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Willingness to Engage in Virtual Reality at UNESCO World Heritage Sites of Nepal: A Deductive Qualitative Inquiry

Sujan Chaulagain*, Laxman Pokhrel**[1]
**South Asian College of Management (SAIM) College*
***School of Hospitality and Tourism Management, Spears School of Business, Oklahoma State University, USA*

Abstract

Nepal is home to ten UNESCO-listed natural and cultural heritage sites, which attract a significant number of tourists from across the country each year. Despite the popularity of these heritage sites, the factors influencing visitors' willingness to engage with virtual reality (VR) at cultural heritage locations remain largely underexplored. Drawing on the Unified Theory of Acceptance and Use of Technology (UTAUT) model, this paper investigates the factors that influence the willingness to adopt VR technology in Nepal's cultural heritage sites. Specifically, it explores the key drivers behind visitors' decisions to engage with VR during their visits. Using a deductive qualitative analysis (DQA) approach, we conducted interviews with ten visitors to cultural heritage sites who had prior experience with VR technology. The data was analyzed using Braun and Clarke's six-step process of reflexive thematic analysis. Our findings indicate that performance expectancy and facilitating conditions are the most significant factors influencing the willingness to engage in VR tourism, followed by effort expectancy and social influence. These findings offer valuable insights for heritage site managers, enabling them to develop and promote service packages that incorporate VR technology, enhancing the visitor experience and engagement at cultural heritage sites.

Keywords: Behavioral intention, performance expectancy, thematic analysis, UNESCO world heritage sites

Introduction

Virtual tourism, a fusion of virtual reality and the tourism sector, has experienced remarkable growth over the past decade as a niche within the broader tourism market. The global virtual tourism market's value stood at $6.1 billion in 2022, with projections indicating a significant increase to a $23.5 billion valuation by 2028 (Forecast, 2023). This growth in virtual tourism is predominantly driven by advancements in information and communication technologies, as highlighted by Beck et al. (2019). These advancements are further propelled by the emergence of innovative artificial intelligence-driven technologies, particularly VR. VR is swiftly becoming a catalyst for new and enriched tourism experiences, serving as a valuable source of information, entertainment, education, accessibility, and heritage preservation (Beck et al., 2019). In tourism, VR technology creates a virtual environment (VE) by delivering synthetic or 360-degree real-

[1] Corresponding author
Email: laxmanpokhrel98@gmail.com

life content through various levels of immersive VR systems, whether non-immersive, semi-immersive, or fully immersive (Beck et al., 2019).

VR's adoption in the tourism industry has gained substantial momentum due to its ability to elevate the overall customer experience, as noted by Buonincontri and Marasco (2017) and Lin et al. (2020). Likewise, Lee et al. (2020) applied a quantitative method to identify the quality factors of VR and examine their impacts on consumers' behavioral intentions. Moreover, Zhu et al. (2023) identified the antecedents and consequences of telepresence to help interpret tourist behavior in the context of non-immersive VR experiences from world heritage sites. Furthermore, post the COVID-19 pandemic, the implementation of VR in tourism offers strategic advantages due to increased demand for virtual tourism experiences and its capacity to enhance visitor satisfaction and drive future visits to destinations, as suggested by Lu et al. (2022). Therefore, the exploration of VR's role in the context of UNESCO Heritage sites is both essential and timely, given its potential to reshape and revitalize the heritage tourism experience.

