The Influence of Virtual Reality on Religious Digital Cultural Heritage

Abstract

Purpose

The purpose of this study is to propose an expanded experience economy model and to explore if this model provides a better understanding of the process of growing continuance intention of religious digital cultural heritage and intention to visit the cultural heritage site. In particular, it examines whether spiritual experiences influence the evaluation of religious digital cultural heritage comparing a virtual reality (VR) to a web-based experience.

Design/methodology/approach

In this study, a representative destination of religious cultural heritage, Jerusalem, was chosen as an example for the application. 292 participants were randomly divided into two groups, one group using the Web and the other group experiencing VR. After experiencing the destination virtually, participants completed a survey which was analysed using path analysis and multi-group analysis.

Findings

The results suggest that the spiritual experience mediates Pine and Gilmore's (1998) four experiences and the continuance intention. It was also found that intellectual awareness about religious cultural heritage is the factor that strengthens the spiritual experience, and that spiritual experience is an important variable mediating educational and aesthetic experiences and the successful use of VR and Web. Additionally, experiencing VR strengthened the influence of spiritual experiences on the continuance use of virtual heritage and visits to actual religious heritage than using the Web.

Originality/value

The originality of this study lies in the exploration of the use of digital technologies for the exploration of spiritual experiences, utilizing an expanded experience economy model as a theoretical foundation. The comparison of web-based and VR experiences provides important implications for destination marketers in terms of promoting destinations online to create actual visit intentions in the future.

Keywords: Religious Cultural Heritage, Virtual Reality, Experience Economy, Spiritual Experience, Comparative Study

1. Introduction

The rapid rise and proliferation of digital technologies have only been accelerated by the recent COVID pandemic (Bingaman, 2020). Particularly technologies such as virtual reality (VR) have increased in importance in sectors such as tourism and cultural heritage due to peoples' inability to travel and visit museums and destinations in person. One particular cultural heritage context that has not received a lot of attention in terms of the influence of VR advancements is the religious cultural heritage context. Recently, Qurashi and Sharpley (2018) started to explore the role of general media on pilgrimages and found that the use of information communication technologies (ICTs) negatively affects the spiritual experience. However, they argued that this is not necessarily true in general and is dependent on the direction technology evolves. VR in particular is known to be highly immersive; while allowing users to escape (Lee et al., 2020). Alla-Cherif (2022) agrees and provides evidence that VR provides spiritual experiences using the example of smart cathedrals.

The experience economy is among the leading theories that takes into account users' and consumers' shifts in attitude from simply consuming products and services towards a more proactive role in the consumption process (Olya et al., 2020). Consequently, Pine and Gilmore (1998) emphasized the need for staging experiences to cater to the latest needs of consumers. This theory is extremely relevant for the context of this study, as the creation of VR allows users to be a part of the experience. Especially, in this study, the expanded experience economy model was proposed by incorporating the context-specific factor (i.e. authentic experience) as an additional dimension of experience economy to better explain how users are experiencing religious cultural heritage through VR.

Over the last number of years, there have been several attempts to extend the experience economy within various contexts. For instance, tom Dieck et al. (2018) and Olya et al. (2020) extended the model by incorporating the mediating variables of memory and satisfaction within the augmented reality (AR) festival context. One thing these aforementioned Experience Economy studies have in common is the call for more context-specific factors that affect users' behavioral intentions. Within the context of this study, the focus of the expanded model will be on spiritual experience. First, this is highly relevant in the given context of Jerusalem's cultural heritage and second, research incorporating spiritual experience and the experience economy is non-existent and will help to further bridge the gap between the religious and technological context. This is particularly important in light of the recent COVID pandemic and visitors' inability to visit religious places of worship in person (Alla-Cherif, 2022). Bringing these spaces to life makes an important contribution to peoples' overall lives and well-being.

Previous research has indicated that more context-specific dimensions are needed for future experience

economy research (c.f. Olya et al., 2020; tom Dieck et al., 2018). Research focusing on VR within religious cultural digital heritage is scarce and requires further investigation considering the enormous potential of VR to provide accessibility to, and enhancement of, experiences (Marasco & Balbi, 2019). In addition, to the best of our knowledge, limited research explored the differences between VR and web-based content on the modelled relationships between experience economy, spiritual experience and behavioral intentions within the religious cultural digital heritage context. This leads to our research questions:

RQ1: How is spiritual experience mediating the paths from the experience economy dimensions towards behavioral intentions in VR?
RQ2: Are there differences in the experience when exploring content via VR or web-based browsers?

