

Analyzing the Attitude Mediation on the Effect of Virtual Tourism's Telepresence on Tourist Satisfaction

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Abstract: - Virtual reality (VR) has emerged as an important immersive technology with considerable potential to transform tourism experiences and visitor satisfaction. This study investigates the role of VR-related factors in virtual tourism by examining telepresence and sense of presence as predictors of visitor satisfaction, while attitude is positioned as a mediating variable and perceived usefulness as a moderating variable. The study aims to provide a theoretical contribution by integrating these constructs into a comprehensive framework for understanding virtual tourism experiences. Data were collected through an online survey involving 320 respondents who had experienced virtual reality interactions. The collected quantitative data were analyzed using partial least squares structural equation modeling (PLS-SEM). The findings indicate that attitude and enjoyment do not significantly influence the experience of presence, while telepresence does not have a significant direct effect on visitor satisfaction. However, perceived usefulness demonstrates a significant moderating effect, highlighting its importance in shaping users' responses to virtual tourism experiences. These findings provide theoretical insights and practical guidance for tourism managers and researchers seeking to develop immersive and technology-enabled tourism experiences. As immersive technologies continue to evolve, virtual tourism may become an increasingly important component of the future tourism industry.

Key-Words: - virtual tourism; telepresence; perceived usefulness; virtual reality; tourism; e-tourism.

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1 Introduction

Visitors from around the globe because of its vast natural and cultural diversity. The Indonesian archipelago is made up of almost 17,000 islands, more than 300 ethnic groups, and 51 national parks, several of which have been named World Heritage sites, [1]. Actually, the nation's economic growth has been greatly aided by tourism, which has grown significantly as a consequence of easier access to travel locations and enhanced international transportation. Due to a number of government-imposed limitations, the COVID-19 pandemic had the greatest impact on Indonesia's tourism industry,

[2]. Consequently, companies operating in the tourism sector, including hotels, airlines, restaurants, tour companies, retail outlets, and tourist spots, were experiencing financial losses. The Indonesian government declared the outbreak to have ended in 2023, [3]. Nevertheless, many tourism-related firms start to have a distinct perspective in anticipation of impending emergencies or natural disasters. The utilization of virtual reality (VR) is one such choice.

A three-dimensional virtual simulation of an attraction, destination, or real-world travel experience is known as virtual tourism, and it is

developed either to enhance a previous customer experience or to be prepared for a destination visit. This feeling of presence adds to the enjoyment of the interaction, [4]. Telepresence is the degree to which a person feels present in a mediated environment. People can use virtual tourism, also known as virtual tours, as a substitute activity to see many of Indonesia's tourist attractions without ever leaving their homes, [5].

This technology is well-known in the travel industry and can help with marketing as one of the promotional media in the sector for tourism itself, in addition to destination planning and management, entertainment, accessibility, education, and the preservation of historical property, [6]. We present numerous innovations in this research, the first of which is a theoretical gap. As a moderator, we present perceived usefulness, a variable from the Technology Acceptance Model (TAM). We are among the first to present this study approach. Next, we demonstrate the empirical gap by presenting the findings of an Indonesian virtual tourist survey. Taking into account the overall results of the study, it is reasonable to draw the conclusion that the following variables may have an influence on virtual tour satisfaction: enjoyment, intention, telepresence, sensation of presence, and attitude, [2]. The study attempts to determine whether or not virtual tours can provide satisfaction based on the ideas of telepresence and experience of presence. This study assesses the effects of enjoyment, intention, and attitude on virtual tour satisfaction in addition to two forms of presence: telepresence and sensation of presence.

2 Literature Review

Virtual Reality (VR) is a relatively new technology that allows users to move around and converse completely online while submerging them in a 3D computer-generated world. It is critical that the tourist sector make use of the virtual digital world at a time when it is impacting passengers' lives more and more, [7]. Numerous businesses, such as marketing, education, accessibility, historical preservation, entertainment, and tourism planning and management, employ virtual reality, [8]. Virtual reality has received a lot of interest as a potential enhancement or replacement for items connected to tourism, [9]. This is due to the fact that everything in a virtual reality environment may be changed to create the perfect virtual travel experience. Companies in the travel business may communicate with customers using virtual reality (VR).

