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The Behavioral Intention of Young Travelers to Use Virtual Reality Technology in Cultural Tourism Destinations: An Application of Technology Acceptance Model

Chee-Hua Chin[1,2] (Corresponding author)
Email: chincheehua@uts.edu.my

Winnie Poh-Ming Wong[1,2] and Ek-Tee Ngian[1,2]

[1] School of Business and Management, University of Technology Sarawak, 96000 Sibu, Sarawak, Malaysia.
[2] Centre on Technological Readiness and Innovation in Business Technopreneurship.

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Abstract

Technology plays a crucial role in safeguarding cultural and heritage assets for tourism destinations. Despite youths' apparent technological proficiency, there has been limited research on their intention to use virtual reality (VR) in such settings. This study stands as one of the pioneering efforts to examine young individuals' behavioral intention to utilize VR technology in cultural heritage tourism destinations within the Borneo region, specifically Sarawak. Drawing from the concept of the technology acceptance model, this study investigates how various factors of perceived usefulness (such as accessibility to information, information quality, and media richness) and perceived ease of use (such as interactivity) influence the behavioral intention to use VR technology in cultural tourism settings. Statistical Package for Social Sciences (SPSS) and WarpPLS were used for data analysis. This study gathered data from 250 valid responses from young visitors at cultural tourism sites in Sarawak, Malaysia. Employing a quantitative methodology, the interrelationships among the study variables were examined through partial least squares - structural equation modelling. The current research reveals that young individuals prioritize factors such as information quality, media richness, and interactivity when considering their intention to use VR technology in cultural tourism destinations. However, the accessibility of information was not found to be a significant concern. This study lies in its focus on the Borneo region, offering new insights into the adoption of VR technology in cultural heritage tourism among youths.

Keywords: Technology acceptance model, virtual reality, behavioral intention, young travelers, Malaysia.

1. Introduction

Before the COVID-19 pandemic, the tourism sector was regarded as one of the world's largest and fastest-growing industries (Nicolaides, 2020). During the pandemic, it is undeniable that travel and hospitality has been experiencing the biggest impact (Liubarets et al., 2022). However, post pandemic, it is projected that the tourism industry will soon be booming as people are eagerly wanting to travel due to the long lockdown (World Economic Forum, 2022). Tourism is undeniably capable of generating lucrative revenues for the community and tourism stakeholders, as well as contributing to the country's overall economic growth (Scott, Hall, & Gössling, 2019; Phukamchanoad, 2022; Chin et al., 2024a). The term "tourism" refers to the movement of people between locations in order to encounter unique authentic natural, cultural, and heritage experiences (Talty, 2017).

The pandemic has brought businesses, including those in the travel and hospitality sectors, to a halt. In response to the competitive and unpredictable business environment, the majority of countries have embarked on digital transformation initiatives (Lee, Lee, & Liu, 2023), which may include digitizing tourism products or leveraging various technology and social media platforms to sustain their businesses. In fact, technology plays a crucial role in preserving cultural and heritage resources for tourism destinations (Trček, 2022) and contribute to the sustainable development of the destinations. Virtual tourism has emerged as one of the most beneficial tourism technologies to stimulate the travel experience (e.g., virtual tours), providing tourists with an indirect travel experience via advanced technology (Rogers, 2021). Recognising the potential of virtual reality (VR) in tourism to enhance visitor experience (e.g., pre-, during, or post-pandemic) as well as its role in preserving cultural heritage resources, it is worthwhile to conduct an in-depth examination into this area.

