioural intentions (Van der Heijden, 2004; Fetscherin & Lattemann 2008). According to Kim et al. (2008), perceived usefulness is a critical element influencing passengers' attitudes and intentions to use mobile devices for travel preparation. When users have a good experience in exploring the virtual tour video and believe that using the VR to look at a destination is helpful, they will most likely utilize it in the future to explore the place. According to Disztinger (2017), there is a connection among perceived usefulness and intent to make use of VR for travel planning. The use of VR can aid in making a choice when it comes to destination selection depending on travellers' VR experience prior to their visit (Vishwakarma et al., 2019). The last hypothesis proposed is:

H7: Perceived usefulness positively affects the intention to use virtual tours.

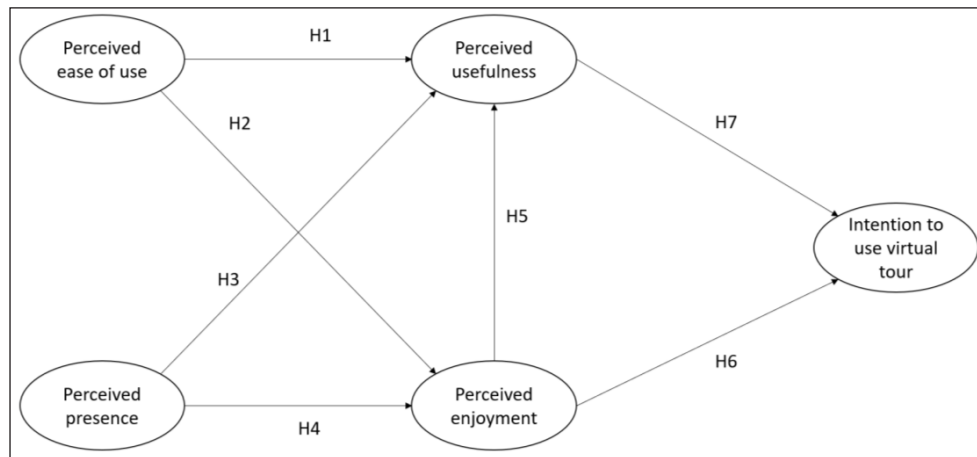


Fig. 1: Conceptual Framework

RESEARCH METHODOLOGY

Study Area

Indonesia is a potential tourism market. According to UNWTO, Indonesia is ranked 7th globally in terms of ease of regulation for bringing in foreign tourists. According to the World Travel and Tourism Council, Indonesia ranks 9th out of 185 countries in terms of the fastest-growing countries based on tourism's contribution to GDP, foreign tourist spending,

domestic tourist spending, and the value of the investment in the tourism sector. Indonesia can outperform Thailand, the Philippines, Malaysia, and Singapore (Indonesia.go.id, 2019). While the Indonesian tourism industry significantly grows (Indonesia Statistics, 2017), the COVID-19 pandemic has hit this industry severely. Hence, tourism operators may consider offering virtual tours to survive. Not only is it considered innovative tourism activities during the pandemic, but virtual tours can also be used to promote the destination (Merdeka.com, 2020).

Research Design

Due to the COVID-19 epidemic, an online survey was utilized to gather data for this research, which used a quantitative research technique. The online questionnaire was prepared in Google Forms and distributed through social media platforms. Samples were selected using a purposive sampling technique involving respondents whose vacation plans were disrupted due to the pandemic and who were aware of VR technology. Multiple data collections were performed in April-August 2021 and August 2022.

Even though samples of this study knew about VR technology, they might not use it for tourism purposes. Thus, at the beginning of the survey, the respondents were exposed to a 360-degree VR presenting tourist attractions in Bandung, West Java, to enable them experiencing the use of VR technology. A 360-degree video can be used to make potential tourists feel their presence at the destination (Viswakarma et al., 2019). The 360-degree video used in this survey was developed by the Republic of Indonesia Ministry of Tourism. Respondents were asked to answer questions on the investigated phenomena after seeing the video.

