VIRTUAL REALITY EXPERIENCE IN INDONESIAN TOURISM

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Abstract: The shift in the pattern of the tourism industry is inseparable from technological developments. In recent times, a concept known as virtual reality has developed in the tourism sector. The purpose of this study is to determine the antecedents of tourist experience satisfaction, which in turn will shape tourist attitudes. The author explores further the relationship of each variable studied using the Stimulus Organism Response (SOR) framework. The method used in this research is experimental. Respondents were determined as many as 100 people with certain requirements. The data that has been collected is processed using SEM-PLS software. The results of the study stated that all the hypotheses tested were positive, but not all were significant. The author finds that tourist interactions with tourist destinations carried out in the realm of virtual reality are not sufficient to provide significant satisfaction. Another finding in this study shows that the experience satisfaction felt by tourists does not always encourage tourists' attitudes to visit tourist destinations.

Keywords: sor, virtual reality, experience, satisfaction, attitude towards

Abstrak: *Pergeseran pola industri pariwisata tidak terlepas dari perkembangan teknologi. Dalam beberapa waktu terakhir, berkembang konsep yang dikenal virtual reality dalam bidang pariwisata. Tujuan dari penelitian ini adalah untuk mengetahui anteseden dari kepuasan pengalaman wisatawan, yang pada akhirnya akan membentuk sikap wisatawan. Penulis menggali lebih jauh hubungan tiap variabel yang diteliti menggunakan framework Stimulus Organism Respons (SOR). Metode yang digunakan dalam penelitian ini bersifat eksperimental. Responden ditentukan sebanyak 100 orang dengan persyaratan tertentu. Data yang telah dikumpulkan diolah menggunakan software SEM-PLS. Hasil penelitian menyatakan semua hipotesis yang diuji bernilai positif, tetapi tidak semua signifikan. Penulis menemukan bahwa interaksi wisatawan terhadap destinasi wisata yang dilakukan dalam ranah virtual reality tidak cukup mampu memberikan kepuasan yang signifikan. Temuan lain dalam penelitian ini menunjukkan bahwa kepuasan pengalaman yang dirasakan wisatawan tidak selalu mendorong sikap wisatawan untuk berkunjung ke destinasi wisata.*

Kata kunci: *sor, virtual reality, experience, satisfaction, attitude towards*

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INTRODUCTION

The adoption of the internet as a means to search for tourist destinations and travel information has been carried out by many tourists from Indonesia. Previous literature assessed that tourist behavior tends to depend on the internet before travel (Liu et al. 2015; Adeola & Evans, 2019), including Indonesian tourists (Purwanto, 2016; Sahabudin, 2020; Soeswoyo & Rahardjo, 2020). For example, search for information bfromtourisfrom tourists visiting Pangandaran, West Java (Putri et al. 2019) or those who seek tourist recommendations on the island of Bali (Purnawan et al. 2021).

The overflow of information obtained online directly or indirectly has changed the lifestyle of tourists (Hjalager, 2015; Gössling, 2017). This has a huge impact on the tourism business as well as on the consumers themselves. Previous studies found that more than 90 percent of users search for and collect information related to tourist attractions before traveling (Öz, 2015). One of the reasons that encourage this is the characteristics of the tourism destination itself.

Tourism destination products have their uniqueness. Tourist destinations can only be enjoyed by visiting directly (Jung, 2017; Rice & Khanin, 2019). In addition, tourist destination products are not in tangible physical form that can be brought home. That is, information and experiences of other tourists are very much needed for users who will travel (Pesonen et al. 2015).

Some tourists (especially millennials) seek to showcase, present, and share their experiences by utilizing information technology. Such as by sharing travel pictures or videos on social media accounts (Noor et al. 2019; Wiweka et al. 2019). Tourist destination managers take part in this, by creating a special tourism website, as well as part of their promotion (Alamäki et al. 2019). Unfortunately, pictures and videos are not enough to increase tourists' desire to visit.

Virtual reality is a technological development that has had many impacts on the tourism sector (Tussyadiah et al. 2017; Kim & Kim, 2020). The availability of tourism VR devices allows one to enjoy tours and tourist attractions without the need to leave the house. This study assumes that VR is not only limited to technology, but also as a medium of communication (Baker et al. 2019), transfers knowledge (Haase et al. 2013), and produces experiences for its users (Huang et al. 2016).

This study focuses on knowing the user experience in the context of virtual tourism. The results of this experience refer to how virtual reality can affect the feelings, thought processes, and conclusions that visitors get (Kim et al. 2020). Previous literature has measured the dimensions of virtual reality experiences related to the satisfaction felt by users such as e-commerce consumers (Pizzi et al. 2019), users of virtual health service applications (Palanica et al. 2019), and tourists in the tourism sector (Wu et al. 2020).

Satisfaction is a condition when expectations are achieved by expectations. Vater & Schröder-Abé (2015) consider that satisfaction is formed after a person evaluates positively through cognitive and emotional assessments. In the end, satisfaction also encourages and influences a person's attitude. Tourist satisfaction is said to be the main predictor of tourism business success (Agyeiwaah et al. 2016).

Attitude is an advanced assessment of a certain object (Ledgerwood et al. 2018). Attitudes are things that vary, depending on what was experienced before. Previous studies have proven that satisfaction comprehensively determines the attitudes shown by local tourists (Chung et al. 2015) and tourists who use virtual reality (Wu et al. 2020). Thus, it can be said that tourists can have different attitudes when it comes to the desire to visit tourist destinations.

