

ENCOURAGING VIRTUAL REALITY EXPERIENCES: THE EFFECT ON TOURISTS' INTENTION TO VISIT TOURISM DESTINATION

Cheng-Wen LEE¹

Chung Yuan Christian University, Department of International Business, Taoyuan City, Taiwan, e-mail: chengwen@cycu.edu.tw

Idris IDRIS^{2*}

Chung Yuan Christian University, Program in Business, Taoyuan City, Taiwan; Universitas Negeri Malang, Social Studies Program, Malang, Indonesia, e-mail: idris.fis@um.ac.id

Citation: Lee, C.W., & Idris, I. (2024). ENCOURAGING VIRTUAL REALITY EXPERIENCES: THE EFFECT ON TOURISTS' INTENTION TO VISIT TOURISM DESTINATION. *Geojournal of Tourism and Geosites*, 57(4spl), 2052–2059. <https://doi.org/10.30892/gtg.574spl19-1372>

Abstract: This study aims to analyze the relationship among virtual reality experiences, virtual reality experiential outcomes, destination awareness, and intention to visit a destination. It is also investigated regarding the mediating role of the virtual reality experiences and destination awareness on intention to visit. This study used a questionnaire to collect data from tourist experiences using a virtual reality application. The 115 data collected were analysed by Partial Least Square (PLS) analysis. The finding indicates that the virtual reality experience does not significantly influence intention to visit. Furthermore, the results of the virtual reality experience also proved not to significantly influence intention to visit, so the virtual reality experiential outcomes were not able to become an important factor as an indirect relationship between virtual reality experiences and intention to visit a destination. However, the virtual reality experience still has an influence on destination awareness and has an indirect effect on intention to visit destinations through mediation from destination awareness. Therefore, tourism managers must be able to utilize VR as an information medium related to the destinations offered, so that tourists will get a lot of useful information to be more familiar with these destinations which will ultimately influence the intention to visit a destination. The limitations of the study and future research agenda are also highlighted.

Keywords: virtual reality experiences, virtual reality experiential outcomes, destination awareness, and intention to visit destinations

* * * * *

INTRODUCTION

Tourism is a service industry that relies on experience in which the product is intangible (Tasci and Gartner, 2016). The intangible of tourism products makes the tourism industry vulnerable to threats and risks (i.e., crime, natural disasters, disease outbreaks, socio-political instability). This also makes tourists have difficulty in assessing the attractiveness of a tourist destination because in making a travel decision it is only based on perception, not reality (Hudson et al., 2011; Ye and Tussyadiah, 2011). In addition, the perception of risk is important for tourists in determining the trip to the destination. Increasing natural threats (e.g., disease outbreaks, natural disasters) can inhibit tourist arrivals (Chew and Jahari, 2014). The emergence of the Covid 19 disease outbreak in recent years is an example of the risk perception in tourism. The Covid 19 pandemic resulted in a dramatic decline in tourism industry (Abbas, 2021). The pandemic impacted a tourist behavior such as canceling planned travel (Bauer et al., 2021).

Now, however, the tourism industry is slowly recovering and there is new interest and opportunities for technology advancement contributing to the recovery of some destinations (Yung et al., 2021). Tourism stakeholders during the post-pandemic period are trying to market their tourism products in a way that is attractive to tourists. A virtual reality (VR) is one of the product that has been widely used around the globe. The advantages in terms of interactivity, diving, and spatial visualization provided by VR are one of the reasons for using this technology in tourism (Guttentag, 2010). In addition, with these advantages VR can provide a view that it can be an outstanding resource for marketing intangible tourism and experiences as a product (Huang et al., 2016; Hyun and O'Keefe, 2012). The use of VR in tourism is used as a medium for tourism promotion (Adachi et al., 2020; Griffin et al., 2017, 2022; Idris et al., 2021). Several studies have revealed that the use of VR is an effective and efficient promotional tool to use. The main reason is because VR can reduce uncertainty related to intangible tourism products. The "try before you buy" option can reduce tourists' worries in deciding their trip because they get a more realistic experience of the destination (Alyahya and McLean, 2022). As a result tourists can be more interested in visiting destinations they have never visited before (Pantano and Servidio, 2011).

Virtual Reality (VR) refers to a computer-generated 3D environment where users can navigate and interact in real-time simulations (Gutierrez et al., 2008; Guttentag, 2010). Computerized interfaces are used in VR to simulate 3D objects such as places, people and other entities in a virtual environment (VE) so that they can involve the use of one or more senses and interact in real time. Then, at the same time, a user gets a sense of presence (Hudson et al., 2019; van Kerrebroeck et al.,

* Corresponding author

2017). The VR in tourism is intended to make tourists can experience VR applications or so-called virtual reality experiences (VRE). Goodwin (2016) revealed that there are six dimensions of VRE including 360 photo and video emulation, VR with interactivity and haptic landscape, and directional motion. However, based on several studies revealed that VRE is affected by "immersion". It is a process of involving the user until they are fully immersed in VE to forget about time and escape from the real world for a while (Vynogradova, 2014; Yee, 2006).

Virtual reality experiential outcomes (VREO), on the other hand, focuses on the results obtained directly from an experience. A number of studies suggest that cognitive orientation or similar influences are common themes associated with end-state experiences. Cognitive experiential outcomes involve conscious thoughts or mental states, while affective experiential outcomes are related to a person's moods, feelings, and emotions (Fernandes and Cruz, 2016). Experiential outcomes consist of loyalty, satisfaction, and advocacy. The experiential outcome is the result of the actual experience (Hassenzahl and Tractinsky, 2011). In VR use, experience outcomes relate to how VR impact users thought processes, feel, and conclusions of their VR experiences (Singh, 2018). Moreover, destination awareness (DA) refers to knowledge, experience, awareness, and expertise (Sharifpour et al., 2013). According to Alba and Hutchinson (1987) DA has a relationship with experience. DA, in the tourism concept, is often conceptualized as one dimension from previous visits (Milman and Pizam, 2016; Sun et al., 2013). However, according to Gursoy (2011) non-visitors can also have certain DA due to knowledge. Education, mass media, travel guides, personal contacts, and the Internet are very helpful in obtaining information on tourist destinations even before visiting them (Xiang et al., 2015). To summarise, the previous studies on experience outcomes, and destination awareness are still rare, especially related to the VR context. Thus, this study aims to examine the correlation among virtual reality experiences (VRE), virtual reality experiential outcomes (VREO), destination awareness (DA), and tourist intentions to visit tourist destinations (IVD).