The widely accepted definition of VR involves the utilization of computer-generated 3D environments that allow users to navigate and interact, thereby simulating, often in real-time, one or more of their five senses (Yung & Khoo-Lattimore, 2019). In the realm of virtual tourism, VR technology entails the creation of computer-generated 3D environments representing tourism sites, enabling visitors to engage with these sites and experience them through a real-time simulation involving all five senses. Given the inherent intricacies of virtual reality technology, it is of utmost significance to explore the factors influencing the acceptance of VR. This is especially important because, as Wibisono et al. (2023) point out, VR tourism technology is not widely available, particularly in developing nations. Several studies have investigated the behavior and intention of VR technology in different tourism and hospitality contexts (e.g., Lin et al., 2020; Nam et al., 2024; Zhu et al., 2023). However, these papers are predominantly applied quantitative methods in the western context. Moreover, previous studies have invited future studies to investigate VR tourism in different countries, contexts, and cultures (e.g., Dieck et al., 2018; Lin et al., 2020; Zhu et al., 2023). Thus, it is reasonable to investigate factors influencing willingness to engage in virtual reality at UNESCO World Heritage sites in Nepal.

This research presents new insights into the theoretical and destination marketing elements of heritage tourism in Nepal. This study has theoretically explored factors underlying factors such as effort expectancy, social influence, performance expectancy, and facilitating conditions in a willingness to engage in VR tourism. These findings provide a more profound and nuanced understanding of the UTAUT within the research area of virtual tourism. Likewise, although numerous studies have explored the application of virtual reality in heritage sites (e.g., Loureiro et al., 2020; Noble et al., 2022; Toyoda et al., 2021), Nepali heritage sites, despite their UNESCO World Heritage status, have received limited attention in previous research (e.g., Baniya et al., 2021). This study, therefore, opens new possibilities for virtual tourism at Nepali heritage sites, with potential applicability to similar contexts. Managerially, destination managers could develop strategies for designing heritage products for developing VR tourism products. Likewise, stakeholders such as the Nepal Tourism Board could invest in infrastructure in virtual reality technology to harness the potential of virtual tourism.

Literature Review and Theoretical Foundation

Unified Theory of Technology Acceptance and Use (UTAUT) Model

The UTAUT postulated that effort expectancy, facilitating condition, performance expectancy, and social influence are the most significant predictors of behavior intention (Venkatesh et al., 2012). First, effort expectancy, as defined by Venkatesh et al. (2003, p. 450), represents the level of ease associated with utilizing a particular system. In the context of our study, it pertains to the ease with which visitors to heritage sites can use virtual reality technology. Second, facilitating conditions, as defined by Venkatesh et al. (2003, p. 453), refer to the extent to which an individual believes that the necessary organizational and technical support infrastructure is in place to facilitate the use of a particular system. In the context of our study, this concept encompasses the extent to which tourists believe that organizational resources and the technological infrastructure for VR exist to enable them to explore heritage sites virtually. Third, performance expectancy, as defined by Venkatesh et al. (2003, p. 447), relates to the extent to which an individual believes that using a system will improve their job performance. In the context of virtual tourism, it refers to the extent to which a tourist believes that employing virtual technology will enable them to explore heritage sites virtually. Finally, social influence, as defined by Venkatesh et al. (2003, p. 451), pertains to the extent to which an individual believes that significant others, such as family, friends, and colleagues, endorse or expect them to use a new system. In the context of our study, it refers to the degree to which a tourist perceives that their social circle views their use of VR technology for virtual heritage site exploration as appropriate or advisable. The UTAUT model has seen widespread application in prior studies, serving as a framework to comprehend technology adoption intentions in various domains such as financial technology (FinTech) (Bajunaied et al., 2023), ChatGPT (Strzelecki, 2023), ICT in tourism (Ali et al., 2022), and immersive VR in the chemical industry (Noble et al., 2022). However, there is a dearth of research to investigate VR technology in the context of heritage sites (e.g., Lee et al., 2020; Li et al., 2024; Nam et al., 2024). Therefore, we develop our research idea embedded in the UTAUT model in Nepali heritage tourism.