Several managers of Indonesian tourist destinations have begun to develop tourism in the virtual realm. By utilizing the 360 camera and the Google Cardboard application, tourism destination managers in North Sulawesi are trying to provide tourists with a "before-seen" experience (Waraney et al. 2017). The development of virtual tourism using web-based applications has also been carried out in the city of Lahat, South Sumatra (Istita & Suroyo, 2021).

The purpose of tourism development as described above is to introduce tourism objects in each region (Waraney et al. 2017; Istita & Suroyo, 2021). Information about tourist objects will be displayed virtually with a 360-degree view, making it easier for tourists to find out in detail while providing a different experience. But unfortunately, there has been no further study on how the experience gained will affect their attitude to visit these tourist destinations.

This research aims to close this gap. This study is a follow-up to determine the cognitive behavior of tourists after getting the experience of visiting virtual tourism. Researchers assume that the positive experiences felt by tourists must encourage their desire to visit tourist destinations directly. The model in this study elaborates on the research conducted by Wu et al. (2020) and (Kim & Kim, 2020).

METHODS

The sample in this study were students of Business Administration at Mulawarman University. Researchers used experimental methods, to obtain data results as needed. A total of 100 respondents will be given time to watch 360 videos from the Kemenparekraf Youtube account for some time, before distributing the questionnaires. To represent the group of respondents who are most likely to experience and be affected by VR, students from the 2017 20and 2019 batches were invited to participate in this study. The collected data were analyzed using SEM-PLS software.

Questionnaires were developed to test the hypotheses in this research model. There are six constructs, namely Immersion (X1), Interaction (X2), Usability (X3), and Illusion (X4) as independent variables. VR Satisfaction (Y1) and Attitude Toward Tourism Destination (Y2) as dependent variables. Each variable consists of several question items which are measured using a Likert scale. The details can be seen in Table 1.

Table 1. Variable and item

Variable	Item
Immersion	I got so involved with tourist VR that I forgot about anything else
	Time seems to pass quickly when you see VR tours on the Kemenparekraf Youtube account
	The tourism VR program for the Kemenparekraf Youtube account makes me feel like I'm in another world
	Seeing VR travel on the Kemenparekraf Youtube account released me from everyday reality
Interaction	I'm always aware when using travel VR
	I always know where I'm going when using travel VR
	I can see freely in all directions on the VR tourism Kemenparekraf Youtube account
	I have complete control when using tourist VR
	My interaction and VR travel is a simultaneous process
	My interaction with travel VR is a continuous process
Usability	The tourism VR content of the Kemenparekraf Youtube account is easy to understand
	The tourism VR feature of the Kemenparekraf Youtube account is easy to understand
	Setting up VR tourism content on the Kemenparekraf Youtube account is easy to use
	I find it easy to move the view in tourist VR
	It's easy to find something you need in travel VR
	VR tourism Kemenparekraf Youtube account has never had a problem
Illusion	I can feel the scorching heat of the sun on Mount Bromo
	I feel like I can hear the sound of birds chirping in the trees of Bandung City
	My feet feel wet when exposed to water on the beach of the island of Bali
	The clothes I wear may be different when using VR tours
	My experience using travel VR was very pleasant
	I probably have more than one body
VR Satisfaction	I am happy with the VR view of the Kemenparekraf Youtube account
	I am satisfied with the VR view of the Kemenparekraf Youtube account
	VR tourism Kemenparekraf Youtube account is useful for me
Attitude Towards Destination	The experience of using VR tourism on the Kemenparekraf Youtube account exceeded my expectations
	I feel happy to see VR tours displayed on the Kemenparekraf Youtube account
	I'm interested in seeing VR tours displayed on the Kemenparekraf Youtube account
	I feel that tourist destinations in the VR program for the Ministry of Tourism and Creative Economy are good
	I feel that the tourist destinations in the VR program of the Ministry of Tourism and Creative Economy are worth a visit

Stimulus-Organism-Response (SOR) Model

The Stimulus-Organism-Response framework is widely used to measure user behavior. The SOR paradigm was first introduced by Mehrabian & Russel in 1974 (Manthiou et al. 2017). Stimulation from the external environment is considered to be able to protect or influence the situation within a person (Marteau et al. 2012). This model assumes that a person's behavior is formed from an attitude that has received a stimulus from the outside environment.

Following technological developments, the SOR framework is also often used to understand the experience that online users get (Ettis, 2017). Previous studies used the SOR model such as in the field of fashion (Vazquez et al. 2021), online education (Zhai et al. 2020), as well as in the retail banking perspective (Izogo et al. 2017). In the field of tourism, this SOR paradigm is also often used (Kim et al. 2018; Yadav et al. 2022).

VR Experience

Referring to the SOR model, the stimulus in this study is the tourist VR experience. Based on previous literature, the dimension of VR experience is divided into four components, namely immersion, interaction, usability, and illusion. Nilsson et al. (2016) describe immersion as a pleasurable and engaging experience that users experience. In the context of a traveler's VR experience, immersion is an important factor and a key component that tourists perceive for the first time. Then, when tourists begin to explore visuals in tourist destinations, this is where interaction occurs naturally (Wu et al. 2020).