LITERATURE REVIEW AND HYPOTHESES

VRE and IVD

Based on the recent literature, it can be indicated that the minimum requirements to be able to experience VRE have not been well defined. Perez-Marcos (2018) offers VRE dimensions including immersion, interaction, usability, and illusion. The immersion most likely to be associated with VRE is defined as user engagement during the consumption phase, which makes them momentarily forget about the real environment (Vynogradova, 2014). Interaction in VRE naturally starts with visual space exploration. When the user is experiencing immersion, at that time he also performs interaction changing the view point in looking around. That is because their path in the VR environment is predetermined and cannot be changed (Strickland, 2019). The usage is related to users' efficiency, effectiveness, and satisfaction in achieving their goals (Diels et al., 2017). This means that usability is a software product that is easy to understand, learn, and use by users as well as being attractive when used under certain conditions (Costabile, 2001). In the meanwhile, a variety of perceptual illusions pertaining to space, environment, and self make up illusions in VRE (Perez-Marcos, 2018).

Travel motivation or intention visit destination (IVD) has a vital role for tourism planning and marketing. Several tourism literatures in the last decade have examined IVD to understand tourist behavioral intentions in choosing tourism destinations (Lam and Hsu, 2006). One popular motivational model for travel intention is push and pull (Crompton, 1979). The push and pull factors are the two strengths that make up the intention to choose tourist places according to the push and pull travel intention model. Human needs, such as the need to escape, explore new things, seek adventure, fulfill dreams, rest and relax, maintain one's physical and mental well-being, maintain one's social standing, and so on, provide the push factor. Pull factors, which include things like food, people, recreational facilities, historical and natural features, and the destination's image, are external elements that draw people to recognize the desire for specific travel experiences. As a result, the pull element helps to clarify the destination decision, while the push factor helps to explain the urge to travel (Uysal and Jurowski, 1994). As a result, an individual's IVD is drawn toward an objective by outside influences and pushed by internal motivations. Guttentag's research (2010) demonstrated how VR can, but only to a certain extent, meet every push element for an individual. For instance, offering a means of escape, even if it's merely psychological. While the experience felt through reproductions won't be the same as the experience felt in real life, it might still offer novelty and excitement for VR users (Stangl and Weismayer, 2008). VR is also capable of meeting all of a person's pull factors, although only to a certain extent. For example, recreating sites or objects in a virtual environment that is much better than activity, and can enjoy social interaction (Wall and Mathieson, 2006). Therefore, the first hypothesis proposed regarding the relationship between VRE and IVD is as follows.

H1. There was a positive effect between VRE and IVD.

VREO and IVD

VREO is the outcome of travelers' subjective reactions and their experiences with how they feel when engaging in tourism-related activities (Quan and Wang, 2004). The term VREO describes the impact of virtual reality on tourists, including their emotions and inferences from the experience. VREO is seen as the outcome of visitors' emotional interactions with virtual reality technology, which are predicated on their happiness, loyalty, and advocacy for the medium (Singh, 2018). VR experiential satisfaction is a reflection of the satisfaction felt from VR content. Visitors can compare between their experiences from VR and their expectations of VR, the result is positive and negative disconfirmation can occur (Kao et al., 2008). VR experiential loyalty is related to how users experience a VR environment and have the desire to re-purchase VR products and services provided by service providers (Kim et al., 2020). The VREO discussed in this study is VR experiential advocacy. However, in this study it was combined with VR experiential loyalty. VR experiential advocacy relates to how tourists are

willing to provide recommendations and praise for VR technology provided to other tourists (Wu and Cheng, 2017). Numerous VR research demonstrated a connection between IVD and VR experience enjoyment (Hosany et al., 2016; Loureiro et al., 2021). Research from Kim et al. (2020) showed positive results that VR engagement directly influences individuals' intention to visit destinations they have visited virtually. Loureiro et al. (2021) also found that VR experiential satisfaction is a significant driver in tourist IVD. Meanwhile, experiential satisfaction and experiential loyalty are two basic things in success in any business (Rust and Chung, 2006). Both of these are related to the conceptualization of combining the idea that the service experienced subjectively by users is better measured by predictors of experiential satisfaction and experiential loyalty than measured objectively (Oliver, 2014). This indicates that these factors have a meaningful association with one another. Regarding the connection between VREO and IVD, there is still unanswered study.

H2. There was a positive effect between VREO and IVD.

DA and IVD

The ideas of awareness, knowledge, experience, and competence are frequently connected to the concept of destination awareness (DA) (Sharifpour et al., 2013). The quantity of customer experiences pertaining to a product is what defines DA. In other words, DA is a conception of past visits or the quantity of past visits (Alba and Hutchinson, 1987; Sun et al., 2013). However, several studies also show that DA cannot only be obtained from experience, but can also be obtained from education, mass media, personal contact with other individuals, and travel guides (Gursoy, 2011; Xiang et al., 2015). Consequently, DA is more related to the hunt for information and the time spent finding it (Baker et al., 1986). Thus, there are two definitions of DA and experience gained from prior information, knowledge gained from information about service providers and knowledge gained from direct engagement with service providers (Huang et al., 2014; Webb, 2006).