In general, VR refers to the immersive technology that allows users to interact with a lifelike, computer-generated, and three-dimensional virtual environment (Guttentag, 2010) which allows users to experience the different cultures and environments. VR technology is widely recognized as one of the most significant innovations in the realm of information and communication technology (ICT), with a notable impact on the tourism industry (Pestek & Sarva, 2021). Indeed, VR is not a novel technology, having been extensively investigated in a variety of contexts, including education (Deale, 2013), marketing (Tussyadiah et al., 2018), cultural heritage (Dieck & Jung, 2017), and tourism destination marketing (Rainoldi et al., 2018). However, within the tourism literature, there has been an increasing interest in studying VR in tourism, owing to its potential to aid in destination marketing (An, Choi, & Lee, 2021). Despite this interest, most studies have focused on usability or usefulness-related dimensions (e.g., Kim & Hall, 2019; Lee, Kim, & Choi, 2019; El-Said & Aziz, 2021; Schiopu et al., 2021), leaving a gap in understanding how VR technology influences young travelers' behavior intentions in cultural tourism settings,

In Malaysia's case, it is undeniable that the pandemic has had a significant impact on the country's tourism sectors, with travel restrictions imposed. Following COVID-19, a number of initiatives aimed at revitalising the tourism industry have been implemented. One of the initiatives is to digitally transform tourism products through the use of digital technology, such as Augmented Reality (AR), VR, and 3D models in order to stimulate and improve tourists' travel experiences. Stretched along the northwest coast of Borneo, the Malaysian state of Sarawak is blessed with a multitude of natural and cultural riches that support the growth of the state's tourism sector (Zahari et al., 2017). Digital and execution are one of the seven strategic thrusts of the post-COVID-19 development strategy 2030 (Economic Planning Unit Sarawak, 2021). Indeed, the virtual tourism industry is still in its early stages and it is expected to grow continuously. Sarawak has pioneered the digitalization of tourism products by launching the Sarawak Travel App and Web Portal in early 2020 (Bong, 2020). The Sarawak Travel App and Web Portal are notable for their use of VR, AR, and 3D modelling to showcase Sarawak's natural, cultural, and culinary heritage.

Given that young travelers are technology savvy and more influenced by technology related products (Buhalis, 2020), exploring their intentions to use VR in cultural tourism destinations is important. On the other hand, young travelers specifically Generation Z also show their interests on VR technology related products as it provides more engagement to enhance their tourism experiences (Buhalis & Karatay, 2022). In this regard, to explore young travelers' intention to use VR in cultural tourism destinations, this study adopted Technology Acceptance Model (TAM) as the underpinning theory to govern the development of the research framework. Based on the TAM, both perceived usefulness and perceived ease-of-use are equally important when exploring technology related products. Building on the above discussion, this study aims to address gaps in the theory and literature by conceptualizing information access, quality of information, and media richness as components under perceived usefulness, while interactivity is conceptualized as a component of perceived ease-of-use.

The study seeks to examine their influence on young travelers' behavioral intention to use VR in Sarawak's cultural tourism destinations. In practical terms, these discoveries could offer valuable perspectives for the state's initiatives in digitizing tourism offerings, thus bolstering destination marketing tactics. Theoretically, this research expanded upon existing tourism literature by exploring the potential connections between VR technology and cultural tourism sites, particularly focusing on how young people perceive them.

The next section provides a literature review, covering the Technology Acceptance Model (TAM), behavioral intention to use virtual reality, and the independent variables, along with the development of hypotheses. Following that, the methodology section details the research design and data collection process. The results section presents the findings of the study, which are then discussed in the subsequent section. Finally, the paper concludes

with insights into the implications of the findings, limitations, and suggestions for future research.

2. Literature Review

2.1 Technology Acceptance Model (TAM)

The original TAM is a theoretical framework introduced by Fred Davis in the 1980s and it has been widely used as the theoretical foundation for forming conceptual frameworks in the area of information and technology research. TAM refers to the presence of external stimuli that would further influence the user's motivation and subsequently lead to the user's action and responses towards certain phenomena (Chuttur, 2009). In relation to the external factors, both perceived ease-of-use and perceived usefulness are projected to play a mediating function that led to behavioral action (Zhang, Ali, & Kanesan, 2022). In the past, TAM has been applied in different contexts and technology related products such as websites (Koufaris, 2002), e-mail (Szajna, 1996) and word processors (Davis, 1989) to determine the behavior of the consumer toward the new technologies. Some recent studies have also adopted TAM as the theoretical foundation in framing the research framework for the tourism and hospitality industry (Hasni, Farah, & Adeel, 2021; Liu, Henseler, & Liu, 2022). With that, the TAM is useful for understanding how users (consumers) perceive and adopt the technology in order to maximize its usage. This study borrowed the concept of TAM as the underlying theory and proposed a model that aimed to investigate the relationship between the proposed predictors of perceived usefulness (i.e., information access, quality of information, and media richness), and perceived ease of use (i.e., interactivity) towards youths' behavioral intention to use virtual reality in cultural tourism destinations. This concept aligns with recent research which underscores the importance of TAM in predicting user behavior (Maziriri, et al, 2023, Teng, Wu, & Kuo, 2024).