Some previous literature states that VR design must be effective and efficient (Oliveira et al. 2017; Pencarelli, 2020). Conceptually, usability is by building functionality, along with a pleasant and satisfying environmental experience (Kuliga et al. 2015). The ease with which VR can be learned, understood, and used by tourists is defined as usability. In the context of VR, it is very possible to create the illusion where the user behaves as if he has entered a certain situation or entity (Gonzalez-Franco & Lanier, 2017).

H1: Immersion has a positive and significant effect on VR Satisfaction.

H2: Interaction has a positive and significant effect on VR Satisfaction.

H3: Usability has a positive and significant effect on VR Satisfaction.

H4: Illusion has a positive and significant effect on VR Satisfaction.

VR Satisfaction

Satisfaction in the tourism concept is a level of perceived pleasure, based on the results of the travel experience to meet the desires and needs of tourists. The concept of VR satisfaction is based as a result of tourists' evaluations of VR content provided by tourist destination managers (Ghorbanzadeh, 2021). VR satisfaction is considered to play an important role in influencing the competitiveness of a tourist destination (Chia & Wang, 2021). However, tourists may not decide to take a trip suddenly. Therefore, it is important to gain a better understanding of tourist attitudes after gaining experience and satisfaction (Powell & Ham, 2008).

H5: VR Satisfaction has a positive and significant effect on Attitude Toward Tourism Destinations

Attitude Toward Tourism Destination

Attitude is a tendency to respond favorably or unfavorably to a certain stimulus at a certain time per period (Bharata & Wardhani, 2021). Attitudes of modern tourists tend to experience shifts in tastes and preferences (Stepchenkova & Park, 2021). Tourists tend to choose original tourist destinations, compared to artificial thanuristtouristons. Demands for tourist orientation encourage tourism destination managers to present and provide unforgettable tourist experiences (Solís-Radilla et al. 2019; Reitsamer et al. 2016). VR in the field of tourism uses technology to realize the expectations that tourists expect (Jung, 2017).

RESULTS

Convergent Validity

The measurement model must reflect the indicators that are assessed based on the relationship between score items. The value of the loading factor or outer loading must be 0.7 to be declared valid (Black & Babin, 2019). Then next there is the term AVE (Average Variance Extracted) which has an assessment value of 0.5 to be declared good or valid.

Figure 1 is the initial measurement of the outer loading. Several indicators do not meet the requirements because when measuring discriminant validity there is a small value compared to the relationship between the variables themselves. 4 ind4 indicators must even thrust even value has met the standard, namely, the value must be 0.7. This indicator is eliminated because it has the lowest value among the others. The indicators that were eliminated were, among others, from the X1 variable there was an IM4 item with a value of 0.807. The X2 variable contains IN5 items with a value of 0.785. Variable X4 contains IL2 items with a value of 0.757. And the Y1 variable contains VR1 items with a value of 0.805. After analyzing and eliminating each item score that is less than the value limit, the final measurement model is obtained as follows in Figure 2.