This study used a closed-ended questionnaire as the research instrument. The questionnaire was presented in Indonesian language to ease respondents understanding of its content. The questionnaire had three parts: the filtering questions, the items measuring each variable of interest, and the respondents' demographic and behavioural profiles. Double-back translation was performed in designing questions of each variable in this study. As per the literature of TAM, five items of perceived ease of use and eight items of perceived usefulness had been taken by Vishwakarma (2019, 2020) and Kim (2019). Five items of perceived presence were adopted from Tussyadiah et al. (2018) and Lo et al. (2020). Six questions adapted from Vishwakarma (2020) and Kim (2019) were used to assess perceived enjoyment. The intention to use virtual tours was measured as a dependent variable using three questions adapted from Vishwakarma (2019, 2020). All items were scored on a 5-point Likert scale.

Data Analysis

This study utilized three stages of data analysis (Fig. 2) to observe the variables influencing using a virtual tour. In the initial stage, descriptive statistics focused on the respondents' profiles and got a feel of the data. The next stage was to conduct reliability and validity tests to determine the instrument's suitability. The indicators of convergent validity were indicated by factor loadings and average variance extracted (AVE), which values should be equivalent to or more than 0.5 (Hair et al., 2009). Moreover, the AVE should be at least 0.5 (Hair Jr. et al., 2014; Bagozzi & Yi, 1988). Discriminant validity was tested to verify that each concept was distinct from the others, which was evaluated using the Fornell-Larcker criterion and the HTMT ratio. Based on the

Fornell-Larcker criterion, the variable's square root of AVE should be greater than its correlation coefficient with other variables, whereas the HTMT value should be below 0.85 (Ab Hamid et al., 2017). The reliability was indicated by Cronbach's alpha and the composite reliability, in which both values should be equal to or greater than 0.7 (Hair Jr. et al., 2014).

Following, the path model was utilized to investigate the proposed connections between the hypotheses. According to Hair et al. (2011), the smallest number of bootstrap samples was 5,000, and the critical t-value was 1.645 for the one-tail hypothesis. The hypotheses were tested using partial least square structural equation modelling (PLS-SEM). PLS-SEM was suitable for exploratory research or extending from existing structural theory by maximizing the power of exogenous variables in predicting the endogenous construct (Hair et al., 2011).

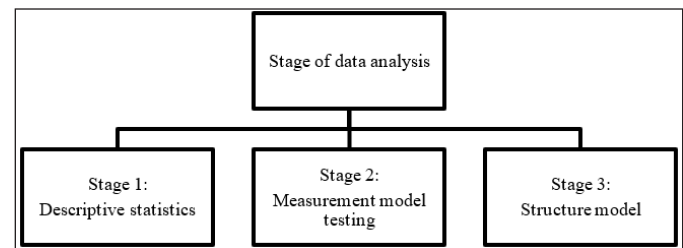


Fig. 2: Data Analysis Stages

RESULTS

The questionnaire was distributed in April-August 2021 and August 2022. Of 434 respondents who completed the survey, 127 responses did not meet the sample criteria. Hence, this study used 307 responses to examine the hypotheses. The demographic characteristics of responders are exposed in Table 1. The proportion of respondents based on gender was almost equal. Most respondents were of the Millennial generation, aged 25-40 years, well-educated, worked in a private company, and travelled 2-5 times in a year prior to the pandemic.