Based on this, the study aims to make the following contributions. First, to expand the experience economy model using spiritual experience as an additional factor. Second, to explore how the use of VR/Web-based content within the religious cultural heritage context results in the continued intention to use the VR experiences as well as to actually visit the cultural heritage site. Third, to examine if there are differences in the proposed model when experiencing the content in VR or through a web-based solution.
This paper is structured as follows. We begin by providing the theoretical background of this study, leading to the hypotheses development. This is followed by the methods section which describes the research design. Then, we present the findings including the multi-group analysis. This paper concludes with a discussion of findings, theoretical and practical implications as well as limitations and future research directions.

2. Theoretical Background and Hypotheses

2.1 Cultural Heritage and Virtual Reality

Cultural heritage institutions around the world (e.g. Louvre in Paris) are experimenting with digital innovations to preserve historical collections and digitalize their museum archives (Selmanovic et al., 2020; Trunfio et al., 2022). This push towards increasing digitalization was expedited by the recent pandemic and tourists' inability to access cultural heritage content in person, neither in museums nor at cultural heritage destinations. As a result, VR gained in momentum (Verma et al., 2022). Research has found that VR can be both seen as a replacement for the real museum and cultural heritage visit as experienced during the pandemic; or as an enhancement of the actual museum and destination visit (Fan et al., 2022; Guttentag, 2020). According to Spiers et al. (2022), the future of museums lies in VR and

storytelling. VR is especially gaining momentum due to the increased importance of immersion as part of the customer experience (Shin, 2019). Shahab et al. (2022) explored VR within the museum setting and identified that it provides visitors with entertaining and educational experiences. Lately, a number of studies have explored the use of VR within the cultural heritage setting by offering tourists a digital, interactive and immersive way of experiencing additional content (e.g. Shahab et al., 2022; Tussyadiah et al., 2018), while other studies created virtual museums (e.g. Besoain et al., 2022). The majority of previous VR research within the tourism and cultural heritage context has focused on adoption behaviors (e.g. tom Dieck et al., 2018a); overall attitude towards VR (e.g. Besoain et al., 2012; Errichiello et al., 2018), flow experience (e.g. Wu et al., 2021), gratifications (Shahab et al., 2022); the influence of presence (Tussyadiah et al., 2018) or spatial and social norms (Parker and Saker, 2020). Several previous studies explored the use of VR within the museum context through the lens of experience economy (e.g. Han et al., 2021; Lee et al., 2020). Lee et al. (2020) found that escapism and esthetics both mediated the paths from education and entertainment toward the overall VR museum experience and called for further research within other cultural heritage contexts incorporating a wider breadth of variables and contexts. The following sections will highlight the contribution our study makes to the existing pool of knowledge.

2.2 Extended Experience Economy Model

The experiential economy model of Pine and Gilmore (1998) suggests four elements of experience according to two dimensions: immersion/absorption and passive/active participation. The experiential economy model has provided inspiration for understanding the evaluation of experiential users not only in e-commerce (Poulsson et al., 2004) or tourism (Oh et al., 2007) but also in the field of cultural heritage. In particular, the four experiential factors of the experiential economy model have a significant effect on satisfaction or continuance intention with the content (Yoo et al., 2021). Moreover, it is also known that the viewer's experience of content such as VR has a positive effect on the continuance intention of the content (Hwang, 2021). Here, experience is similar to the degree of involvement in VR (Huang et al., 2021), and is also used as a perceived value for VR (Yang, 2020). The experiential economy model is also useful in explaining continuance intention in digital media such as VR (Jeng et al., 2017). Therefore, it is expected that a significant causal relationship between the experience element and the continuance intention in the cultural heritage context, and Pine and Gilmore's (1998) experience element and the continuance intention of the digital system context will appear in the case of religious digital heritage. Thus, entertainment, education, esthetics, and escape experiences for digital content will have a positive effect on the intention to continue using the virtual experience of religious cultural heritage. Therefore, the following hypotheses were established.

Hypothesis 1.1 The entertainment experience of religious digital heritage will be positively associated with the continuous intention of the digital heritage.