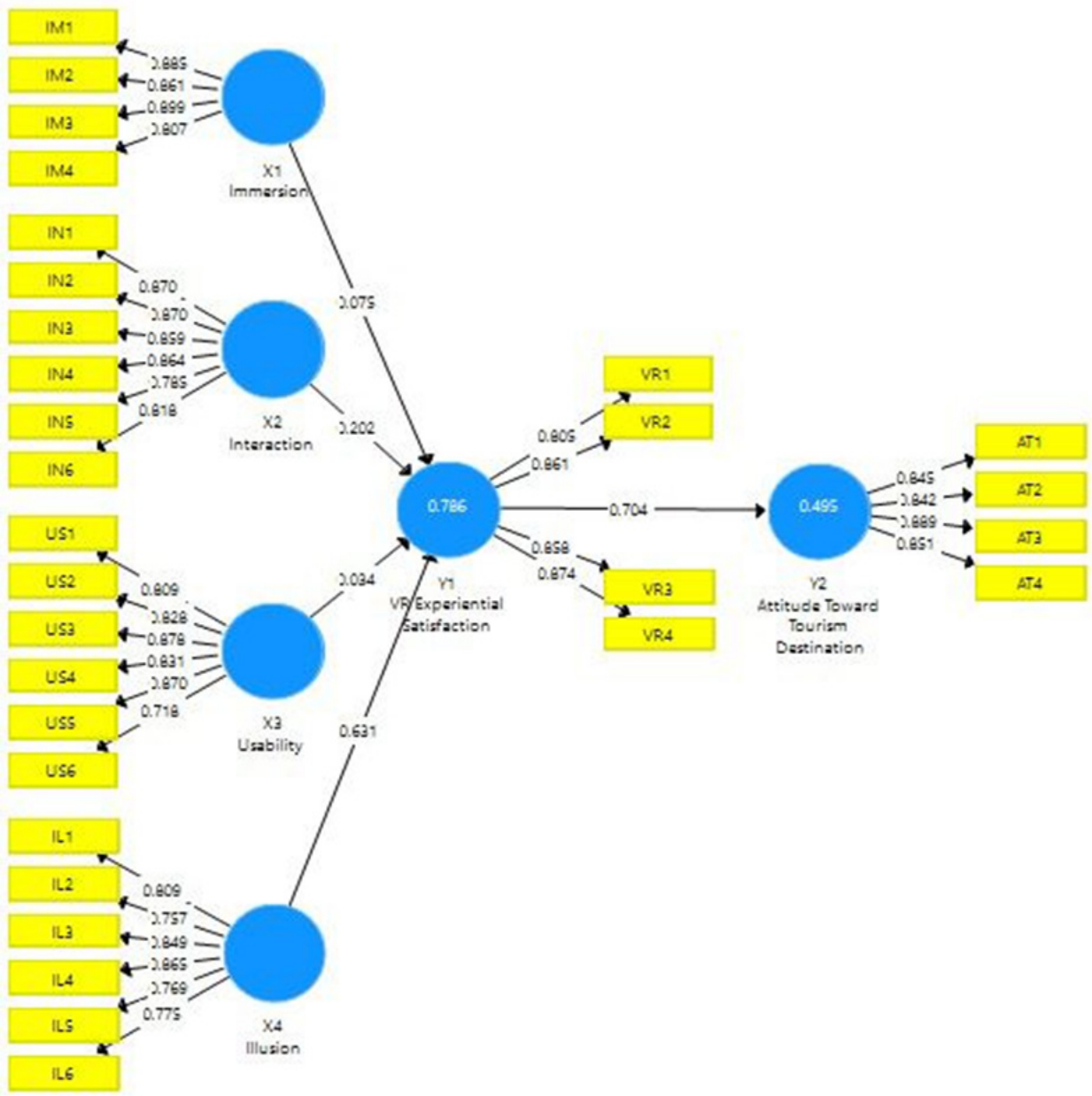

Figure 1. Initial loading factor/outer loading value of measurement

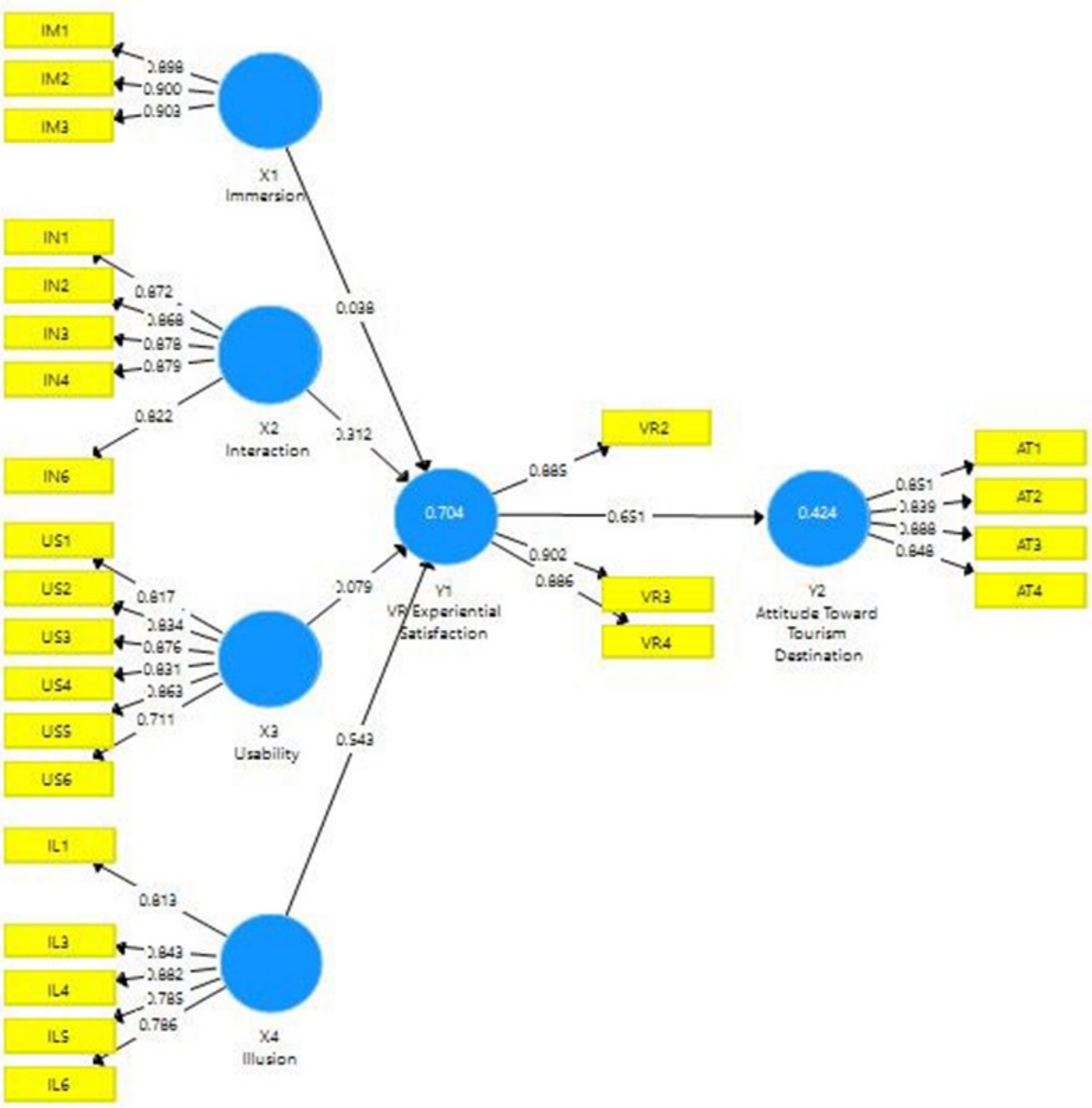

Figure 2. Final loading factor/outer loading value of measurement

Discriminant Validity

Discriminant Validity is done to measure the extent to which a variable is declared different from other variables, it can be said as a comparison material (Cheung & Lau, 2008). The assessment is that the discriminant validity value of each variable must have a high value when compared to other variables. In table 2 the cross-loading value of each variable has a higher value assessment when compared to the value of other variables. It can be concluded that each variable is declared valid. The test results can be seen through the Cross Loading value as follows in Table 2.