Table 1: Profile of Respondents

Attributes	Frequency	Percentage
<i>Gender</i>		
Male	153	50
Female	154	50
<i>Education</i>		
Senior high school	37	12
Undergraduate	227	74
Postgraduate	43	12
<i>Monthly Income*</i>		

Attributes	Frequency	Percentage
Less than IDR 5 million	83	27
IDR 5-14 million	139	45
IDR 15-24 million	49	16
IDR 25-35 million	17	6
More than IDR 35 million	19	6
<i>Traveling Frequency (yearly)</i>		
Less than 2	76	25
2-5	192	63
6-10	28	9
More than 10	11	4
<i>Occupation</i>		
Private employee	130	42
Student	20	7
Freelance	17	6
Professional	21	7
Housewife	30	10
Retired	8	3

Attributes	Frequency	Percentage
Civil servant	38	12
Others	43	14
<i>Age</i>		
15-24	36	12
25-40	192	63
41-55	54	18
>55	25	8

*Note: as of August 20, 2022, IDR 1 million equals USD 67.23.

As shown in Table 2, the convergent validity assumptions were met as the factor loadings of all items ranged from 0.581 to 0.920, and the AVE ranged from 0.520 to 0.774. The discriminant validity assumption was also fulfilled as presented in Tables 3 and 4. The composite reliability scores ranged from 0.843 to 0.947, while the Cronbach's alphas were between 0.772 and 0.933 that indicating all items were reliable. The requirements of discriminant validity based on the Fornell-Larcker criterion and HTMT were also met as presented in Tables 3 and 4.

Table 2: Results of Descriptive Statistics, Convergent Validity, and Reliability

Variable	Item	Descriptive Statistics		Convergent Validity		Reliability	
		Mean	Std Dev	Loading	AVE	Cronbach's Alpha	Composite Reliability
Perceived Ease of Use (PEOU)	PEOU1: It is simple for me to understand how to operate a VR device.	4.309	0.748	0.739	0.520	0.772	0.843
	PEOU2: It is simple for me to exploit the tourism-related VR operation.	4.313	0.740	0.680			
	PEOU3: The tourist industry VR operation does not require much mental work.	4.039	0.748	0.615			
	PEOU4: I believe that using the tourism-related VR operation is straightforward.	4.179	0.740	0.787			
	PEOU5: I find it simple to acquire what I want when I utilize the tourism-related VR operation.	4.157	1.033	0.771			
Perceived Usefulness (PU)	PU1: The use of VR would assist me in making a more informed decision about a destination.	4.368	0.738	0.756	0.604	0.904	0.924
	PU2: The use of virtual reality will allow me to choose a destination in a more pleasant way.	4.306	0.742	0.807			
	PU3: The use of virtual reality in destination travel planning is hugely helpful to me.	4.270	0.812	0.856			
	PU4: Using VR technology would make it easier for me to choose a destination travel plan.	4.261	0.768	0.848			
	PU5: I learn new things by participating in the tourism-related VR activity.	4.313	0.722	0.799			

Variable	Item	Descriptive Statistics		Convergent Validity		Reliability	
		Mean	Std Dev	Loading	AVE	Cronbach's Alpha	Composite Reliability
	PU6: Using a tourism-related VR operation to gather information is beneficial.	4.326	0.738	0.773			
	PU7: It is good to use the tourism-related VR operation.	4.316	0.771	0.764			
	PU8: I am able to form friendships with other users by engaging in tourism-related VR activity.	3.743	1.060	0.581			
Perceived Presence (PP)	PP1: I received the sense that I was actually in the virtual reality world.	3.915	0.965	0.859	0.752	0.917	0.938
	PP2: It seemed as if I was a participant in the VR action (sightseeing).	3.873	0.938	0.894			
	PP3: It felt as though my physical position had been transported into the virtual world.	3.795	1.043	0.898			
	PP4: The video-watching experience was intense.	4.107	0.865	0.818			
	PP5: I felt fully submerged in the world depicted in the film.	3.808	0.985	0.864			
Perceived Enjoyment (PE)	PE1: It is fun for me to participate using Virtual Reality technology for activities with a tourism context	4.026	0.854	0.843	0.749	0.933	0.947
	PE2: When I use virtual reality technology in tourism, it is pleasant for me.	3.987	0.850	0.841			
	PE3: I like the tourism-related VR activity.	4.117	0.823	0.850			
	PE4: I enjoy using the VR practice that is connected to tourism.	4.036	0.836	0.862			
	PE5: The use of virtual reality in observing designation is pleasurable.	4.127	0.807	0.892			
	PE6: The use of virtual reality for witness designation excites me.	4.075	0.845	0.902			
Intention to Use (IU)	IU1: I intend to utilize virtual reality to plan my vacation shortly.	3.570	1.106	0.842	0.774	0.853	0.911
	IU2: In the future, I hope to incorporate virtual reality into my travel plans.	3.945	0.858	0.920			
	IU3: In the future, I can see myself incorporating virtual reality into my travel plans.	4.003	0.841	0.875			