2.2 Behavioral Intention to Use Virtual Reality

Behavioral intention refers to one of the crucial components in explaining customer behaviors action; when a person is having a strong intention to engage in a particular behavior tend to increase the likelihood for action (Ajzen, 1991). Behavioral intention represents an individual's conscious decision to attempt in engaging a specific behavior. These intentions can arise from both personal evaluative factors and normative constructs (Eagly & Chaiken, 1993). Besides, intention or conation is an act that is motivated by knowledge and affection (Chen et al., 2016). In the tourism studies, behavioral intention plays an important role in comprehending traveler destination choices, future intentions, and behavior action (Afshardoost & Eshaghi, 2020). Some studies in the past have also investigated the behavioral intention of using virtual reality in different areas, such as students' intention to use virtual reality in the education (Shen et al., 2018) and intention to use virtual reality for modern tourism (Pestek & Sarvan, 2021). In this study, the dependent variable will be the behavioral intention to use virtual reality technology,

focusing on youth's intention to use virtual reality in cultural heritage tourism destinations, expanding on the existing literature (Sinha et al, 2024).

2.3 Independent Variables and Development of Hypotheses

Information is referred to as the availability of a reliable means for disseminating information (Jaeger & Burnett, 2005). Access to information can be conceptualized in various ways, drawing from different academic disciplines such as communication, media studies, and economics. It can be examined through different lenses, including knowledge, technology, communication, and participation with influences on access includes physical, cognitive, affective, economic, social, and political considerations (Dervin, 1973). Past research has demonstrated that consumers' desire for product information drives their search behavior and influences their purchase intention (Anderson et al., 2014). In this study, information access refers to tourists' availability and accessibility of information about tourist attractions or destinations that is relevant and useful to them when they use VR in tourism. When young travelers are able and easy to access information, it means that they perhaps may be keen to form a positive intention towards the use of technology. Previous studies have indicated a significant and positive relationship between information to access and behavioral intention (Ajzen, 1991; Zamasiya, Nyikahadzoi, & Mukamuri, 2017).

Information is data that has been processed into something meaningful for the recipient, has true worth, and is considered for a choice that will be made in the near or far future (Verrecchia, 1990). In the virtual reality context, the term "information quality" refers to the practice of utilizing high-quality VR information to enhance the VR experience (Gao, Bai, & Park, 2017). As mentioned by Mulyanto (2009), several key aspects of information quality include accuracy, just-in-time (JIT) delivery, relevance, completeness, and reducing uncertainty. All of these information quality dimensions contribute to fostering trust and influencing behavioral actions (Chin et al., 2024b). Giving quality information to the people empowers them to make opinions and take part in performing the actions (Kovach & Rosenstiel, 2007). In this study, information quality is defined as the use of accurate, dependable, and well-formatted information about VR tourism content. Past studies have argued that there is a positive relationship towards the quality of information and behavioral intention to use VR (Ramayah, Ahmad, & Loh, 2010). Besides, Saeed, Hwang, and Yi (2003) have also indicated that there is a positive relationship between quality of information and behavioral intentions to use VR.