Numerous investigations have demonstrated that DA and IVD do, in fact, have a favorable association (Chen and Lin, 2012; Tsai, 2012). Baloglu (2001) showed that information which is important in DA also has a positive relationship with IVD. In addition, a person's subjective knowledge is also an important indicator in making decisions to visit a destination (Sharifpour et al., 2013). Therefore, we formulate a hypothesis related to the relationship between DA and IVD.

H3. There was a positive effect between DA and IVD.

VRE, VREO and IVD

VRE has been verified to be an important factor in VREO (Chandra, 2014). Quan and Wang (2004) revealed that VREO comes from the results of the user's experience in participating in the VR environment. VREO is the result of the user's emotional VRE with VR which is based on VR experiential satisfaction, VR experiential advocacy, and VR experiential loyalty (Singh, 2018). Hosany et al. (2016) and Loureiro et al. (2021) found that there is an influence relationship between VR experiential satisfaction and IVD. In addition, in the opinion of Rust and Chung (2006) experiential satisfaction and experiential loyalty are two basic things in success in any business. As a result, we contend that VREO might mediate between VRE and IVD.

H4. There was a positive effect between VRE and VREO.

H5. VREO can be a mediator between VRE and IVD.

VRE, DA and IVD

VRE can be interpreted as a user experience with VR or a VR environment (Perez-Marcos, 2018). In the meantime, awareness, knowledge, experience, and competence are ideas that are connected to DA (Sharifpour et al., 2013). According to Baker et al. (1986) DA is associated with the information search and the duration of time spent finding the information. Virtual reality (VR) can offer comprehensive information about travel places, particularly prior to travel (Cho et al., 2008). Moreover, VR is defined as a visual medium that assumed by Liu (2005) as the most significant contributor to DA, so VR has the potential to offer more information and contribute to DA. Baloglu (2001) explained that information which is important in DA also has a positive relationship with IVD. Numerous investigations have demonstrated that DA and IVD are positively correlated (Chen and Lin, 2012; Tsai, 2012). Therefore, we assumed that DA could potentially mediate VRE and IVD.

H6. There was a significant positive effect between VRE and DA.

H7. DA can be a mediator between VRE and IVD.

MATERIALS AND METHODS

Sample Design and Data Collection

The survey questionnaire was conducted two months after initial contact was made in person with the Tourism Office of North Lombok Regency, Indonesia, explaining research objectives and permits. After obtaining approval, online and offline questionnaires were distributed to tourists in the Lombok area through direct interviews and Google forms. As an experiment, participants tried one of our virtual reality-tourism map applications, called Explotours (Explore Lombok Tours). After trying the Explotours application, 115 respondents completed the questionnaire (the respondents was more than expected samples). The sample was determined based on the Lemeshow formula:

$$n = \frac{z^2 p (1 - p)}{d^2} \quad n = \frac{1.96^2 \cdot 0.5 (1 - 0.5)}{0.1^2} \quad n = 96.4 \approx 100$$

Where: n = total sample; z = score of confidence level 95% = 1.96; p = maximum estimation = 0.5; d = margin error = 10%. The majority of responders (62.6%) are men, (55.7%) are between the ages of 17 and 24 (35.8%), work as students (34.8%), and have a high school or technical school degree (45.2%) (Table 1).

Table 1. Distribution of respondent characteristics

		n	Presentase			n	Presentase
Gender	Male	72	62.6	Age	17-24 years	64	55.7
	Female	43	37.4		25-34 years	34	29.6
Occupation	Students	40	34.8		35-50 years	15	13.0
	Private sector	32	27.8		>50 years	2	1.7
	Civil servant	1	0.9	Education	Elementary school	20	17.4
	Self-employed	35	30.4		Junior high school	13	11.3
	Housewife	1	0.9		Senior high school	52	45.2
	Others	6	5.2		Bachelor/Master	30	26.1

Variables and Measures

The variables VRE, VREO, DA, and IVD are included in this study. The evaluation of instrument measurements involved the application of validity and reliability tests in an effort to determine the degree of accuracy and consistency. The loading factor value, which must be greater than 0.6, and the average variance extract (AVE) value, which must be greater than 0.5 for construct validity, served as the foundation for the validation requirements. Additionally, for construct dependability, the values of Cronbach Alpha (CA) and Composite dependability (CR) must be greater than 0.6 and 0.7, respectively (Hair et al., 2016). All of the variables in this study were operationalized using accurate and trustworthy measures from earlier empirical research that was published. VRE questions were compiled from pertinent literature and adjusted for this study's setting. Each item in each construct was measured and rated on a 5-point Likert scale from 1 "Strongly disagree" to 5 "Strongly agree". Wu et al. (2020) developed a 24-item instrument to measure virtual reality experiences (VRE) which includes four indicators: immersion, interaction, usability, and illusion. From this scale, 17 items were selected according to the context of research on virtual reality experiences (VRE). According to Table 2, AVE is 0.645, whereas CR and CA are, respectively, 0.969 and 0.966. This indicates that the construct's validity and reliability standards have been met.

Wu et al. (2020) created ten items to assess virtual reality experience outcomes (VREO), which are comprised of three indicators: VR advocacy, VR experiential loyalty, and VR experiential satisfaction. This work serves as the basis for the VREO instrument. Only two measures, VR experiential loyalty and VR experiential satisfaction, were chosen out of the three. This study included seven items overall from the two indicators since they were pertinent to the context of virtual reality experience outcomes (VREO). With an AVE value of 0.679, which indicates that the VREO items have been fulfilled. Table 2 displays the validity and dependability of the items. In the meantime, they also surpassed the standards, as evidenced by the CR and CA values, which were, respectively, 0.936 and 0.921.