Virtual tours are a useful tool for tourist promotion as well as amusement for the general public. More studies should be done on the variables influencing people's opinions of virtual tours as an alternative to real travel. [10] discovered that a fulfilling and pleasurable virtual world experience is influenced by presence, interaction, and skill. Post-VR experiences benefited from the presence of VR, and VR experiences were more satisfying when VR was present. The amount of engagement in a virtual environment is determined by the level of co-presence and involvement. Spatial telepresence, or the perception of physically existing in a virtual space, is a specific aspect of VR, [11]. Virtual reality (VR) technology, in a similar way, provides users with a sense of plausibility (an illusory perception of events) and virtual body ownership (an illusory notion of entire body ownership based on cognitive neuroscience), [12]. As a result, telepresence refers to the appearance of participation in distant or virtual contexts, [13]. Various VR applications now allow users to feel as though they are present in a real, virtual, or imagined environment, [11].

2.1 Attitude in Telepresence

In consumer behavior research, attitude has been employed as a classic concept of judgment on good-bad, detrimental-beneficial, pleasant-unpleasant, and likable-unlikeable aspects, [4]. An individual's attitude shapes their response to things and helps predict their behavioral objectives, [14]. One of the main objectives of the study was to show the connections between the representative VR aspects, such as presence and attitude, in light of the recent developments in digital technology, [6]. Researchers in tourist marketing have examined how the presence of ads and businesses affects consumers' impressions, [14]. Finally, research shows that being present promotes pleasurable sensations and, as a result, contributes to the development of a constructive attitude, [15]. For example, [16] discovered that the physical appearance of objects in 3D commercials had a greater persuasive influence on customers' views towards advertisements and buy intentions.

We have also looked into the relationships between presence and attitude in contexts other than advertising, such as education, healthcare, and tourism, based on the present conceptual extension of virtual reality, the variety of technology categories, and the expansion of application domains, [5]. An analysis of the impact of virtual reality on travel decisions, for example, showed that

people's perceptions of tourist attractions were impacted by presence, [17].

2.2 Satisfaction as Outcome

Even in virtual interactions, people can define happiness as an assessment, [18]. Because of this, earlier studies have examined how satisfied users are with VR environments, [19]. These results demonstrate that virtual reality stores may generally make people feel satisfied. As a corporate tool, virtual reality technology may help create distinctive customer experiences and boost customer satisfaction, [4]. This element could have an impact on visitors' level of satisfaction with their virtual tour, [11]. Individuals who have participated in a virtual tour to a great extent will be happy with their virtual tour experience and will pay greater attention to individuals present in the virtual environment, [8]. The research model that results from the aforementioned evaluations is shown in Figure 1.

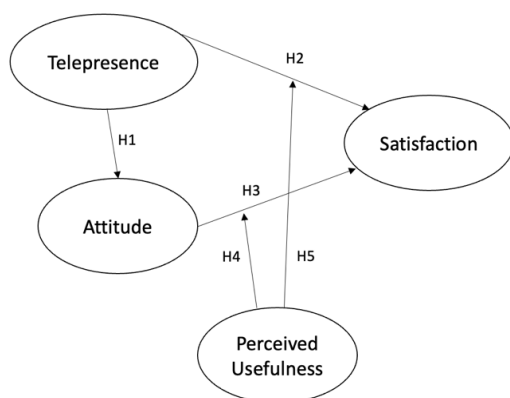


Fig. 1: Research Model
Source: Authors' own elaboration

3 Research Methods

We thoroughly reviewed the literature to find earlier studies on virtual tourism and associated factors such as telepresence and sensation of presence, [11]. Next, we include factors related to consumer behavior, including satisfaction [8], attitude [20], [14], and enjoyment, [21], [22]. We then employ a number of practical research tools. For this investigation, sixteen research articles from diverse relevant sources have been reviewed. A five-point Likert scale was used to grade the study's design, with 1 being strongly disagree and 5 representing strong agreement. Furthermore, the last survey item was translated into Indonesian first since it was anticipated that people of that language would respond. Table 1 displays the structures.