The media richness of a communication channel refers to its relative ability to deliver messages with a high level of detail (Vazquez, Dennis, & Zhang, 2017). It refers to the ability of VR as a communication medium to convey information of tourism in this study. The level of media richness can be defined as the "ability to process rich information" which may help to improve user concentration (Daft & Lengel, 1986). The study conducted by Saeed and Sinnapp (2009) found that there was a positive relationship between media richness and behavioral intention to use VR. Furthermore, this finding is consistent with

previous empirical studies that have demonstrated a relationship between media richness and behavioral intention (Bondos, 2018).

The term interactivity refers to the degree to which users can alter the appearance and content of a mediated environment in real time (Steuer, 1992). In this study, interactivity is defined as two-way communication and the exchange of information between a machine/system and a user, with timely responses under the user's control within the context of a VR experience. Interactivity is commonly associated with modern communication technology (DeFleur & Ball-Rokeach, 1989) and is a vital component of the digital system. Interactivity can also be defined as the user of a system engaging and interacting with that system through "orders" and "responses" (Janlert & Stolterman, 2017). Several empirical studies have found a positive relationship between interactivity and behavioral intention. This study aligns with one such empirical study by Chiu, Hsieh, and Kao (2005), which also reported an impact on behavioral intention from interactivity. Following the preceding discussion, the following hypotheses were proposed:

H1: Information to access is significantly related to young travelers' intention to use VR in cultural tourism destinations.

H2: Quality of information is significantly related to young travelers' intention to use VR in cultural tourism destinations.

H3: Media richness is significantly related to young travelers' intention to use VR in cultural tourism destinations.

H4: Interactivity is significantly related to young travelers' intention to use VR in cultural tourism destinations.

3. Methodology

Sarawak, one of Malaysia's 13 states, is known for its rich cultural and natural riches on the island of Borneo (Er & Simon, 2015). The current study was carried out at cultural destinations in Sarawak, specifically those that have used VR technology to highlight the cultural and heritage features of their individual groups or ethnicities. In Sarawak, one of the goals is to revitalize the tourism industry post-COVID-19 by promoting domestic tourism. Thus, the objective of this study was intended to examine the influence of information access, quality of information, media richness, and interactivity on young travelers' behavioral intention to use VR in cultural tourism destinations in Sarawak. The present study is in line with the initiatives taken by the state to promote digitalization in the economy (Ling, 2022).

In this study, a quantitative method was used, with a close-ended questionnaire developed. The list of measuring items was adopted from previous studies (Ei-Said & Aziz, 2021; Lee & Kim, 2021; Lee, Lee, & Liu, 2023) and modified to suit the Malaysian setting. The survey questionnaire is generally divided into two sections. Section I focuses on the

respondent's demographic information, whereas section II discussed the multiple measurement items to investigate young travelers' perceptions on their behavioral intention to use VR in cultural tourism destinations. A total number of 24 measurement items were selected and developed using a seven-point rating from scale 1 to 7, where '1' represented strongly disagree while '7' represented strongly agree.

The survey respondents consisted of young travelers who had visited VR tourism destinations in Sarawak. In this study, G*Power software was used to calculate the minimum sample size, with 129 respondents (Faul et al., 2007). This calculation was primarily based on a statistical power of 0.95, four predictors, and a medium effect size with the significance level of 0.15. To select the representative respondents, a non-probability purposive sampling method was conducted (Sekaran & Bougie, 2013), targeting on individuals who had visited VR tourism destination in Sarawak. This sampling method ensured that the respondents had relevant experiences and provided information-rich data relevant to the study (Sekaran & Bougie, 2013). Besides, the minimum age for respondents was set at 18 to ensure a better understanding of the measurement items and thereby generate more reliable outcomes. Data was collected from four main cities in Sarawak—Kuching, Sibu, Bintulu, and Miri—over a period of 3 months (from August 2023 to November 2023). Before participating in the survey, the researchers reached a consensus with the selected respondents on rating each measurement item. A total of 271 of 350 distributed questionnaire were returned, showing an approximately 77% response rate and indicating that there is no response error (Nulty, 2008).