The destination awareness (DA) instrument is measured by four items that are listed in the appendix. These four items are based on relevant previous research and have been modified from Lai and Vinh (2013); Yoo et al. (2017). The instrument's reliability and validity were demonstrated by an AVE of 0.701, CR, and CA of 0.903 and 0.857, respectively. As a result, the instrument's build measurement is deemed consistent. In addition, the intention to visit destination (IVD) instrument is measured by five items that reflect the behavior of tourists in their intention to visit destinations. The five items selected (listed in the appendix) have been adopted and modified from previous studies (Atzeni et al., 2022; Marasco et al., 2018). The AVE value, as seen in Table 2, is 0.760. In the meantime, CR and CA are, respectively, 0.941 and 0.921. This indicates that the instrument complied with the specifications.

Table 2. Value of loading factor, AVE, composite reliability (CR), and cronbach alpha (CA)

Variables	Indicators	Items	Loading	AVE	CR	CA	Variables	Indicators	Items	Loading	AVE	CR	CA	
VRE	Immersion	IM1	0.804	0.645	0.969	0.966	VREO	VR experiential satisfaction	VES1	0.752	0.679	0.936	0.921	
	Interaction	IN1	0.819						VES2	0.844				
		IN2	0.840						VES3	0.826				
		IN3	0.829						VES4	0.886				
		IN4	0.837					VR experiential loyalty	VEL1	0.803				
		IN5	0.828						VEL2	0.850				
	US1	0.843				VEL3			0.798					
	Usability	US2	0.833				DA	DA1	0.849	0.701	0.903	0.857		
		US3	0.863					DA2	0.853					
		US4	0.822					DA3	0.858					
		US5	0.811					DA4	0.786					
		Illusion	IL1	0.746				IVD	IVD1	0.875	0.760	0.941	0.921	
	IL2		0.801				IVD2		0.874					
	IL3		0.734				IVD3		0.861					
	IL4		0.737				IVD4		0.887					
	IL5		0.745				IVD5		0.862					
	IL6		0.737											

RESULTS AND DISCUSSION

500 subsamples of the gathered data were utilized in this study's partial least square (PLS) analysis, which was conducted utilizing the bootstrapping technique. Testing the proposed hypotheses is the objective. The hypothesis is accepted if the data indicate that the association between the variables has a significance level of less than 0.05.

Table 3. Hypotheses testing by PLS (Note: VRE - virtual reality experiences; VREO - virtual reality experiential outcomes; DA - destination awareness; IVD - intentions to visit tourist destinations)

Hypotheses	Relationship	(β)	SE	sig.	Decision
1	VRE - IVD	0.006	0.066	0.923	Not supported
2	VREO - IVD	0.153	0.097	0.115	Not supported
3	DA - IVD	0.728	0.077	0.000	Supported
4	VRE - VREO	0.531	0.085	0.000	Supported
5	VRE - DA	0.540	0.076	0.000	Supported
6	VRE - VREO - IVD	0.082	0.056	0.146	Not supported
7	VRE - DA - IVD	0.393	0.071	0.000	Supported

According to Table 3, there is no direct correlation between VRE and IVD ($\beta = -0.006$, sig. = 0.923), which contradicts the initial hypothesis. This indicates that VRE has no appreciable beneficial impact on IVD. Additionally, VREO ($\beta = 0.153$, sig. = 0.115) did not demonstrate any significant favorable impact on IVD. H1 and H2 are therefore disproved. On the other hand, DA has a positive and significant influence on IVD with a value of $\beta = 0.728$ and sig. = 0.000. Moreover, VRE had a noteworthy and favorable impact on DA ($\beta = 0.540$, sig. = 0.000) and VREO ($\beta = 0.531$, sig. = 0.000). H3, H4, and H5 are therefore approved. In the meantime, there was no discernible impact ($\beta = 0.082$, sig. = 0.146) in the VREO mediation test results regarding the connection between VRE and IVD. H6 is therefore disregarded. Additionally, it was demonstrated that DA acted as a mediator between IVD and VRE ($\beta = 0.393$, sig. = 0.000). H7 is therefore approved. The path coefficient of the proposed hypothesis is displayed in Figure 1.

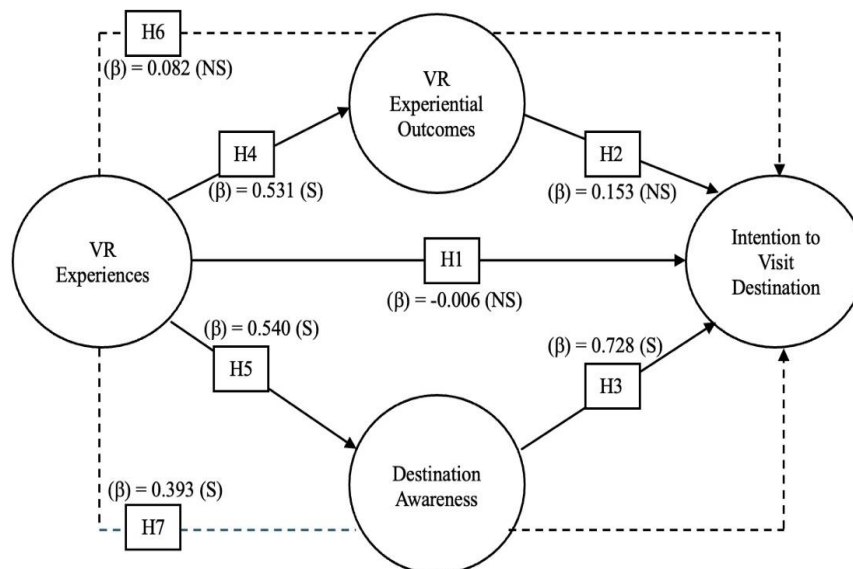


Figure 1. The diagram of hypotheses (Note: S = Significant, NS = Not Significant)

Numerous earlier investigations that examined the impact of VRE on IVD produced encouraging and noteworthy findings (H. Lee et al., 2020; M. Lee et al., 2020; Park et al., 2015). A study from Alyahya and McLean (2022) in the United Kingdom based on a lab experiment on 204 participants was conducted to test their attitudes towards tourist destinations before receiving stimuli (VR experience stimuli and traditional website experiences).