Virtual Reality in Hospitality and Tourism Management

Heritage tourism attracts for longer periods and encourages experiences of deep cultural exploration. Old cities and settlements engage tourists in cultural, historical, and natural parts of heritage tourism (Lin et al., 2020). The growth of technology such as virtual reality has enticed visitors to different heritage sites. Recently, artificially intelligent technologies such as virtual reality have transformed the traditional ways that people travel to and experience future destinations (Lee et al., 2020). These technologies have been used in various hospitality and tourism areas such as theme parks, museums, hotels, and destinations. The VR destination tour could allow potential tourists to engage in website-based VR features (Lee et al., 2020). Likewise, Li et al. (2024) argued that the authentic experience of museum tourists relies on genuine relics, the environment, and activities that are ancient or traditional. The authors reported that there is a chain intermediary between presence and visit intentions, from original authenticity to interactive authenticity and then to emotional authenticity. Technology readiness and museum familiarity moderate some relationships between VR attributes and presence. Finally, Nam et al. (2024) postulated that virtual reality (VR) is a topic of growing interest in heritage tourism and reported that system quality and authenticity are associated with the enjoyment and usefulness of information, and presence is positively associated only with enjoyment. Familiarity negatively moderates the relationship between enjoyment and satisfaction with VR. Despite the plethora of studies on VR in heritage sites throughout the world, Nepali heritage sites are relatively less explored (e.g., Baniya et al., 2021). Moreover, the application of UTAUT model with DQA in the unique cultural heritage of Nepal has propelled investors to carry forward with this study.

Methods

Participants and recruitment

The specific context of this study revolves around the heritage sites located in Nepal, which have earned the prestigious distinction of being designated as World Heritage Sites by UNESCO. Nepal's initial foray into the World Heritage list was in 1979 when the Kathmandu Valley, encompassing iconic locations such as Kathmandu Durbar Square, Bhaktapur Durbar Square, Patan Durbar Square, Swayambhunath Stupa, Pashupatinath Temple, and Boudhanath Temple, collectively earned recognition as a World Heritage Site (UNESCO World Heritage Center, 2023, August 17). Ten participants, who had exposure to VR technology and visited heritage sites, were interviewed regarding their adoption of intention of virtual reality UNESCO heritage sites of Nepal. After ten participants, the information from the participants started repeating. Because of theoretical saturation and the recommendation of 10-12 interviews for social science research (e.g., Marshall et al., 2013); therefore, we decided that 10 participants would be appropriate for this study.

Description of the Participants

Ten participants, consisting of two women and eight men, willingly participated to respond to their use of virtual reality in the heritage sites. We have presented their responses, genders, and ages arranged in the sequence of their interviews and participant numbers in Table 1. We have highlighted the responses section, which includes the different responses collected during the study. It's worth noting that some participants' responses overlap, showing similarities with virtual reality games.

Table 1
Description of Participants

Participants	Responses	Gender	Age
1. Ram	Interested in the Elon Musk companies such as Tesla, Space X.	Male	23
2. Shree	Interested in using Apple vision pro feels it is so attracting and entertaining features.	Male	17
3. Srijana	Keen on virtual reality games for her would because of its surreal feeling.	Female	24
4. Ayush	Virtual tool kit providing real feeling which also helps to save time, cost and money.	Male	26
5. Rakesh	Played Hercules a virtual reality game it has given me surreal feeling.	Male	24
6. Rabindra	Virtual reality not only has 3D tracking but also have brought apple vision pro.	Male	22
7. Subin	With virtual reality technologies I find myself there even if I am sitting at my home.	Male	19
8. Ritu	Healing for the people with bad health conditions especially with mental health.	Female	17
9. Pratik	Realistic experience and making me feel that I am right there even if I am at my home.	Male	26
10. Khagendra	Portable and accessible everywhere	Male	24

Note. Based on authors' data collection

Data collection and data analysis procedure

A semi-structured interview with open-ended questions was used. Semi-structured interviews enable researchers to have a set of predetermined questions while allowing flexibility to explore issues raised by the interviewee (McGrath et al., 2019). All this would provide flexibility for a more natural conversation and enable participants to share their thoughts, experiences, and perceptions of VR tourism. Over one month, from June 20 to July 28, 2023, the interviews, which lasted between 25 and 40 minutes, were completed. We followed the guidelines of Fife and Gossner (2024) to conduct a deductive qualitative analysis, especially developing research questions, operationalizing theory, sampling, and theorization. To analyze data, we applied Braun and Clarke's (2021) six-stage process of thematic analysis because it provides rich insights into participants' experiences and is well-suited for early researchers due to its flexibility and user-friendly nature (Braun & Clarke, 2021).