Before commencing the measurement and structural analysis, the Social Sciences Statistical Package (SPSS) 28.0 software was used to clean the data. During the process, 21 rows of data were deleted owing to straight-line responses and missing information. The remaining 250 rows of data were used to conduct a partial least squares-structural equation modeling (PLS-SEM) analysis with WarpPLS 8.0 software (Kock, 2022). PLS-SEM was employed to focuses on maximizing the explained variance of the dependent constructs and is well-suited for predictive applications (Hair et al., 2017). Figure 1 showed the study's proposed research model.

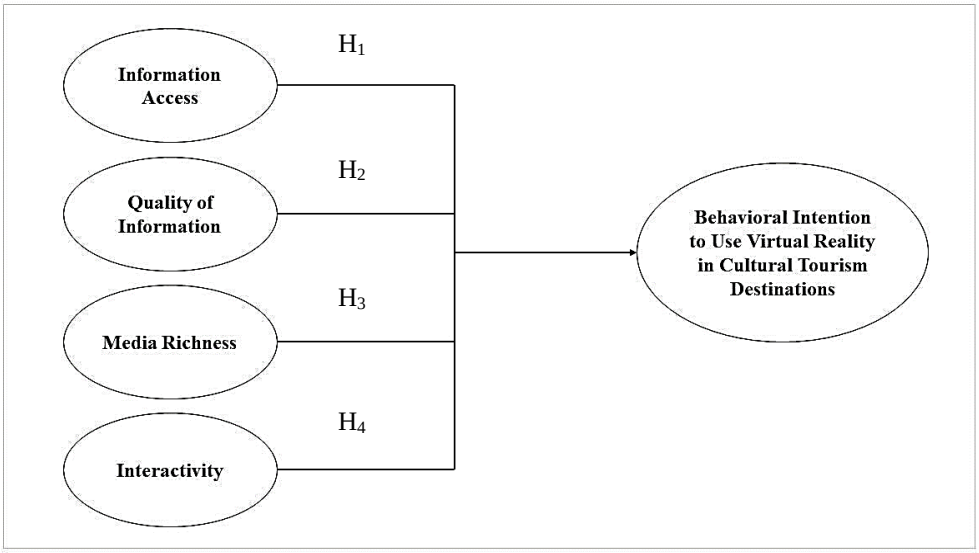

Figure 1: The Proposed Conceptual Model

4. Results

4.1 Respondents Characteristics

Descriptive statistics are conducted to obtain the general information of the respondents. Out of the 250 rows of data, male recorded 114 and females stood at 106. As for respondents age, the minimum age of the respondent was 16 years old and with a maximum age of 35 years old. In terms of the type of respondents, 21% of them were international travelers, whereas the remaining 79% were local or domestic travelers. The majority of respondents reported a monthly income of RM1,200 and below, while 14% (n=35) fell within the range of RM1,201 to RM2,400, followed by 4.8% (n=12) earned between RM3,601 to RM4,800. Regarding to another 2 categories, RM2,401 to RM3,600 and RM6,001 and above, approximately 11 respondents (4.4%) were in each category. However, only a small minority of respondents were in the RM4,801 to RM6,000 range (2%, n=5). As for ethnic compositions, Chinese were the largest group of respondents in this study, represented by 193 samples (77.2%), others were 8.8 percent (n=22) followed by 8 percent of Malays (n=20). Dayak ethnicities accounted for 8% (n=20) and Indian at 0.8% (n=2).

4.2 Assessment of the Measurement Model

In this study, the proposed model was evaluated using confirmatory factor analysis (CFA) to assess the reliability, convergent validity, and discriminant validity of the scales. As

indicated in Table 1, each item must achieve a minimum loading of 0.70 to be considered acceptable and ensure internal consistency (Bagozzi, Yi, & Philipps, 1991). Additionally, construct validity was assessed using composite reliability (CR), with a minimal cutoff point of 0.70 (Chin, 2010), and average variance explained (AVE), which should be at least 0.50 (Fornell & Larcker, 1981). The values obtained for both CR and AVE met the suggested minimum requirements. To examine Common Method Bias (CMB), Harman's single factor test was conducted, indicating that the loading of the first factor was found at 36.46%, which below the cut off value of 50%, and therefore indicate that the results are free of CMV (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003).