The result was a difference between the two, as evidenced by a positive and significant effect of the VRE on tourist attitudes in IVD. Although several previous studies showed significant results, in this study the results were different. The results of the correlation test between VRE and IVD showed that there was no positive relationship.

This finding supports Deng et al. (2019) study which states that VRE actually weakens IVD. The VR experience felt by tourists makes them feel a consumption experience that is close to reality weakens their desire or intention to visit. Tourists feel that the experience provided by VR has been considered similar to the actual experience so they feel satisfied. The result is reduced interest or intention to get involved or visit.

The same finding was also shown in the relationship between VRE and IVD where the relationship between the two was not positive and significant. This is because the existence of VREO is the result of VRE. In accordance with the opinion of Quan and Wang (2004) that VREO is the result of the VR experience of tourists about how they feel and their subjective responses after participating in a VR environment. VREO refers to how tourists are affected by VR and how they feel and draw conclusions from VRE (Singh, 2018). However, the research findings also show that VRE has a positive correlation to VREO. This means that these results are in accordance with previous findings which state that VREO is the result of VRE. In addition, Verhagen et al. (2011) also found that the VRE dimension, namely interaction, is a driver of user satisfaction with the VR world (VREO = VR experiential satisfaction). Mütterlein's opinion (2018) also said that the VRE dimension—immersion—affects satisfaction with the VR experience and is an appropriate predictor in the VR context. As with the VRE dimension, illusion is also a predictor of visitor satisfaction in the VR context (Slater, 2018). Although several

studies have shown that VR experiential satisfaction can have a positive effect on IVD (Hosany et al., 2016; Loureiro et al., 2021). However, the findings also show that there is no indirect relationship between VRE and IVD via VREO.

Regarding the destination awareness, this study found that there was a positive connection between DA and IVD. This finding supports the findings of Baker et al. (1986) that DA, which is defined as information search and the amount of time spent accessing information related to a destination, has a positive correlation to IVD. In addition, the intention to visit is basically in the decision making. Thus, one's subjective knowledge is an important indicator (Baloglu, 2001).

Furthermore, a positive relationship was found between VRE and DA which also verified that there was an indirect relationship between VRE and IVD through DA. According to Sharifpour et al. (2013) DA is related to the concepts of awareness, knowledge, experience, and expertise. Therefore, VRE can be positively related to DA. Additionally, Cho et al. (2008) stated that DA is more related to information seeking. Meanwhile, VR in its use can provide a wealth of information to users. These findings support the findings of Liu (2005) which states that VRE has great potential to provide more information and contribute to DA which ultimately affects IVD.

CONCLUSION

VREO and DA, in this study, are positioned as mediation between VRE and IVD to determine the indirect effect of these two variables. The findings show that VRE has no direct influence as an important factor in intention to visit a destination (IVD). The study also found that VREO associated with VRE also did not show a direct effect on IVD. The findings from VRE and VREO also influence the role of VREO as a mediator for IVD. The findings of this study contradict several previous studies which stated VRE and VREO to be important factors for tourist IVD. Therefore, tourism managers are advised to make more use of the use of VR in tourism. This is because VREO has VR experiential satisfaction and VR experiential loyalty which can increase tourist interest. This means that there is still a lack of use of VR in tourism which causes tourists not to experience satisfaction and leads to a lack of tourist interest in visiting or returning to tourism destinations. However, VRE is still proven to be an important factor in IVD through the mediation of DA.

This means that the use of VR can increase the level of tourist familiarity with a destination. If tourists are more familiar with a destination, it will affect the intention of tourists to visit the destination. Therefore, tourism managers must be able to utilize VR as an information medium related to the destinations offered, so that tourists will get a lot of useful information to be more familiar with these destinations which will ultimately influence the intention to visit the destination.

This study has several limitations in its process including; This study tested VRE of tourists using VR applications that had little sensory experience, even categorized as low-level sensory VR experiences that only included visual and tactile information. Therefore, future research is expected to be able to use VR applications that provide high-level sensory (visual, tactile, and auditory) VR experiences in order to find new results related to the effect of VRE on IVD. Moreover, to enrich the literature in this discipline, testing the influence of moderator variables should also be considered for future research.

Author Contributions: Conceptualization, C.W. L. and I.I.; methodology, C.W. L. and I.I.; software, I.I.; validation, C.W.L.; formal analysis, C.W. L.; investigation, C.W. L. and I.I.; data curation, I.I.; writing - original draft preparation, C.W. L. and I.I.; writing - review and editing, C.W. L.; visualization, I.I; supervision, C.W. L.; project administration, C.W.L. All authors have read and agreed to the published version of the manuscript.