The composite reliability value of 0.7 can determine the reliability value. Even so, some experts also state that a composite reliability value of 0.6 is still acceptable (Black & Babin, 2019). In addition, the reliability of the variables can also be calculated using the Alpha Chronbach formula. Table 3 explains that all variables can meet the reliable requirements, namely with each composite reliability value and alpha chronic value having a value of 0.7.

Table 2. Discriminant validity

Indicator	Immersion (X1)	Interaction (X2)	Usability (X3)	Illusion (X4)	VR Experiential Satisfaction (Y1)	Attitude Toward Tourism Destination (Y2)
IM1	**0.894**	0.675	0.638	0.580	0.518	0.625
IM2	**0.891**	0.674	0.632	0.550	0.561	0.555
IM3	**0.861**	0.786	0.741	0.644	0.586	0.638
IN1	0.671	**0.865**	0.731	0.677	0.706	0.586
IN2	0.761	**0.874**	0.661	0.653	0.634	0.608
IN3	0.628	**0.857**	0.730	0.629	0.694	0.548
IN4	0.695	**0.873**	0.785	0.639	0.671	0.521
IN6	0.705	**0.778**	0.642	0.606	0.542	0.551
US1	0.600	0.676	**0.819**	0.578	0.659	0.615
US2	0.635	0.719	**0.832**	0.639	0.661	0.528
US3	0.714	0.780	**0.875**	0.700	0.673	0.584
US4	0.597	0.643	**0.819**	0.627	0.556	0.496
US5	0.632	0.695	**0.861**	0.755	0.625	0.530
US6	0.526	0.538	**0.645**	0.584	0.448	0.435
IL1	0.643	0.541	0.523	**0.725**	0.576	0.555
IL3	0.525	0.624	0.628	**0.840**	0.664	0.521
IL4	0.555	0.695	0.702	**0.861**	0.699	0.485
IL5	0.445	0.545	0.616	**0.797**	0.635	0.583
IL6	0.542	0.609	0.705	**0.784**	0.702	0.604
VR2	0.542	0.669	0.622	0.691	**0.890**	0.576
VR3	0.539	0.669	0.667	0.692	**0.885**	0.465
VR4	0.593	0.703	0.706	0.788	**0.884**	0.615
AT1	0.647	0.591	0.586	0.637	0.560	**0.840**
AT2	0.455	0.399	0.415	0.433	0.381	**0.825**
AT3	0.619	0.611	0.580	0.565	0.587	**0.848**
AT4	0.535	0.555	0.578	0.607	0.520	**0.826**

Table 3. Composite Reliability

Variable	Composite Reliability	Alpha Chronbach
Immersion (X1)	0.913	0.858
Interaction (X2)	0.929	0.904
Usability (X3)	0.920	0.895
Illusion (X4)	0.900	0.861
VR Experiential Satisfaction (Y1)	0.917	0.864
Attitude Toward Tourism Destination (Y2)	0.902	0.856

Structural Model Evaluation Analysis

The inner model is carried out to see the relationship between variables, significance value, and R-value of the research model. This R-Square test is obtained from the PLS output and path coefficient values, namely the original sample, standard deviation, T-Statistics, and P Values through the Bootstrapping stage (Table 4). The R-Square value on the VR Experiential Satisfaction (Y1) variable has a value of 70.4%, so it can be said that the VR Experiential Satisfaction (Y1) variable can be explained by other variables of 70.4% while the remaining 29.6% is explained by the other variables. others that were not addressed in this study. Then the R-Square value on the Attitude Toward Tourism Destination (Y2) variable has a value of 42.4%, so it can also be said that the Attitude Toward Tourism Destination (Y2) variable can be explained by other variables of 42.4% while the remaining 57.6 % is explained by variables outside of this study.

From the path coefficient value, it can determine a positive or negative relationship. To be declared positive if it is marked with a value < 1 and to be declared negative it is indicated by a value < 0. The path coefficient value of the partial relationship in this study is shown in Table 5. For analysis of significant or insignificant relationships, it can be determined by using the bootstrapping method. To test the hypothesis, the T-Statistic > T-Table assessment and the P Values are used. The test results can be seen in Table 6.

The results of the study show that all variable relationships are positive, but not all significant. Based on the data obtained from the survey, it turns out that interaction is not able to give a significant effect on the experiential satisfaction of VR users. The results of the study stated that satisfaction in terms of the tourist experience can only be obtained by visiting tourist destinations directly (Antón et al. 2017; Ramseook-Munhurrun et al. 2015). Tourist interaction with tourist destination attractions using the help of 360 video cameras, is not able to provide significant satisfaction. This result is different from other variables studied, such as immersion, usability, and illusion.