Hypothesis 1.2 The educational experience of religious digital heritage will be positively associated with the continuous intention of the digital heritage.

Hypothesis 1.3 The esthetic experience of religious digital heritage will be positively associated with the continuous intention of the digital heritage.

Hypothesis 1.4 The escape experience of religious digital heritage will be positively associated with the continuous intention of the digital heritage.

Spiritual experience

The four factors in the original experience economy model of Pine and Gilmore (1998) have been fully explained and continuously debated in numerous studies (e.g. Lee et al., 2020; tom Dieck et al., 2018b). As discussed above, there have also been studies suggesting other experiential factors in addition to the four experiential factors. Most relevant for the context of this study is the previous addition of authentic experience, which refers to the awe and overwhelming feeling that arises when experiencing a masterpiece or experiencing overwhelming natural scenery (Kim et al., 2020). This has been applied and well discussed within the VR context (e.g. Gutentag 2010; Mura, Tavakoli, and Sharif 2017; Yung and Khoo-Lattimore 2019). However, the feelings felt about religious cultural heritage are somewhat different from authentic experiences. Theology states that spiritual experience is different from simple psychological experience. Spiritual experience is when one feels connected to both a transcendent being and to others (Kim and Jung, 2015), and often affect psychological states such as subjective well-being. Spiritual experience is different from authentic experience because it is described as spiritual peace and harmony, spiritual emotion, and intimacy with god (Underwood and Teresi, 2002). Therefore, in this study, spiritual experience was adopted to focus on the experience of religious digital heritage. Allal-Cherif (2022) agrees within their study on cathedrals and believes that the main reason for people to visit is gaining spiritual experiences. However, despite several prior studies on the relevance of experiential factors by Pine and Gilmore (1998) in digital cultural heritage (Kim et al., 2020) and the existence of spiritual experiences in religious heritage, studies that add spiritual experiences to the evaluation of virtual experiences for religious digital heritage have been limited. If a spiritual experience can be found with the viewers of religious digital heritage, the spiritual experience in the religious digital heritage will also affect the continuance intention. Therefore, we propose:

Hypotheses 2.1 The spiritual experience of religious digital heritage will be positively associated with the continuous intention of the digital heritage.

Spiritual experiences can also relate to the desire to visit the religious heritage site directly (Hwang, 2021), regardless of the intention to continue using the digital heritage site. In other words, it is necessary to determine whether a spiritual experience of a religious digital cultural heritage leads to an intention to visit the real heritage only with a one-time experience. In a similar study, there was a study that authenticity contributes to the formation of an image of the site and the intention to visit the site (Carreira et al., 2021). In line with this, the spiritual experience can be expected to have a similar direct effect on actual visit intention. Therefore, the hypothesis is established as follows.

Hypotheses 2.2 The spiritual experience of religious digital heritage will be positively associated with the intention of visiting the actual cultural heritage.

Relationship between the experience economy model and spiritual experience

Religious spiritual experience is not simply a transcendent experience, but it can also appear in enlightenment (Ramasesh, 2010), inner emotional (Newberg, 2000) consent, and spiritual immersion (Watson, 2005) for the religion. First, in history, religion is often combined with joy and entertainment (Oberdeck, 1999), and religion plays a role of entertainment in our daily life (Romanowski, 2006). Religious and cultural heritages are often tourist destinations, and for pilgrims, visiting the area they have longed for all their lives brings great joy and pleasure. Moreover, in the case of religious ceremonies, dancing, music, and various performances harmonize, so the enjoyment of various performances in the religious cultural heritage in digital content such as VR can enhance the spiritual experience by bringing immersion into the religious ceremony. (Orakwe, 2015). Hence, we propose, in the context of religious heritage tourism, the entertainment experience is positively associated with digital religious heritage.

Hypothesis 3.1 The entertainment experience of religious digital heritage will be positively associated with the spiritual experience of the digital heritage.

Second, sermons and poles included in religious events must be accompanied by intellectual enlightenment (Ramasesh, 2010). In addition to being impressed by the simple appearance of religious and cultural heritage, visitors can have a deeper spiritual experience when they learn the story of the place and the meaning of objects. In particular, it has been confirmed that storytelling has a positive effect on the engagement of experiencers (Podara et al., 2021). Therefore, educational experiences acquired from religious cultural heritage can strengthen spiritual experiences.