Funding: Not applicable.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgements: The research undertaken was made possible by the equal scientific involvement of all the authors concerned.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

- Abbas, J. (2021). Crisis management, transnational healthcare challenges and opportunities: The intersection of COVID-19 pandemic and global mental health. *Research in Globalization*, 3, 100037. <https://doi.org/10.1016/J.RESGLO.2021.100037>
- Adachi, R., Cramer, E. M., & Song, H. (2020). Using virtual reality for tourism marketing: A mediating role of self-presence. *The Social Science Journal*, 59(4), 657–670. <https://doi.org/10.1080/03623319.2020.1727245>
- Alba, J. W., & Hutchinson, J. W. (1987). Dimensions of Consumer Expertise. *Journal of Consumer Research*, 13(4), 411–454. <https://doi.org/10.1086/209080>
- Alyahya, M., & McLean, G. (2022). Examining Tourism Consumers' Attitudes and the Role of Sensory Information in Virtual Reality Experiences of a Tourist Destination. *Journal of Travel Research*, 61(7), 1666–1681.
- Atzeni, M., del Chiappa, G., & Mei Pung, J. (2022). Enhancing visit intention in heritage tourism: The role of object-based and existential authenticity in non-immersive virtual reality heritage experiences. *International Journal of Tourism Research*, 24(2), 240–255. <https://doi.org/10.1002/jtr.2497>
- Baker, W., Hutchinson, J. W., Moore, D., & Nedungadi, P. (1986). Brand Familiarity and Advertising: Effects on the Evoked Set and Brand Preference. *Advances in Consumer Research*, 13, 637–642. <https://www.acrwebsite.org/volumes/6570/volumes/v13/NA-13/full>
- Baloglu, S. (2001). Image variations of Turkey by familiarity index: informational and experiential dimensions. *Tourism Management*, 22(2), 127–133. [https://doi.org/10.1016/S0261-5177\(00\)00049-2](https://doi.org/10.1016/S0261-5177(00)00049-2)

- Bauer, A., Garman, E., McDaid, D., Avendano, M., Hessel, P., Díaz, Y., Araya, R., Lund, C., Malvasi, P., Matijasevich, A., Park, A., la, Paula, C. S., Ziebold, C., Zimmerman, A., & Evans-Lacko, S. (2021). Integrating youth mental health into cash transfer programmes in response to the COVID-19 crisis in low-income and middle-income countries. *The Lancet Psychiatry*, 8(4), 340–346. [https://doi.org/10.1016/S2215-0366\(20\)30382-5](https://doi.org/10.1016/S2215-0366(20)30382-5)
- Chandra, S. (2014). The Impact of Customer Experience toward Customer Satisfaction and Loyalty of Ciputra World Surabaya. *IBuss Management*, 2(2), 1–11. <https://publication.petra.ac.id/index.php/ibm/article/view/2398>
- Chen, C. C., & Lin, Y. H. (2012). Segmenting Mainland Chinese Tourists to Taiwan by Destination Familiarity: a Factor-cluster Approach. *International Journal of Tourism Research*, 14(4), 339–352. <https://doi.org/10.1002/JTR.864>
- Chew, E. Y. T., & Jahari, S. A. (2014). Destination image as a mediator between perceived risks and revisit intention: A case of post-disaster Japan. *Tourism Management*, 40, 382–393. <https://doi.org/10.1016/j.tourman.2013.07.008>
- Cho, Y. H., Wang, Y., & Fesenmaier, D. R. (2008). Searching for Experiences. *Journal of Travel & Tourism Marketing*, 12(4), 1–17. https://doi.org/10.1300/J073V12N04_01
- Costabile, M. F. (2001). Usability In The Software Life Cycle. *Handbook of Software Engineering and Knowledge Engineering*, 179–192. https://doi.org/10.1142/9789812389718_0010
- Crompton, J. L. (1979). Motivations for pleasure vacation. *Annals of Tourism Research*, 6(4), 408–424. [https://doi.org/10.1016/0160-7383\(79\)90004-5](https://doi.org/10.1016/0160-7383(79)90004-5)
- Deng, X., Unnava, H. R., & Lee, H. (2019). “Too true to be good?” when virtual reality decreases interest in actual reality. *Journal of Business Research*, 100, 561–570. <https://doi.org/10.1016/J.JBUSRES.2018.11.008>
- Diels, C., Erol, T., Kukova, M., Wasser, J., Cieslak, M., Payre, W., Miglani, A., Mansfield, N., Hodder, S., & Bos, J. (2017). Designing for comfort in shared and automated vehicles (SAV): a conceptual framework. *International Comfort Congress (ICC2017)*. <http://irep.ntu.ac.uk/id/eprint/30975/>
- Fernandes, T., & Cruz, M. (2016). Dimensions and outcomes of experience quality in tourism: The case of Port wine cellars. *Journal of Retailing and Consumer Services*, 31, 371–379. <https://doi.org/10.1016/J.JRETCONSER.2016.05.002>
- Goodwin, T. (2016). *The 6 Dimensions Of Virtual Reality*. <https://www.forbes.com/sites/tomfgoodwin/2016/04/20/the-6-dimensions-of-virtual-reality/?sh=627bbea118be>