Trustworthiness

To ensure the trustworthiness of the data, we followed the guidelines outlined by Lincoln and Guba (1985). To enhance accuracy, participants were provided with access to their interview transcripts and were invited to participate in follow-up meetings when necessary. The findings were carefully described to ensure their applicability across diverse contexts. The dependability of the data was upheld through meticulous documentation, including the original data, transcripts, and the researchers' analytical reflections (Nowell et al., 2017). Furthermore, the results were validated by transparently detailing the processes used to reach conclusions, as well as justifying the selection of theories, methods, and analytical approaches (Nowell et al., 2017).

Results

After transcribing ten semi-structured interviews, we collectively discussed coding the transcribed data. The final codes were decided after a round of discussion among researchers. After closely discussing the similarities among those 15 codes, nine sub-themes or first-order codes are finalized (refer to Figure 1). From the review of nine sub-themes or first-order codes and reviewed literature of the UTAUT model, four main themes or second-order codes have emerged. Finally, willingness to engage in VR tourism emerged from effort expectancy, social influence, performance expectancy, and facilitating condition. Since this study is grounded on the UTATU model, the final theme centered around the behavioral intention of VR tourism acceptance or willingness to engage in VR tourism (refer to Figure 1).

Effort expectancy

It refers to the degree of ease associated with the use of virtual reality technology by visitors of heritage sites (Venkatesh et al., 2003). The effort expectancy of virtual reality emerged from support in destination decision-making, and VR saves time, money, and effort. The argument and excerpt of the transcript are presented subsequently.

First, the sub-theme is ' support in destination decision making'. The participants believed that VR would make travel plans easier. The details provided by VR:

> *"ah! (thinking) virtual reality would be helpful for choosing a tourist destination. [sigh] the visual will be already set before doing firsthand experience which will lead to fun and much more detail about the place. For example: A person from India wants to visit Pashupatinath but he is currently in wheelchair. So yeah, I feel it's quite important for such cases." (Srijana: 3, Female, 24)*