Table 1: Results of Measurement Model

Model Construct	Measurement Item	Loading	CR[a]	AVE[b]
Information Access (INF)	INF_1	0.823	0.895	0.741
	INF_2	0.889		
	INF_3	0.869		
Quality of Information (QOI)	QOI_1	0.871	0.891	0.732
	QOI_2	0.881		
	QOI_3	0.813		
Media Richness (MR)	MR_1	0.763	0.808	0.584
	MR_2	0.769		
	MR_3	0.761		
Interactivity (INTER)	INTER_1	0.731	0.916	0.576
	INTER_2	0.690		
	INTER_3	0.710		
	INTER_4	0.820		
	INTER_5	0.764		
	INTER_6	0.788		
	INTER_7	0.799		
	INTER_8	0.763		
Behavioral Intention to Use VR (BINT)	BINT_1	0.748	0.910	0.591
	BINT_2	0.739		
	BINT_3	0.730		
	BINT_4	0.816		
	BINT_5	0.786		
	BINT_6	0.789		
	BINT_7	0.771		

Note: a Composite Reliability (CR); b Average Variance Extracted (AVE)

Table 2 displays the measures' discriminant validity, primarily consisting of the assessment of inter-correlation among the constructs using the square rooted values of AVE. According to Fornell and Larcker (1981) and Chin (2010), the correlation values obtained

must be higher than each other. Based on the evidence of accuracy, convergent, and discriminant validity, the present measurement model was considered appropriate.

Table 2: Discriminant Validity of Constructs

Constructs	INF	QOI	MR	INTER	BINT
Information Access (INF)	**0.861**				
Quality of Information (QOI)	0.606	**0.856**			
Media Richness (MR)	0.553	0.575	**0.764**		
Interactivity (INTER)	0.446	0.426	0.459	**0.759**	
Behavior Intention (BINT)	0.393	0.405	0.438	0.462	**0.769**

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations

In this study, the coefficient of determination (R^2) was computed to assess the significance of the model's ability to forecast the approximate actual data points (Hair et al., 2017). The R^2 value for behavioral intention to use VR was found to be 0.318, indicating a moderate level of significance. Additionally, Q^2 values were obtained to explain the predictive value of the data. It is suggested that the Q^2 value should be greater than zero (Hair et al., 2017). In this study, the Q^2 value for behavioral intention to use VR was 0.325, exceeding the threshold of zero.

4.3 Assessment of the Structural Model

As mentioned earlier, a total of 4 directional hypotheses were formulated based on the developed research model. As tabled in Table 3, the VIF scores are lesser than 3.3, indicating that there are no multicollinearity issues with the model. The structural results indicated that quality of information (H2, β =0.104, t = 1.670), media richness (H3, β = 0.319, t = 3.328), and interactivity (H4, β =0.104, t = 5.330) are predictors of behavioral intention to use virtual reality in cultural heritage tourism destinations. However, the remaining predictor, information access (H1, β =0.077, t = 1.241) did not establish any significant relationship with behavioral intention. Thus, other than H1, the remaining hypotheses are supported.

To examine these hypotheses, WarpPLS software was employed. The results, including regression weights, bootstrap critical ratios p-values, and R^2 values to elucidate the model's endogenous linkages (O'Cass & Frost, 2002), as presented in Figure 2. In this study, the coefficient of determination (R^2) was computed to assess the significance of the model's ability to forecast the approximate actual data points (Hair et al., 2017). The R^2 value for behavioral intention to use VR was found to be 0.318, indicating a moderate level of significance. Additionally, Q^2 values were obtained to explain the predictive value of the data. It is suggested that the Q^2 value should be greater than zero (Hair et al., 2017). In this study, the Q^2 value for behavioral intention to use VR was 0.325, exceeding the threshold of zero. Additionally, effect size (f^2) was calculated to determine the strength between

independent and dependent variables. From Table 3, the f^2 values for information access, quality of information, media richness, and interactivity are considered weak.