- Griffin, T., Giberson, J., Lee, S. H. (Mark), Guttentag, D., Kandaurova, M., Sergueeva, K., & Dimanche, F. (2017). Virtual Reality and Implications for Destination Marketing. *Travel and Tourism Research Association: Advancing Tourism Research Globally*. https://scholarworks.umass.edu/tra/2017/Academic_Papers_Oral/29
- Griffin, T., Guttentag, D., Lee, S. H., Giberson, J., & Dimanche, F. (2022). Is VR always better for destination marketing? Comparing different media and styles. *Journal of Vacation Marketing*, 29(1), 119–140. <https://doi.org/10.1177/13567667221078252>
- Gursoy, D. (2011). *Modeling tourist information search behavior: A structural modeling approach*. Saarbrücken: Lambert Academic Publishing.
- Gutierrez, M., Vexo, F., & Thalmann, D. (2008). *Stepping into virtual reality*. Springer Science & Business Media.
- Guttentag, D. A. (2010). Virtual reality: Applications and implications for tourism. *Tourism Management*, 31(5), 637–651. <https://doi.org/10.1016/J.TOURMAN.2009.07.003>
- Hair, J., Anderson, R., Black, B., & Babin, B. (2016). *Multivariate Data Analysis* (7th ed.). Pearson Education. <https://books.google.com/books?id=LKOSAgAAQBAJ>
- Hassenzahl, M., & Tractinsky, N. (2011). User experience - a research agenda. *Behaviour & Information Technology*, 25(2), 91–97. <https://doi.org/10.1080/01449290500330331>
- Hosany, S., Prayag, G., van der Veen, R., Huang, S. (Sam), & Deesilatham, S. (2016). Mediating Effects of Place Attachment and Satisfaction on the Relationship between Tourists’ Emotions and Intention to Recommend. *Journal of Travel Research*, 56(8), 1079–1093. <https://doi.org/10.1177/0047287516678088>
- Huang, L., Gursoy, D., & Xu, H. (2014). Impact of personality traits and involvement on prior knowledge. *Annals of Tourism Research*, 48, 42–57. <https://doi.org/10.1016/J.ANNALS.2014.05.010>
- Huang, Y. C., Backman, K. F., Backman, S. J., & Chang, L. L. (2016). Exploring the Implications of Virtual Reality Technology in Tourism Marketing: An Integrated Research Framework. *International Journal of Tourism Research*, 18(2), 116–128. <https://doi.org/10.1002/JTR.2038>
- Hudson, S., Matson-Barkat, S., Pallamin, N., & Jegou, G. (2019). With or without you? Interaction and immersion in a virtual reality experience. *Journal of Business Research*, 100, 459–468. <https://doi.org/10.1016/J.JBUSRES.2018.10.062>
- Hudson, S., Wang, Y., & Gil, S. M. (2011). The influence of a film on destination image and the desire to travel: a cross-cultural comparison. *International Journal of Tourism Research*, 13(2), 177–190. <https://doi.org/10.1002/JTR.808>
- Hyun, M. Y., & O’Keefe, R. M. (2012). Virtual destination image: Testing a telepresence model. *Journal of Business Research*, 65(1), 29–35. <https://doi.org/10.1016/J.JBUSRES.2011.07.011>
- Idris, I., Adi, K. R., Firmansyah, R., Nadhianty, A., Mobarq, M. H., Putri, P. G., Pratama, A. S., & Wahono, E. R. (2021). Developing smart tourism using virtual reality as a tourism promotion strategy in Indonesia. *Geojournal of Tourism and Geosites*, 35(2), 332–337. <https://doi.org/10.30892/GTG.35210-656>
- Kao, Y. F., Huang, L. S., & Wu, C. H. (2008). Effects of Theatrical Elements on Experiential Quality and Loyalty Intentions for Theme Parks. *Asia Pacific Journal of Tourism Research*, 13(2), 163–174. <https://doi.org/10.1080/10941660802048480>
- Kim, M., Lee, C., & Jung, T. (2020). Exploring consumer behavior in virtual reality tourism using an extended stimulus-organism-response model. *Journal of Travel Research*, 59(1), 69–89. <https://doi.org/10.1177/0047287518818915>
- Lai, W. H., & Vinh, N. Q. (2013). Online Promotion and Its Influence on Destination Awareness and Loyalty in the Tourism Industry. *Advances in Management & Applied Economics*, 3(3), 1792–1752.
- Lam, T., & Hsu, C. H. C. (2006). Predicting behavioral intention of choosing a travel destination. *Tourism Management*, 27(4), 589–599. <https://doi.org/10.1016/j.tourman.2005.02.003>
- Lee, H., Jung, T. H., tom Dieck, M. C., & Chung, N. (2020). Experiencing immersive virtual reality in museums. *Information & Management*, 57(5), 103229. <https://doi.org/10.1016/J.IM.2019.103229>
- Lee, M., Lee, S. A., Jeong, M., & Oh, H. (2020). Quality of virtual reality and its impacts on behavioral intention. *International Journal of Hospitality Management*, 90, 102595. <https://doi.org/10.1016/J.IJHM.2020.102595>
- Liu, S. Q. (2005). A Theoretic Discussion of Tourism E-commerce. *7th International Conference on Electronic Commerce*, 1–5. www.crt.dk