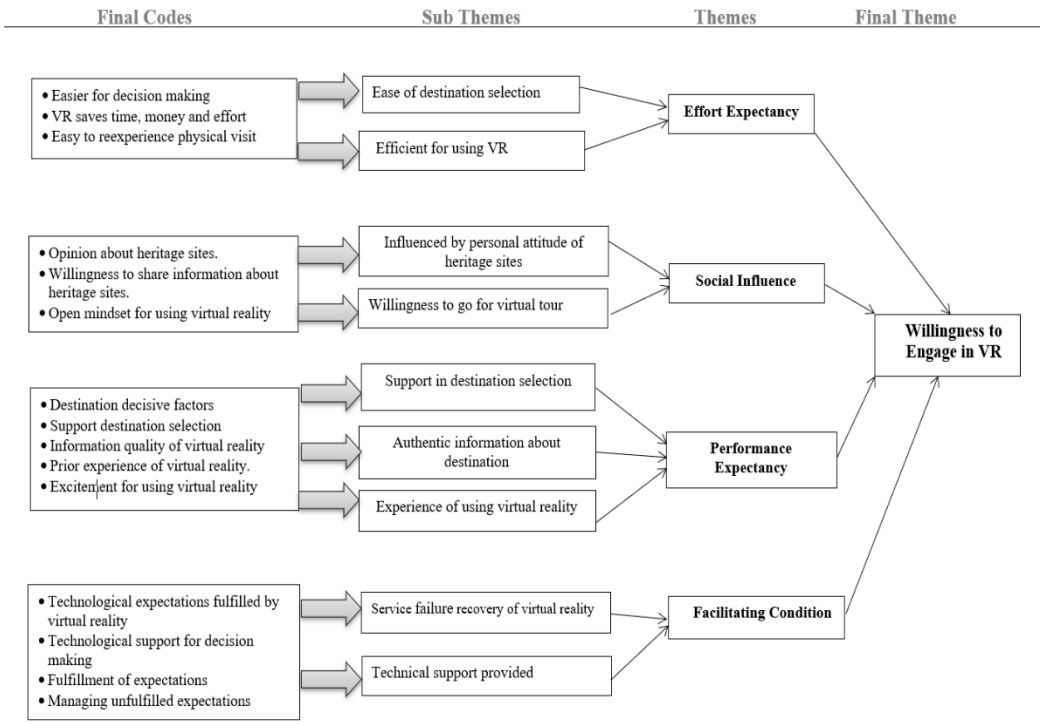

Figure 1. Thematic analysis of willingness to engage in VR tourism

Second, the sub-theme is 'VR saves time, money and effort'. The participants believed that VR helps to save time, money and effort to visit the place:

> *"It has made my travel plans easier by knowing the places for perfect pictures as being a content creator I always look for the perfect spot where I can find my perfect pictures. It will help me for preplanning before making my travel plans, so it has been possible because of Virtual Reality..." (Ayush: 4, Male, 26)*

> *"I think virtual reality technologies will provide us with reliable information so I feel it would make our travel plans easier [laugh]. Because it provides us the knowledge for the expenses, the roadway track for the place, environment, accommodation facilities, lodging and fooding facility for the place." (Ayush: 4, Male, 26)*

Social influence

Social influence refers to the degree to which tourists perceive their interest, and their family and friends think about using VR for virtual tourism (Venkatesh et al., 2003). This theme emerged from being influenced by personal attitudes about heritage sites and being willing to go for virtual tours.

First, the sub-theme is 'Influenced by personal attitude about heritage site'. The participants believed that sharing information about heritage sites such as cultural and natural ones has influenced others to visit:

> *"I prefer to travel solo trips… I think if I must visit heritage sites I will visit with my group of friends. When we head to heritage sites, we visit there to look the architect, history etc. In that scenario I would love to go with my group of friends." (Pratik: 9, Male, 26)*

Second, the sub-sub-theme is 'willing to go for virtual tour'. Participants believed that they are making others understand by connecting cultures with heritage sites.

> *"Basically, I start with the name of the heritage sites and why is it important. I share with them review of vlog travel made by vloggers for sharing information I often use social media. Not only Nepali but also India could use it because we share same culture." (PN: Ayush, Male, 26)*

Performance Expectancy

It refers to the degree to which a tourist believes that using virtual technology would be supported by organizations in the technical aspect of virtual tourism (Venkatesh et al., 2003). It emerged from support in destination selection, authentic information about the destination, and experience of using VR.

First, the sub-theme is 'support in destination selection'. All the ten participants expressed their eagerness to use it for using VR, and seems that they are driven by their enthusiasm and curiosity:

> *"Indeed, I think virtual reality helps to decide where to visit. They might choose Nepalese heritage sites especially because of the cultural and geographical aspects. So, it would be effective tool for searching the tourist destination." (Srijana:3, Female,24)*

Second, the sub-theme is 'authentic information about destination'. Many participants highlighted that advancement in technology could provide real quality information to its consumer.

> *"Yes, it is very effective, our Nepal has natural resources, heritage sites, terai, mountains, hilly regions. If tourist wants to visit the mountains and want to do adventures then they can know that the risk that can happen there and they can even confirm after using virtual reality" (Khagendra:10, Male,29)*

Third, the sub-theme is 'experience of using VR'. Many participants highlighted that advancement in technology is providing authentic experience to its consumer.