Table 3: Discriminant Validity based on Fornell-Larcker Criterion

	IU	PEOU	PE	PP	PU
IU	0.879				
PEOU	0.405	0.721			
PE	0.698	0.513	0.865		
PP	0.630	0.403	0.743	0.867	
PU	0.642	0.621	0.688	0.616	0.777

Table 4: Discriminant Validity based on HTMT Ratio

	IU	PEOU	PE	PP	PU
IU					
PEOU	0.470				
PE	0.780	0.579			
PP	0.710	0.459	0.802		
PU	0.729	0.712	0.744	0.669	

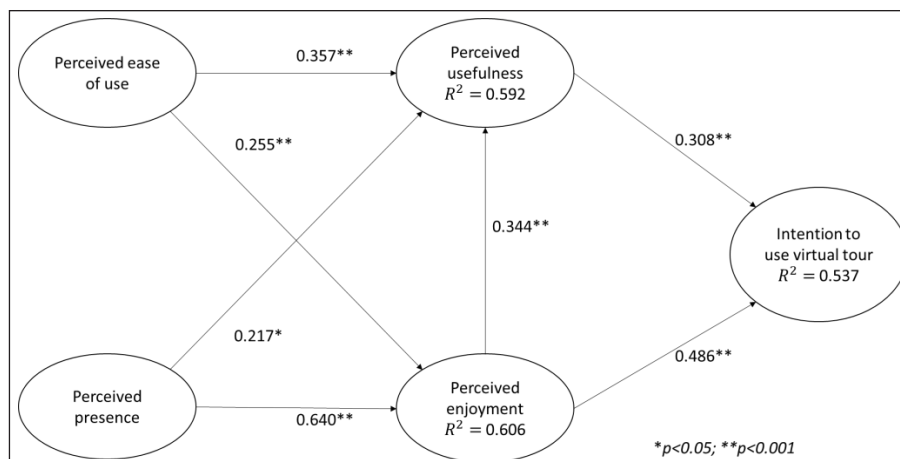


Fig. 3: Path Diagram

Table 5: Summary Results of Hypothesized Model Testing

Path	Path Coefficient (β)	Standard Error	T-Value	P-Value	Effect size (f^2)	Remarks
H1: PEOU → PU	0.357	0.060	5.994	0.000	0.231	Supported
H2: PEOU → PE	0.255	0.053	4.765	0.000	0.138	Supported
H3: PP → PU	0.217	0.066	3.286	0.001	0.052	Supported
H4: PP → PE	0.640	0.040	16.198	0.000	0.869	Supported
H5: PE → PU	0.344	0.073	4.727	0.000	0.114	Supported
H6: PE → IU	0.486	0.073	6.702	0.000	0.268	Supported
H7: PU → IU	0.308	0.067	4.566	0.000	0.108	Supported