Immersive engagement affects satisfaction with the VR experience. This evidence suggests that the concept of a fully engagetouristsst is a suitable predictor, even in the context of VR (Wu et al. 2020). Regarding the benefits or usability of VR compared to the user's perceived experience satisfaction, the results also show positive and significant results. This finding is consistent with (Ghorbanzadeh, 2021) in his study of virtual garden visitors. Another fact found in the field, it turns out that the illusion that is realized with the help of technology in the VR realm also provides user satisfaction in its way. Tourism VR users feel the sensation of "being in place" just by looking at the video results of the 360 camera (Zayer, 2019).

Another finding in this study is that there is a non-significant positive relationship between experiential satisfaction and the attitude of tourists to visit tourist destinations. These results are not in line with previous studies (Kim & Kim, 2020). The author concludes that distance and cost factors are the cause. In this study, the tourist destinations that become objects are the city of Bandung, Mount Bromo, and the island of Bali. While the respondents are domiciled in the city of Samarinda. Of course, further consideration is needed to visit these tourist destinations.

Tabel 4. Uji R-Square

Variabel	R-Square
VR Experiential Satisfaction (Y1)	0.704
Attitude Toward Tourism Destination (Y2)	0.424

Table 5. Path coefficients

Hypothesis	Nilai Path Coefficience	Conclusion
X1 → Y1	0.038	Positive
X2 → Y1	0.912	Positive
X3 → Y1	0.079	Positive
X4 → Y1	0.543	Positive
Y1 → Y2	0.651	Positive

Table 6. Bootstrapping methods

Hypothesis	Sample Original	Standard Devices	T-Statistic	P Value	Conclusion
X1 → Y1	0.038	0.104	7.933	0.023	Significance
X2 → Y1	0.912	0.159	1.618	0.372	Non Significance
X3 → Y1	0.079	0.142	3.674	0.000	Significance
X4 → Y1	0.543	0.118	4.452	0.000	Significance
Y1 → Y2	0.651	0.080	0.251	0.499	Non Significant

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The findings in this study have theoretically strengthened the SOR framework in the tourism sector. All the proposed variable relationships showed positive results, although two results were not significant. The author realizes that the results of this study cannot be generalized.

Recommendations

This research is only the result of experiments on respondents in certain areas and at certain times, with far distances from tourist destinations. It is very possible to obtain different results if tested on respondents who are near these tourist destinations. For future research, it is also expected to consider the use of other variables, other than those used in this study.

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REFERENCES

Aboubaker ES. 2017. Examining the relationships between online store atmospheric color, flow experience and consumer behavior. *Journal of Retailing and Consumer Services 37*(March): 43–55. https://doi.org/10.1016/j.jretconser.2017.03.007

Adeola O, Evans O. 2019. Digital tourism: mobile phones, internet and tourism in Africa. *Tourism Recreation Research 44*(2): 190–202. https://doi.org/10.1080/02508281.2018.1562662

Agyeiwaah E, Adongo R, Dimache A, Wondirad A. 2016. Make a customer, not a sale: Tourist satisfaction in Hong Kong. *Tourism Management 57*: 68–79. https://doi.org/10.1016/j.tourman.2016.05.014

Al Zayer M. 2019. *Universal Usability of Virtual Reality*. Reno:University of Nevada.

Alamäki A, Pesonen J, Dirin A. 2019. Triggering effects of mobile video marketing in nature tourism: Media richness perspective. *Information Processing & Management 56*(3): 756–770.

Antón C, Camarero C, Laguna-García M. 2017. Towards a new approach of destination loyalty drivers: satisfaction, visit intensity and tourist motivations. *Current Issues in Tourism 20*(3): 238–260. https://doi.org/10.1080/13683500.2014.936834

Baker S et al. 2019. Interrogating social virtual reality as a communication medium for older adults. *Proceedings of the ACM on Human-Computer Interaction 3*(CSCW). https://doi.org/10.1145/3359251

Bharata W, Wardhani DP. 2021. Pengaruh Cognitive Response Terhadap Purchase Intention Permen Kopiko Melalui Attitude Towards Advertising Sebagai Variabel Mediasi Pada Penonton Drama Korea Vincenzo. *Journal of Applied Business and Economic (JABE) 8*(1): 91–101.

Black W, Babin BJ. 2019. Multivariate data analysis: its approach, evolution, and impact. *The Great Facilitator* 121–130. https://doi.org/10.1007/978-3-030-06031-2_16

Cheung GW, Lau RS. 2008. Testing mediation and suppression effects of latent variables: bootstrapping with structural equation models. *Organizational Research Methods 11*(2):1–30.