Hypothesis 3.2 The educational experience of religious digital heritage will be positively associated with the spiritual experience of the digital heritage.

Next, most religious cultural heritages are accompanied by elegant exteriors, artistic works, and religious music to reveal religious emotion and solemnity (Koşun, 2021). Religious works (architecture, paintings, icons, etc.) are usually produced very skillfully with a high level of technology, which is enough to give an esthetic experience (Chang, 2021). In this way, the esthetic elements of religious cultural heritage will eventually be the elements that help people feel spiritual experience and authenticity. Hence, the following hypothesis is proposed.

Hypothesis 3.3 The esthetic experience of religious digital heritage will be positively associated with the spiritual experience of the digital heritage.

Finally, religious cultural heritage can stimulate escape experiences, such as a feeling of being temporarily removed from the world during worship (Chang, 2021). Through this, the experiencer achieves the aspiration to escape from everyday secular life for a short time (Vistad et al., 2020), which is also the main function of spiritual experience. This can be seen as consistent with the study that escape experiences obtained through general cultural heritage visits increase the subjective well-being of the participants (Sie et al., 2021). Thus, the following hypotheses were proposed.

Hypothesis 3.4 The escape experience of religious digital heritage will be positively associated with the spiritual experience of the digital heritage.

2.3 Response to the VR experience

Within this study, we are considering two responses to the VR experience: continued use intentions and actual intention to visit the destination. First, continuance intention, the user's intention to continue using a system accepted or visited by a specific user (Bhattacherjee, 2001b), is an important post-adoption behavior indicating the success of a system (Ahmad, 2010). Considering that one of the main purposes of creating virtual experiences for cultural heritage is to actually see the region or heritage in person, the relationship between the continuance intention of the virtual experience and the intention to visit is an important issue to explore.

Content quality, system quality, and vividness subject to virtual experience are positively associated with the intention to visit the actual cultural heritage (Lee et al., 2020). The rationale for explaining this

is the Stimulus-Organism-Response (SOR) model (Mehrabian and Russell, 1974). Based on this theory, when a virtual experience stimulates the cultural heritage and forms an emotion or attitude toward it, the behavior to experience the heritage directly is induced (Kim, 2020). The tie between intention to continue use and intention to visit is also prominent in the tourism sector (Atzeni et al., 2021). Therefore, it is expected that the intention to continue using the religious digital cultural heritage will have a positive effect on the intention to visit the actual religious cultural heritage site.

Hypothesis 4 Continue intention to use religious digital heritage will be positively associated with the intention to visit the actual cultural heritage.

2.4 Web vs VR on Spiritual Experience

Media forms, such as Web and VR, refers to the properties of a display device, and media content refers to the actors, objects and events depicted by the media (Baños et al., 2004). System quality is an important factor for information system success in IS Success Model. Also, the fit of technology and task is important for success according to Task Technology Fit theory. In the same context, media form, an important technical characteristic in media, can influence the experience of cultural heritage.

Compared to the traditional 2D Web, VR has advantages such as embodiment, realism and presence. Recently, there has been increased interest from academia to compare traditional web-based experiences with VR. For instance, Moreno-Lumbreras et al. (2023, p. 14) were interested in exploring users' performance of data visualization software and found "that VR provides a better user experience than on-screen for issues related to locating, moving, and searching for elements in the scene". Kim et al. (2022) conducted a more customer-centered study around the influence of VR/website promotions on consumers' state of flow. They proved that VR leads to stronger degrees of flow than traditional website promotions. Taking a closer look at the tourism industry, the context of this study, Bogicevic et al. (2019) concluded that tourists perceive a stronger degree of presence and increased elaboration of mental imagery in VR, compared to the static experience on a computer screen. Furthermore, Martínez-Molés et al. (2022) revealed that compared to the website, VR facilitated better tourists' learning as consumers, especially among women who tend to dominate the information-gathering stage of planning family cruise vacations. These studies clearly highlight the power of VR within different settings. Thanks to the embodiment of virtual humans, such as avatars, users can play an active role (Shin, 2018). This makes VR experiences more powerful than mere observation. Realism includes graphic (or pictural) realism, sensory realism and social realism, and realism associated with presence leads to immersion, which is the main motivation to apply VR (Schaik et al., 2004).