According to Table 5, perceived ease of use had a significant positive influence on perceived usefulness and perceived enjoyment (0.357, $p < 0.001$; 0.255, $p < 0.001$), providing support for H1 and H2. Its effect was greater on perceived usefulness than on perceived enjoyment as shown by the effect size. Perceived presence exhibited a significant positive influence on perceived usefulness and perceived enjoyment (0.217, $p < 0.05$; 0.640, $p < 0.001$), providing support for H3 and H4. The influence of perceived presence on perceived usefulness was small, while its effect on perceived enjoyment was substantial. Similarly, perceived usefulness and intention to use were had a significant impact on perceived enjoyment (0.344, $p < 0.001$; 0.486, $p < 0.001$), providing support for H5 and H6. Its effect on perceived usefulness was small, but it was moderate on intention to use. The influence of perceived usefulness on intention to use was shown to be considerable (0.308, $p = 0.001$), providing support for H7.

DISCUSSION

This research demonstrates that the extended TAM has greater ability in describing tourist's intentions to utilize

virtual tour technology. According to the findings, ease of use is linked to perceived enjoyment, which is in line with previous research by Huang (2011) and Chen et al. (2014). When the virtual tour technology is easy to operate, easy to understand, and free from mental effort, it will increase enjoyment (Huang, 2011). This research uses 360-degree technology that does not need extra equipment. The respondents are mostly young and well educated. Due to their technology literacy skills, they can operate the technology without any difficulty, thus creating a sense of enjoyment when watching the video and taking advantage of exploring the destination virtually. The 360-degree video enables users to explore the destination from various angles and imagine the place more accurately rather than by watching the 2D videos or photos. This information is later used to determine the destination they want to visit in the future. This result is aligned with Vishwakarma et al. (2019) and Praveena and Thomas (2014).

The influence of perceived presence on perceived enjoyment is very substantial, which is similar to Tussyadiah et al. (2018), Vishwakarma et al. (2019), and Sylaiou et al. (2010).

Individuals will find the encounter very pleasurable if they are wholly involved in the virtual world. The use of 360-degree video technology to present the destination gives a very intense virtual tour video experience. It gives the impression that respondents are really at the destination, making them enjoy watching the video. The impact of perceived presence on perceived usefulness seems considerable even though its magnitude is the smallest compared to perceived ease of use and perceived enjoyment. The results are similar to those of Tussyadiah et al. (2018) and Song et al. (2021). Perceived presence leads to perceived usefulness when using VR technology for travel planning and tourism purposes. Lo and Cheng (2020) stated that the perceived presence in the virtual environment is essential as it affects one's experience while using the technology. The video presentation in the virtual tour enables users to experience the destination and feel their presence in the virtual environment. As a result, it generates favourable attitudes, beliefs, and behavioural intentions after watching the video. When watching the 360° videos, respondents feel like visiting the destination virtually. They can see the destination from various points to experience the destination before they visit the place. They can collect as much information as possible about the tourist destinations and help them make decisions to visit a destination.

The influence of perceived enjoyment on the desire to utilize virtual tour technology is considerable, and it was discovered to be the essential factor. It is consistent with previous research in the virtual tour context (Guo & Barnes, 2011; Pantano & Corvello, 2014; Tussyadiah et al., 2018; Vishwakarma et al., 2019). Perceived usefulness is also influenced by perceived enjoyment, consistent with Vishwakarma et al. (2019) and Venkatesh (2000). Due to its ease of operation and its ability to give a sense of presence at the destination, the users feel pleasure from using the 360-degree video of a virtual tour. Since the 360-degree video does not require special skills and does not require extra effort in setting up the technology like other forms of virtual technology, the users can focus on the video being presented in a more relaxing way. This pleasure feeling stimulates them to reuse the virtual tour technology for travel planning in the future.

In many cases, individuals' emotions affect their cognitive ability and decision-making (Schwarz, 2000; Bower, 1983). In this context, if users enjoy watching the destination through the 360° videos, they are likely to quickly absorb the information presented in the video and imagine the destination. Therefore, they perceive the technology as very beneficial for selecting suitable destinations for their future travel.