- Loureiro, S. M. C., Japutra, A., Molinillo, S., & Bilro, R. G. (2021). Stand by me: analyzing the tourist–intelligent voice assistant relationship quality. *International Journal of Contemporary Hospitality Management*, 33(11), 3840–3859. <https://doi.org/10.1108/IJCHM-09-2020-1032/FULL/XML>
- Marasco, A., Buonincontri, P., van Niekerk, M., Orłowski, M., & Okumus, F. (2018). Exploring the role of next-generation virtual technologies in destination marketing. *Journal of Destination Marketing & Management*, 9, 138–148. <https://doi.org/10.1016/J.JDMM.2017.12.002>
- Milman, A., & Pizam, A. (2016). The Role of Awareness and Familiarity with a Destination: The Central Florida Case. *Journal of Travel Research*, 33(3), 21–27. <https://doi.org/10.1177/004728759503300304>
- Mütterlein, J. (2018). The Three Pillars of Virtual Reality? Investigating the Roles of Immersion, Presence, and Interactivity. *Proceedings of the Annual Hawaii International Conference on System Sciences*, 1407–1415. <https://doi.org/10.24251/HICSS.2018.174>
- Oliver, R. L. (2014). Satisfaction: A behavioral perspective on the consumer, Second edition. In *Satisfaction: A Behavioral Perspective on the Consumer, Second Edition* (2nd ed.). Routledge.
- Pantano, E., & Servidio, R. (2011). An exploratory study of the role of pervasive environments for promotion of tourism destinations. *Journal of Hospitality and Tourism Technology*, 2(1), 50–65. <https://doi.org/10.1108/17579881111112412/FULL/XML>
- Park, M., Oh, H., & Park, J. (2015). Measuring the Experience Economy of Film Festival Participants. *International Journal of Tourism Sciences*, 10(2), 35–54. <https://doi.org/10.1080/15980634.2010.11434625>
- Perez-Marcos, D. (2018). Virtual reality experiences, embodiment, videogames and their dimensions in neurorehabilitation. *Journal of NeuroEngineering and Rehabilitation*, 15(1). <https://doi.org/10.1186/s12984-018-0461-0>
- Quan, S., & Wang, N. (2004). Towards a structural model of the tourist experience: an illustration from food experiences in tourism. *Tourism Management*, 25(3), 297–305. [https://doi.org/10.1016/S0261-5177\(03\)00130-4](https://doi.org/10.1016/S0261-5177(03)00130-4)
- Rust, R. T., & Chung, T. S. (2006). Marketing Models of Service and Relationships. *Marketing Science*, 25(6), 560–580. <https://doi.org/10.1287/MKSC.1050.0139>
- Sharifpour, M., Walters, G., Ritchie, B. W., & Winter, C. (2013). Investigating the Role of Prior Knowledge in Tourist Decision Making. *Journal of Travel Research*, 53(3), 307–322. <https://doi.org/10.1177/0047287513500390>
- Singh, I. (2018). Interrelations, transitions, and experiential outcomes are the main domains to lay the foundation and maximum learning in Architectural Design Studio. *International Journal of Scientific & Engineering Research*, 9(7), 1397–1403.
- Slater, M. (2018). Immersion and the illusion of presence in virtual reality. *British Journal of Psychology*, 109(3), 431–433. <http://publicationslist.org/data/melslater/ref-344/bjop.12305.pdf>
- Stangl, B., & Weismayer, C. (2008). Websites and Virtual Realities: a Useful Marketing Tool Combination? An Exploratory Investigation. *Information and Communication Technologies in Tourism 2008*, 141–151. https://doi.org/10.1007/978-3-211-77280-5_13
- Strickland, J. (2019). *How Virtual Reality Works*. <https://electronics.howstuffworks.com/gadgets/other-gadgets/virtual-reality.htm>
- Sun, X., Geng-Qing Chi, C., & Xu, H. (2013). Developing Destination Loyalty: The Case of Hainan Island. *Annals of Tourism Research*, 43, 547–577. <https://doi.org/10.1016/J.ANNALS.2013.04.006>
- Tasci, A. D. A., & Gartner, W. C. (2016). Destination Image and Its Functional Relationships. *Journal of Travel Research*, 45(4), 413–425. <https://doi.org/10.1177/0047287507299569>
- Tsai, S.P. (2012). Place Attachment and Tourism Marketing: Investigating International Tourists in Singapore. *International Journal of Tourism Research*, 14(2), 139–152. <https://doi.org/10.1002/JTR.842>
- Uysal, M., & Jurowski, C. (1994). Testing the push and pull factors. *Annals of Tourism Research*, 21(4), 844–846. [https://doi.org/10.1016/0160-7383\(94\)90091-4](https://doi.org/10.1016/0160-7383(94)90091-4)
- Van Kerrebroeck, H., Brengman, M., & Willems, K. (2017). Escaping the crowd: An experimental study on the impact of a Virtual Reality experience in a shopping mall. *Computers in Human Behavior*, 77, 437–450. <https://doi.org/10.1016/J.CHB.2017.07.019>
- Verhagen, T., Feldberg, F., van den Hooff, B., Meents, S., & Merikivi, J. (2011). Satisfaction with virtual worlds: An integrated model of experiential value. *Information & Management*, 48(6), 201–207. <https://doi.org/10.1016/J.IM.2011.02.004>
- Vynogradova, I. (2014). *Consumer experiences in virtual reality: dimensions and appropriation operations of immersion* [Universitetet i Nordland]. <https://nordopen.nord.no/nord-xmlui/bitstream/handle/11250/225149/Vynogradova.pdf?sequence=1>
- Wall, G., & Mathieson, A. (2006). *Tourism: Change, impacts and opportunities*. Pearson Prentice Hall.
- Webb, D. (2006). Understanding Customer Role and its Importance in the Formation of Service Quality Expectations. *The Service Industries Journal*, 20(1), 1–21. <https://doi.org/10.1080/02642060000000001>
- Wu, H. C., Ai, C. H., & Cheng, C. C. (2020). Virtual reality experiences, attachment and experiential outcomes in tourism. *Tourism Review*, 75(3), 481–495. <https://doi.org/10.1108/TR-06-2019-0205>
- Wu, H. C., & Cheng, C. C. (2017). What drives green advocacy? A case study of leisure farms in Taiwan. *Journal of Hospitality and Tourism Management*, 33, 103–112. <https://doi.org/10.1016/J.JHTM.2017.10.008>
- Xiang, Z., Magnini, V. P., & Fesenmaier, D. R. (2015). Information technology and consumer behavior in travel and tourism: Insights from travel planning using the internet. *Journal of Retailing and Consumer Services*, 22, 244–249. <https://doi.org/10.1016/J.JRETCONSER.2014.08.005>
- Ye, H., & Tussyadiah, I. P. (2011). Destination Visual Image and Expectation of Experiences. *Journal of Travel & Tourism Marketing*, 28(2), 129–144. <https://doi.org/10.1080/10548408.2011.545743>
- Yee, N. (2006). The Demographics, Motivations, and Derived Experiences of Users of Massively Multi-User Online Graphical Environments. *Presence: Teleoperators and Virtual Environments*, 15(3), 309–329. <https://doi.org/10.1162/PRES.15.3.309>
- Yoo, B., Donthu, N., & Lee, S. (2017). An Examination of Selected Marketing Mix Elements and Brand Equity. *Journal of the Academy of Marketing Science*, 28(2), 195–211. <https://doi.org/10.1177/0092070300282002>
- Yung, R., Khoo-Lattimore, C., & Potter, L. E. (2021). Virtual reality and tourism marketing: conceptualizing a framework on presence, emotion, and intention. *Current Issues in Tourism*, 24(11), 1505–1525. <https://doi.org/10.1080/13683500.2020.1820454>