Adults over the age of 17 who have completed a virtual tour from various regions of Indonesia comprised the study's participants. We agree with [23] that the study's sample size should be five to ten times the total number of indicators used. This study uses sixteen indicators for different items or metrics. For the investigation, questionnaires were used to collect data. 320 people were contacted via social media (WhatsApp, Instagram, Line, and WhatsApp) to take part in the survey. The respondents' demographics can be seen in Table 2. Data from survey questionnaires are analyzed using the PLS-SEM (Partial Least Squares - Structural Equation Modeling) method, with SmartPLS version 4 software being utilized. PLS-SEM may be used in this investigation because of the intricacy of the existing model.

4 Results and Discussion

Partial Least Square Structural Equation Modeling (PLS-SEM) is the method used in this research. PLS-SEM offers the advantages of greater flexibility and dependable statistical methods, [23]. The measurement model and the structural model assessment are the next two analysis processes that are completed with PLS-SEM, [24]. Table 1 displays the PLS-SEM analysis procedure as well as fundamental guidelines for each analytical unit.

Table 1. Threshold Values of PLS-SEM

Phases	Thresholds	Sources
Measurement model evaluation	≥ 0.70	[25]
	0.70-0.90	
	≥ 0.50	
	< 0.85	
Structural model evaluation	$p < 0.05$	
	0.75, 0.50, 0.25 (substantial, moderate, weak)	

Source: authors' own elaborations

Table 2. Respondents' Demography

Profil	Criteria	Frequency	Percentage
Gender	Male	131	40.9%
	Female	189	59.1%
Age (years old)	17-25	93	29.1%
	26-35	113	35.3%
	36-45	61	19.1%
	46-55	35	10.9%
	56 over	18	5.6%
Occupation	Student	98	30.6%
	Entrepreneur	71	22.2%
	Government employees	49	15.3%
	Other	102	31.9%
Ever participated in a virtual tour?	Yes	186	58.1%
	No	134	41.9%

Source: authors' own elaborations

During the data collection period, 350 people completed survey forms. However, after the outlier assessment procedure, only 320 of the 350 data items gathered may be classified as valid data sets. Table 3 provides a summary of the responders.

4.1 Evaluation of the Model

The data is processed to ascertain the link between each variable and produce the study's results once the respondent profile has been reviewed. However, the data must first satisfy the validity and reliability standards for the evaluation of the measurement model before the relationship between variables can be determined. As shown in Table 3, each concept's validity and reliability were assessed as part of the measurement model's evaluation. The indicator loading value, which represents both the composite reliability value and the indicator reliability value, is the fundamental component of construction reliability. It illustrates the structure's dependability and internal consistency.

Table 3. Result of Measurement Model

Variables	Indicator/ Items	Reliability Test	
		Indicator Loadings	Cronbach's Alpha
Telepresence	TP1	0.821	0.801
	TP2	0.810	
Attitude	AT1	0.740	0.734
	AT2	0.733	
	AT3	0.711	
	AT4	0.679	
Satisfaction	S1	0.800	0.720
	S2	0.817	
	S3	0.825	
	S4	0.703	
	S5	0.643	
Moderating effect of perceived usefulness	M1	0.619	0.660
	M2	0.710	

Source: authors' own elaborations

For every loading in Table 3, every loading indicator satisfies the expected value of more than 0.7. However, a study by [25] demonstrated that many indicators may still be employed for additional analysis even if their values are below the minimum requirement of 0.70 since each construct's composite reliability is acceptable. According to Table 3, each structure's Composite Reliability value is larger than the minimal threshold value of 0.70, at 0.814 for the AT, 0.804 for the E, 0.730 for the SP, 0.801 for the S, and 0.752 for the TP, [25]. In the same sense, the dependability of the research structures is widely recognized. Examining convergent and discriminant validity in response to construct validity concerns is another area of emphasis. The convergent validity value is displayed by the AVE (Average Variance Extracted)

score, with AVE values of 0.553 (AT), 0.647 (E), 0.663 (SP), and 0.642 (S). As stated otherwise, the convergent validity value of each concept exceeds the 0.50 minimum threshold value, [25].