Chia SK, Wang YC. 2021. *Impact of destination image on tourist satisfaction: the moderating effect of information technology (IT) Zaidi Bin RAZAK Abang Azlan MOHAMAD 34*(1): 88–93. https://doi.org/10.30892/gtg.34112-623

Chung N, Lee H, Jae S, Koo C. 2015. Technological Forecasting & Social Change The in fl uence of tourism website on tourists behavior to determine destination selection: A case study of creative economy in Korea. *Technological Forecasting & Social Change* 96: 130–143. https://doi.org/10.1016/j.techfore.2015.03.004

Ghorbanzadeh D. 2021. Relationships between virtual reality experiences, experiential relationship quality and experiential advocacy: the case of virtual reality park. *Journal of Relationship Marketing* 23(1): 1–25. https://doi.org/10.1080/15332667.2021.1889744

Gonzalez-Franco M, Lanier J. 2017. Model of illusions and virtual reality. *Frontiers in Psychology 8*(JUN): 1–8. https://doi.org/10.3389/fpsyg.2017.01125

Gössling S. 2017. Tourism, information technologies and sustainability: an exploratory review. *Journal of Sustainable Tourism 25*(7): 1024–1041. https://doi.org/10.1080/09669582.2015.1

122017

Haase T, Termath W, Martsch M. 2013. How to save expert knowledge for the organization: Methods for collecting and documenting expert knowledge using virtual reality based learning environments. *Procedia Computer Science 25*: 236–246. https://doi.org/10.1016/j.procs.2013.11.029

Hjalager AM. 2015. 100 Innovations that transformed tourism. *Journal of Travel Research 54*(1): 3–21. https://doi.org/10.1177/0047287513516390

Istita S, Suroyo H. 2021. Pengembangan aplikasi virtual tour (wisata virtual) objek wisata dengan konten image kamera 360. *Journal of Advances in Information and Industrial Technology 3*(2):45–52. https://doi.org/10.52435/jaiit.v3i2.159

Izogo EE, Reza A, Ogba IE, Oraedu C. 2017. Determinants of relationship quality and customer loyalty in retail banking: Evidence from Nigeria. *African Journal of Economic and Management Studies 8*(2): 186–204. https://doi.org/10.1108/AJEMS-01-2016-0011

Kim BK, Kim KO. (2020). Relationship between viewing motivation, presence, viewing satisfaction, and attitude toward tourism destinations based on TV travel reality variety programs. *Sustainability 12*(11):1–13. https://doi.org/10.3390/su12114614

Kim MJ, Lee CK, Jung T. 2018. 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

Kim MJ, Lee CK, Preis MW. 2020. The impact of innovation and gratification on authentic experience, subjective well-being, and behavioral intention in tourism virtual reality: The moderating role of technology readiness. *Telematics and Informatics 49*(January): 1–16. https://doi.org/10.1016/j.tele.2020.101349

Kuliga SF, Thrash T, Dalton RC, Hölscher C. 2015. Virtual reality as an empirical research tool - Exploring user experience in a real building and a corresponding virtual model. *Computers, Environment and Urban Systems 54*: 363–375. https://doi.org/10.1016/j.compenvurbsys.2015.09.006

Ledgerwood A, Eastwick PW, Smith LK. 2018. Toward an integrative framework for studying human evaluation: attitudes toward objects and attributes. *Personality and Social Psychology Review 22*(4): 378–398. https://doi.org/10.1177/1088868318790718

Liu Y, Yang Q, Pu B. 2015. Send orders for reprints to reprints@benthamscience.ae the research of internet information services on the impact of tourism decision-making. *The Open Cybernetics & Systemics Journal 9*: 1840–1845. https://doi.org/10.2174/1874110X01509011840

Manthiou A et al. 2017. Exploring the roles of self-concept and future memory at consumer events: the application of an extended Mehrabian–Russell model. *Journal of Travel and Tourism Marketing 34*(4): 531–543. https://doi.org/10.1080/10548408.2016.1208786

Marteau TM, Hollands GJ, Fletcher PC. 2012. Changing human behavior to prevent disease: The importance of targeting automatic processes. *Science 337*(6101): 1492–1495. https://doi.org/10.1126/science.1226918

Mayasari SD, Rahardjo S. 2020. Studi komparasi perilaku wisatawan nusantara generasi-x dan milenial era revolusi industri 4.0 di indonesia. *Tourism Scientific Journal 6*(1): 110–126. https://doi.org/10.32659/tsj.v6i1.131

Nilsson NC, Nordahl R, Serafin S. 2016. Immersion revisited: A review of existing definitions of immersion and their relation to different theories of presence. *Human Technology 12*(2): 108–134. https://doi.org/10.17011/ht/urn.201611174652

Noor A, Suryana M, Amalia S. 2019. Perilaku mahasiswa pariwisata menggunakan media sosial untuk mempromosikan destinasi wisata. *Altasia: Jurnal Pariwisata Indonesia 1*(2): 61–70. https://doi.org/10.37253/altasia.v1i2.466

Oliveira EJG. De Simoes FPM, Correia WFM. 2017. Heuristics evaluation and improvements for low-cost virtual reality. *Proceedings - 19th Symposium on Virtual and Augmented Reality, SVR 2017*, *2017-Novem*, 178–187. https://doi.org/10.1109/SVR.2017.31

Öz M. 2015. Social media utilization of tourists for travel-related purposes. *International Journal of Contemporary Hospitality Management 27*(5): 1003–1023. https://doi.org/10.1108/IJCHM-01-2014-0034

Palanica A, Docktor MJ, Lee A, Fossat Y. 2019. Using mobile virtual reality to enhance medical comprehension and satisfaction in patients and their families. *Perspectives on Medical Education 8*(2): 123–127. https://doi.org/10.1007/s40037-019-0504-7

Pencarelli T. 2020. The digital revolution in the travel and tourism industry. *Information Technology and Tourism 22*(3): 455–476. https://doi.org/10.1007/s40558-019-00160-3

Pesonen J, Komppula R, Riihinen A. 2015. Typology of senior travellers as users of tourism information technology. *Information Technology and Tourism 15*(3): 233–252. https://doi.org/10.1007/s40558-015-0032-1