> *"Even the people with bad health condition also can experience the view of mountains just by sitting back at home. It can also be helpful for the healing for the people with bad health conditions especially with mental health." (Ritu: 8, Female, 17)*

Facilitating condition

It refers to the degree to which a tourist believes that organizational resources and VR technological infrastructure exist for virtually visiting heritage sites (Venkatesh et al., 2003). The two themes centered on facilitating conditions of VR by heritage site visitors emerged from the service failure recovery of virtual reality and technical support by VR companies.

First, the sub-theme is 'service failure recovery of virtual reality'. Most of the participants believed that VR should provide necessary information during failure of recovery from virtual reality:

"Yes, it could be the substitute for the people who does not have time and money [laugh]. However, the quality of technology should be good quality even there will be no electricity" (Khagendra: 10, Male, 24)

Second, the sub-theme is 'technical support by VR company'. The participants believed that VR helps to substitute the real travel experiences and meeting the expectations:

> *"I personally feel that after 50 years the technology will be more advanced than it can substitute the real travel experience for sure. But for now, the technical support for VR service provider is important and I think the lack of advancement in technology in Nepal can be lacking" (Srijana: 3, Female, 24)*

Discussion

Historical tourism is inherently complex and multifaceted, which has driven rapid advancements in virtual reality (VR) technology. This technology now provides destination management with state-of-the-art tools to enhance visitor experiences. However, there is a notable lack of research on how VR influences visitors' willingness to engage with VR technology at historical sites, particularly in developing countries like Nepal. To explore this phenomenon at UNESCO World Heritage sites in Nepal, our study applied the UTAUT model as a framework. We investigated key themes in VR tourism, including effort expectancy, social influence, performance expectancy, and facilitating conditions. In line with the recommendations of Fife and Gossner (2024), our research reinforces the applicability of the UTAUT model in the context of VR. The findings indicate that factors such as effort expectancy, social influence, performance expectancy, and facilitating conditions significantly shape visitors' willingness to engage in VR-based tourism.

First, the effort expectancy theme emerged from the ease of destination selection and the efficiency of using VR. It suggests that heritage tourists are willing to engage in VR tourism if they find the services provided by the VR service providers to be easy to use. It is aligned with the previous findings of Pokhrel and Shah (2022), Strzelecki (2023), and Lin et al. (2020). This could be argued that the perception of the ease of using VR technology leads to a willingness to engage in VR for tourism (e.g., Venkatesh et al., 2003). This paper provides a fresh outlook for understanding willingness to engage in VR because it gives them a different experience with reduced cost of visiting the heritage sites. As suggested by the esteemed reviewer, we have revised the highlighted section.

Second, the social influence emerged from two overarching themes: personal attitude about heritage sites and willingness to go for virtual tourism (Venkatesh et al., 2003). Visitors acquire the mindset for VR tourism when they become open to exploring heritage sites and have a good attitude toward the industry. We argue that potential visitors develop their willingness to visit heritage sites by developing from the shared experience of their friends, family members, and colleagues (e.g., Nam et al., 2024). As a result, they develop the mindset of engaging in VR because visitors are willing to gain new experiences from VR.

Third, the performance expectancy theme was unraveled from different three sub-themes. All participants opined that support in destination selection, authentic information about the destination, and experience of using VR emerged as overarching themes of support in virtual destinations (Venkatesh et al., 2003). When visitors perceive that VR tourism effectively supports destination selection by providing authentic information and enriching the experience of using VR, they develop a willingness to engage in VR technology (e.g., Li et al., 2024).

Finally, the recovery from service failures and the technical support provided by VR enterprises plays a crucial role in creating the facilitating conditions for VR tourism (Venkatesh et al., 2003). A key factor influencing visitors' willingness to engage in VR tourism is their expectation of high-quality services that surpass their initial expectations (e.g., Lin et al., 2020). Consumers are more likely to engage in VR tourism if they believe that any service disruptions will be promptly addressed, and that reliable technical support is readily available from service providers.