4.2 Structural Model Evaluation

The structural model is examined when the results of the measurement model evaluation make sense, [23]. All hypotheses in a structural model have a causal relationship; nevertheless, in structural models, hypothetical links are often assessed using route coefficients. To evaluate the statistical significance of a coefficient, the t value is commonly employed, [23]. T-values of 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%) are the key values in two-tailed testing, [25].

The hypothesis will be supported in this study if the t-value (relationship between variables) is larger than the cut-off value of 1.96. The result can be seen in Table 4. In contrast, if the t-statistic value (connection between variables) is less than 1.96, the hypothesis is rejected. The path SP→E obtained a study significance value of 1.993 > 1.96, a significance level of 0.047 < 0.05, and a positive route coefficient value of 0.320, as indicated in Table 5. It shows that there is a positive and strong association between pleasure and presence. It does not, however, agree with all of the hypotheses. For instance, SP→AT receives a research significance value of 3.689 > 1.96, the significance level is 0.811 > 0.05, and the path coefficient value is positive 0.339, indicating a positive but non-significant relationship between presence and attitude.

Table 4. Summary of relationship testing (Direct effects)

Hypotheses	Relationship	Path Coefficient	t-values	p-Values	Significance
H1	TEL → ATT	0.061	2.027	0.007	No
H2	TEL → SAT	0.300	3.159	0.135	Yes
H3	ATT → SAT	0.077	1.652	0.077	No

Source: authors' own elaborations

Furthermore, we looked at the perceived usefulness's two moderating effects. H4 and H5's path analyses are positive and insignificant, indicating that they remain within the acceptable range of significance (p-value must be less than 0.001). As a result, the two moderating effects that this study aimed to demonstrate were acknowledged.

Table 5. Summary of relationship testing
(Moderating effects)

Hypotheses	Path	Coefficient	t-values	P-Value	Significance
H4	TEL→ SAT (moderated by PU)	0.110	1.866	0.000	Yes
H5	ATT→ SAT (moderated by PU)	0.177	1.501	0.000	Yes

Source: authors' own elaborations

In addition, Table 6 shows the mediating effect of attitudes, showing the indirect effect of $SP \rightarrow A \rightarrow S$ and $SP \rightarrow E \rightarrow S$. The significance value of the study is obtained by the t-values of hypothesis 4a and 4b, which are greater than, and the path coefficient values are positive at 0.219 and 0.154, which indicate the effects of sense of presence on satisfaction through attitude and sense of presence on satisfaction through enjoyment are positive but not significant. The same happens with hypotheses 5a and 5b, with positive and significant results, but the effects of telepresence on satisfaction through either attitude or enjoyment are positive but not significant.

Table 6. Summary of relationship testing
(Mediating effects)

Hypotheses	Path	Coefficient	t-values	P-Value	Significance
H6	TEL → ATT → SAT	0.106	3.951	0.000	No

Source: authors' own elaborations

5 Conclusion

The results also indicate that attitude and sensation of presence do not significantly correlate, highlighting the need for further research into other, as yet unidentified key components. This study indicates that a person's sense of presence has minimal bearing on their attitude, most likely because comfort is a more rewarding experience than excitement while traveling via virtual reality.

The results of this study demonstrate how travel can be replaced by virtual reality technology. For example, customers may be compelled to alter their itinerary or activity because of political unrest or environmental disruptions. The idea of creating virtual reality content and previewing it for intended use is something that marketers need to be aware of.

Even when technology is used to organize events instead of physical travel, it can be challenging to do so.

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All authors contributed substantially to the creation of this scientific article. The authors participated in the conceptualization of the study, development of the research framework, data collection, data analysis, interpretation of the findings, and preparation and revision of the manuscript. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work. No individual who made a substantial contribution to the research or manuscript has been omitted from authorship, and no ghostwriter was involved in the preparation of this article.

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Conflict of Interest

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