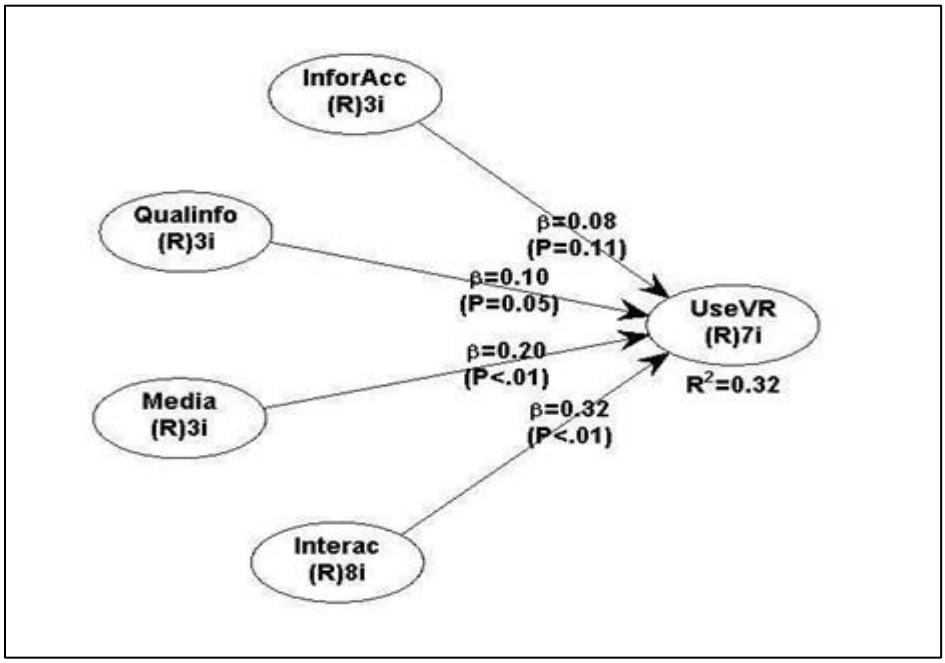

Figure 2: Results of Structural Model

Table 3: Results of Hypotheses Testing

Hypothesis	Relationship	Beta	*p*-Value	*t*-Value	Decision	f^2	VIF
H1	Information access → behavioral intention	0.077	0.108	1.241	Not supported	0.031	1.827
H2	Quality of information → behavioral intention	0.104	0.048	1.670	**Supported**	0.043	1.922
H3	Media richness → behavioral intention	0.203	<0.001	3.328	**Supported**	0.090	1.724
H4	Interactivity → behavioral intention	0.319	<0.001	5.330	**Supported**	0.155	1.361

5. Discussion

The statistical findings of this study indicate that information accessibility is not significantly related to the behavioral intention to use virtual reality in cultural heritage tourism destinations in the context of Sarawak. Therefore, H1 was rejected. The finding

for H1 was contrary to past study by Zamasiya et al. (2017) which suggested that both information accessibility and behavioral intention to use virtual reality is significantly related. In fact, information accessibility and reliability are interrelated. This contradict finding could be due to the fact that the reliability of the information is crucial as less reliable information (Orakani, 2020) will indirectly lead to information accessibility will not directly influence the behavioral intention to use virtual reality in the context of cultural heritage tourism destinations from youths' point of view.

In regard to concerns about the reliability of information when dealing with VR technology products, H2 found that the quality of information is positively and significantly related to the behavioral intention to use virtual reality in cultural heritage tourism destinations. This finding is consistent with previous studies (Ramayah et al., 2010; Saeed et al., 2003), which have also shown that the quality of information significantly influences the behavioral intention to use virtual reality.