Implications

Theoretical implications

From a theoretical perspective, this study corroborated the UTAUT model for the adoption of VR in a UNESCO heritage site of a developing country. This study unravels that virtual destination decisions and organizational and technical support are the most critical elements for the engagement of VR technology. These concepts are related to performance expectancy and facilitating condition variables of the UTAUT model. This study specifically uncovered supporting variables in the choice of heritage tourism destinations, and the quality of VR technology is essential to using VR technology. Moreover, the ease of using VR is another factor explaining the effort expectancy in the UTAUT model. This result enriches the UTAUT model by further exploring the ease and efficient use of VR technology for heritage site selection. Finally, social influence is the least important factor in influencing engagement in VR technology. It helps to implement VR technologies in the field of visitor experience. The suggested model would offer a useful foundation for upcoming studies on visitor experiences enhanced by virtual reality in a variety of different contexts and locations. On the methodological side, this paper employed deductive qualitative analysis to understand the behavioral intention of virtual tourism. The results of this paper could provide critical insights for heritage site managers to develop and promote service packages, including VR, in heritage sites (e.g., Pokhrel & Shah, 2022). It would invite more qualitative inquiry to investigate VR tourism behaviors of Nepali visitors in Nepal and other developing countries (e.g., Pokhrel & Shah, 2022).

Managerial Implications

This deductive qualitative study offers a deeper understanding of the willingness to engage in VR for destination managers and hospitality marketing professionals. First, destination managers could apply VR tools to attract customers with enriched and immersive experiences; thus, they can select the best destination relevant to their needs out of several destination options (e.g., Lee et al., 2020). Specifically, destination managers could incorporate how virtual decision-making of heritage sites could be facilitated by supporting different aspects of virtual decision-making. For instance, the Nepal Tourism Board (NTB) could collaborate with the VR technology designer to provide an authentic experience of the place (e.g., Nam et al., 2024). They could develop VR technical infrastructure and organizational support for virtual tourism of heritage sites to increase adoption intention by visitors. They could get support from the Tourism Ministry so that they can earn the trust of visitors that VR technology and service support are constantly available for virtual tourists.

Second, destination managers could prepare virtual tourism marketing packages by incorporating reasonable prices for the tours, easily accessible virtual tour platforms, and well-crafted promotional messages (e.g., Zhu et al., 2023). For example, Nepali visitors may view virtual products with skepticism, particularly in response to virtual tours. This skepticism could be mitigated through advertising that highlights the performance of VR technology, as well as providing clear information about the support mechanisms in place for addressing any technical issues that may arise. Likewise, the payment gateways

can be integrated with the website of NTB to make payments for virtual tours. Customers would frame the virtual tour price as reasonable so that visitors would not perceive the price of the package as unfair. Moreover, to thrive in a fiercely competitive virtual tourism market, tourism marketers must invest their resources in infrastructure development and service quality enhancement to elevate the overall tourist experience and meet their expectations.

Limitations and direction for future research

The literature on virtual tourism has benefited greatly from this study; however, it is important to interpret the findings cautiously. First, the sample size for the study was ten; therefore, the results may not capture the phenomena different from VR tourism. We invite future studies to investigate the phenomena with larger sample sizes in other contexts of VR tourism, such as virtual hotel tours. Second, this study explored visitors' intent to use VR technology from heritage sites; however, future research would be more precise and helpful if an experimental design was used in conjunction with a qualitative study. Third, this study employed the UTAUT model as a theoretical basis to comprehend the phenomenon of VR tourism in Nepal's landmarks. Other theoretical approaches to investing in VR tourism can be applied in future research. Finally, the application of VR technology can be investigated in different emerging sectors of hospitality and tourism, such as healthcare hospitality management.

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