Pizzi G, Scarpi D, Pichierri M, Vannucci V. 2019. Virtual reality, real reactions?: Comparing consumers' perceptions and shopping orientation across physical and virtual-reality retail stores. *Computers in Human Behavior 96*(November 2018): 1–12. https://doi.org/10.1016/j.chb.2019.02.008

Powell RB, Ham SH. 2008. Can ecotourism interpretation really lead to pro-conservation knowledge, attitudes and behaviour? Evidence from the Galapagos Islands. *Journal of Sustainable Tourism 16*(4): 467–489. https://doi.org/10.2167/jost797.0

Purnawan R, Pitana IG, Darma PIN. 2021. Cultural landscape: brand knowledge wisatawan tentang bali dalam online travel review communication platform. *Mudra Jurnal Seni Budaya 36*(2): 254–263. https://doi.org/10.31091/mudra.v36i2.1200

Purwanto S. 2016. Analisis perilaku wisatawan tiongkok di luar negeri: sebuah studi literatur. *Bina Ekonomi 20*(1): 57–66.

Putri AE et al. 2019. Perilaku Pencarian Informasi Wisatawan Terhadap Pemenuhan Behavior of Tourist Information Search To Fulfill Information About Pangandaran As Tourism Destinastion. *Tornare - Journal of Sustainable Tourism Research 1*(1): 7–11.

Ramseook-Munhurrun P, Seebaluck VN, Naidoo P. 2015. Examining the Structural Relationships of Destination Image, Perceived Value, Tourist Satisfaction and Loyalty: Case of Mauritius. *Procedia - Social and Behavioral Sciences 175*(230): 252–259. https://doi.org/10.1016/j.sbspro.2015.01.1198

Reitsamer BF, Brunner-Sperdin A, Stokburger-Sauer NE. 2016. Destination attractiveness and destination attachment: The mediating role of tourists' attitude. *Tourism Management Perspectives 19*: 93–101. https://doi.org/10.1016/j.tmp.2016.05.003

Rice J, Khanin D. 2019. Why do they keep coming back? the effect of push motives vs. pull motives, and attribute satisfaction on repeat visitation of tourist destinations. *Journal of Quality Assurance in Hospitality and Tourism 20*(4): 445–469. https://doi.org/10.1080/1528008X.2018.1553117

Sahabudin A. 2020. Tantangan milenial di desa wisata. *Tornare 2*(1): 1–15. https://doi.org/10.24198/tornare.v2i1.25824

Solís-Radilla MM et al. 2019. The importance of sustainability in the loyalty to a tourist destination through the management of expectations and experiences. *Sustainability (Switzerland) 11*(15): 1–23. https://doi.org/10.3390/su11154132

Stepchenkova S, Park H. 2021. Authenticity orientation as an attitude: Scale construction and validation. *Tourism Management 83*(October 2020): 1–14. https://doi.org/10.1016/j.tourman.2020.104249

Timothy HJ. 2017. Augmented reality, virtual reality and 3D printing for the co-creation of value for the visitor experience at cultural heritage places. *The Eletronic Library 10*(2): 140–151.

Tussyadiah IP, Wang D, Jia CH. 2017. Information and Communication Technologies in Tourism 2017. *Information and Communication Technologies in Tourism 2017*. Proceedings of the International Conference in Rome, Italy, January 24-26, 2017. https://doi.org/10.1007/978-3-319-51168-9

Vater A, Schröder-Abé M. 2015. Explaining the link between personality and relationship satisfaction: Emotion regulation and interpersonal behaviour in conflict discussions. *European Journal of Personality 29*(2): 201–215. https://doi.org/10.1002/per.1993

Vazquez D, Cheung J, Nguyen B, Dennis C, Kent A. 2021. Examining the influence of user-generated content on the fashion consumer online experience. *Journal of Fashion Marketing and Management: An International Journal 25*(3): 528–547. https://doi.org/10.1108/JFMM-02-2020-0018

Waraney SPF, Tulenan V, Sinsuw AAE. 2017. Pengembangan virtual tour potensi wisata baru di Sulawesi Utara menggunakan teknologi video 360 derajat. *Jurnal Teknik Informatika 12*(1): 1–8.

Wiweka K et al. 2019. Perilaku berwisata wisatawan generasi milenial di Jakarta pada era revolusi industri 4.0. *Focus: Jurnal Pekerjaan Sosial* 2(2): 187 – 197. https://doi.org/10.24198/focus.v2i2.26241

Wu HC, Ai CH, Cheng CC. 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

Yadav N, Verma S, Chikhalkar RD. 2022. eWOM, destination preference and consumer involvement – a stimulus-organism-response (SOR) lens. *Tourism Review 77*(4): 1135–1152. https://doi.org/10.1108/TR-10-2020-0506

Yu CH et al. 2016. Exploring the implications of virtual reality technology in tourism marketing: an integrated research framework. *International Journal of Tourism Research 18*: 116–128. https://doi.org/10.1002/jtr

Zhai X, Wang M, Ghani U. 2020. The SOR (stimulus-organism-response) paradigm in online learning: an empirical study of students' knowledge hiding perceptions. *Interactive Learning Environments 28*(5): 586–601. https://doi.org/10.1080/10494820.2019.1696841