On the other hand, concerning virtual reality-related products, it was suggested that media richness is a significant component. This study confirmed that youths in Sarawak believe that to enhance their behavioral intention to use VR in cultural heritage tourism destinations, it is important to ensure the richness of the media or content. This finding aligns with a past study by Saeed and Sinnapp (2009). VR technology provides opportunities for users to explore experiences related to cultures and environments through virtual tours, thereby promoting VR tourism. Besides, VR technology enables travelers to preview potential destinations and allowing them to plan their individual trip efficiently (Sinha, Dhingra, Sehrawat, & Jain, 2024). Beyond creating the immersive experience, VR facilities can also drive the changes in the decision-making process among the travelers (Teng, Wu, & Kuo, 2024).

Finally, the statistical finding for H4 also indicates that interactivity has a significant impact on the behavioral intention to use virtual reality in cultural heritage tourism destinations in Sarawak. This finding is consistent with a study by Jiang, Sun, Yang, and Gu (2022), where they found that interactivity plays a crucial role in users' intention to use mobile augmented reality virtual shoe-try-on function. Youths believe that it is important to consider the level of interactivity when tourism destinations utilize virtual reality in cultural heritage, as high interactivity enhances the degree of real-time interaction and connectedness in experiencing the cultural heritage components via virtual reality devices (Zhao & Lu, 2012). In fact, when tourists gain a meaningful experience from VR technology, tourists may feel more confident in planning their actual vacation trips (Sinha et al., 2024). According to Wu et al. (2020), Generation Y are tended to have positive opinions about wearing VR glasses (Maziriri, Mashapa, Nyagodza, & Mabuyana, 2023).

6. Conclusion

In conclusion, this study revealed that concerning youths' intention to use virtual reality in cultural heritage tourism destinations, the primary concerns are the quality of information, media richness, and interactivity. It is basically the tangible aspects of virtual reality technology. Practically, this study provides some insightful information for the tourism stakeholders and the policy makers especially in the area of cultural tourism destinations on developing virtual reality related projects associated with cultural and heritage components. As found in this study, youths are concerned about the quality of the information, media richness, and interactivity when it comes to the usage of virtual reality in cultural heritage destinations. Theoretically, the findings of this study have contributed to the virtual reality and cultural heritage tourism literature by using youths in Sarawak, Malaysia as the means to validate the proposed framework. Regarding TAM theory, commonly used to predict new technology acceptance, this study confirms that the intention to use VR technology in cultural heritage tourism destinations is still influenced by two crucial components of TAM: perceived usefulness (such as the quality of information and media richness) and perceived ease of use (like interactivity), aligning with TAM. In fact, VR technology could create virtual tours of cultural tourism destinations and enhance immersive experience compared to traditional methods (e.g., tourist guidebook), which indeed may evoke curiosity. These factors are essential considerations when crafting showcases for cultural heritage elements through virtual reality. The travelers are therefore can enrich their historical and cultural understanding of the specific cultural destination and increase the tourist engagement.

This study comes with several limitations. Firstly, this survey concentrated in Sarawak, Malaysia in which data from other geographical areas could provide different findings. This is due to the fact that different geographical areas could provide different insights because of the differences of culture. In this regard, it is suggested that future study could also collect data from different regions or countries to further validate the framework. The second limitation is regarding the study sample of youths as the targeted respondents in this study. Although youths are considered as the technology savvy group of respondents, when it comes to cultural heritage destinations, older generations should not be neglected as they are the group that are more on cultural and heritage products. Therefore, future studies could explore the perspectives of older generations regarding their behavioral intention to use virtual reality in cultural heritage tourism destinations. Next, purposive sampling was used for sampling recruitment, which may create sampling errors and data bias. Hence, considering sampling methods and different tourism heritage destinations could improve overall generalizability. Other potential determinants variables, such as psychological factors, credibility, engagement, desire, social influence, and personal innovativeness should be considered and include variables with a mediation and or moderation role, when conducting behavioral intention. Additionally, future research will evaluate AR technology’s potential among the individual with disabilities. The research in this area could enhance convenience and experiences for those disabilities people, giving

them an opportunity to explore and enjoy the beauty of cultural tourism destination through the support of VR technology.

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