Consumer intention to use virtual tour technology is also driven by an individual's perception of the technology's usefulness, which is similar to Disztinger (2017), Vishwakarma et al. (2019), and Huang et al. (2016). The 360-degree video enables respondents to enjoy the video

and get information about the destination in this research. They can explore the destination virtually as if they are visiting the place. This technology stimulates the audio and visual senses of the users. Furthermore, as the destination is presented more excitingly and is more interactive, the users acquire more information about the destination. It makes them perceive that the technology is beneficial for travel planning and encourages them to use it again in the future.

CONCLUSION

A few studies have looked into the interest in adopting virtual reality technology for tourism in less technologically advanced countries. This study contributes to the body of knowledge on VR technologies in developing countries, where potential visitors are often confused and hesitant to choose a tourist destination. This study confirms that the extended TAM can better understand travellers' intention to use VR technology. The findings highlight the impact of perceived enjoyment and usefulness on the willingness to use virtual tours. This study reveals that the less complicated VR technology in virtual tourism may enhance users' enjoyment from using the technology and their perceptions of the virtual tour benefits. Perceived ease of use appears to have a higher implication on the perceived usefulness of virtual tours than perceived presence. Perceived presence significantly increases users' enjoyment from joining virtual tours, and the latter enhances users' perceptions of the benefits of a virtual tour. As VR technology offers innovative experiences to people in less technologically advanced countries, the enjoyment factor has a greater impact on the intention to use virtual tours than the usefulness factor.

Managerial Implications

Destination management organizations (DMOs) are competing with each other to attract tourists. Tourists tend to collect as much information about the destination before making decisions. The emergence of virtual technology makes conventional promotion materials that highly emphasize the 2D images and narration less attractive. Virtual technology that presents the 3D images enables potential tourists to feel and experience the destinations from all angles before visiting the spots. Furthermore, an excellent virtual technology application lets consumers immerse themselves in the virtual environment and enjoy the virtual experience.

Aside from being a means of promotion, VR technology in the tourism sector can also be made to suggest business innovation. In a pandemic situation, the number of visitors to tourism sites is decreasing as they are worried about getting infected with COVID-19 while travelling. With VR technology, tourism managers can create a virtual event

where visitors can enjoy 360-degree videos from their homes guided by a live tour guide. Visitors can feel the atmosphere of a tourist destination and seem to be in a tourist place by watching the video. The managers can also offer souvenirs to visitors. In addition to offering souvenirs, special food can also be offered from the tourism destination. The food can be delivered to the visitor's place or home. That way, the user will feel more natural in the tourist place. Furthermore, the sale of souvenirs and food can add a source of income for the manager of tourist attractions. With this virtual tour technology, customers can still enjoy the tourist atmosphere without leaving the house and the risk of being exposed to COVID-19.

By using VR technology, tourism managers can create video content that explains and describes tourist attractions. Based on our research, users are more interested in enjoying the content. Hence, the content creators should consider how they present the destination to make the users enjoy the video and get the information they need. Not only by having an exciting storyboard, but the video can also attach special effects and music, for instance, the sound of splashing water, wind blowing, and travellers' reactions when doing the activity, to enhance the users' experience and sense of presence when they watch the video. The tourism managers can upload the 360-degree video to YouTube to be monetized so that tourism managers have a new revenue stream apart from selling tourism packages. In addition to the 360-degree technology, they may also utilize the more advanced technology to give more exciting experiences to users when exploring the destinations.

Suggestions for Future Research

This study uses 360-degree video as a tool of virtual tour technology. More advanced virtual technologies may have different senses of presence, enjoyment, and benefits and require different technology literacy levels. Further research may use different virtual technology to test the research model. Most respondents involved in this study are Millennials. Different age groups may have different perceptions and acceptance toward technology. Scholars may consider conducting a comparative study across generations. Future studies may also include other variables in the model. For instance, individuals' level of openness to experience may affect their acceptance and willingness to use virtual technology.

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