Hence, web presence and mobile technologies can be utilized to achieve rich and vivid experiences for visitors through virtual experience. On the other hand, the feeling of "presence" is the perceptual illusion of non-mediation (Lombard and Ditton, 1997). These three characteristics of VR bring a difference between the Web and VR, that is, the media form, and the difference in media form also affects the intensity of the experience differently (Martínez-Molés et al., 2022).

Therefore, the media form will have a different influence on the spiritual experience. In particular, the characteristics of embodiment, realism and the presence of VR will increase people's immersion in the spiritual experience they feel, which will further increase their motivation to visit actual cultural heritage. Also, the nature of VR will make people visit the site more often for feeling and spiritual experiences.

Finally, a research model as shown in Figure 1 is proposed.

(Figure 1 about here)

3. Method

3.1 Procedure

The name of the VR and Web content used in the experiment is 'The Holy City', and the 'Tower of David Museum' in Jerusalem, the most representative experience place, was selected as the target. Since it is very difficult to conduct a study with stimulants that cover all religions, we decided to select stimuli that are as general as possible. As a result of hearing opinions from various religious officials, Jerusalem was considered the most well-known religious heritage place where the largest number of people visit for spiritual experiences throughout the year, and it covers most modern religions, such as Christianity, Catholicism, Islam, and Judaism, so Jerusalem was selected as the most suitable religious cultural heritage site for the study.

'The Holy City' was developed for citizens who have difficulty visiting Jerusalem in person, and to stimulate their curiosity to visit. The 'Tower of David Museum' has a total of five gates, including the Jaffa Gate, so you can experience it by entering there. 'The Holy City' content used for VR stimulus is an immersive VR experience that provides access to sacred rituals and the holiest sites of Christianity, Judaism, and Islam. In addition, the Web stimulus is a video of the experience of the same content and

uploaded to YouTube. The content consists of several sections, and each section completes a mission by solving clues through interaction in a virtual Jerusalem, ending with a video of the sacred rituals of the three religions (The Holy Fire, Ramadan, and Sukkot).

For the experiment, among those who have never actually visited Jerusalem, those who wished to experience the tourism content were recruited. Since Jerusalem was a very famous religious and cultural heritage, it was not difficult to recruit participants for VR and Web experiences. An e-mail was sent to the panel members held by a survey organization to encourage them to participate in the survey. Cultural gift certificates (about $10) were provided to the subjects who participated in the experiment. The subjects visited the experience room at the time reserved in advance. They complied with quarantine rules, filled out a fever check and a COVID-19 symptom test sheet, and allowed the experiment if there were no problems. After use, the computer device (VR HMD and/or tablet PC) used was disinfected. The investigator conducting the experiment wore a mask and latex gloves to minimize direct contact with the subject. The procedure of the experiment conducted is as follows:

Subjects answered the questionnaire twice before and after the experiment. The questionnaire was prepared and provided using Google Forms. After the participants filled out a pre-questionnaire, they were provided with materials explaining the content they would experience and the experimental method. After the survey is finished, the participants were randomly assigned to the Web or VR group, and experienced content through the assigned media form. After the experience, a post-questionnaire was filled. The VR experience took an average of 14 minutes, depending on the subject's VR proficiency and interest. The web experience was watched for an average of about 12 minutes. Figure 2 shows the experimental setup.

(Figure 2 about here)

3.2 Subjects

We recruited a total of 292 participants for the experiment and randomly assigned them to the VR and Web experiences. As for the VR content users, 89 (59.7%) women and 60 (40.3%) men experienced the content. The religion of the participants were primarily Christians 89 (59.7%), followed by no religion

53 (35.6%), and 7 others (4.7%). On the other hand, 55 (38.5%) men and 88 women (61.5%) experienced web content. The religion of the participants were 88 Christians (61.5%), 49 with no religion (34.3%), and 6 others (4.2%). Table 1 presents the demographic characteristics of the subjects.

(Table 1 about here)

3.3 Measures

To ensure the content validity of the scales used, the items selected must represent the concept around which generalizations are to be made. Items selected for the constructs were, therefore, largely adapted from prior studies to ensure content validity. All questionnaire items were measured using a Likert 7 scale (1: not at all, 7: strongly agree). In this study, SPSS 25.0, Smart-PLS 4.0 and LISREL 8.3 were used for data analysis. The operational definition and measurement items according to the definitions used in the survey are shown in Table 2 and Table 3, respectively.

(Table 2 about here)

(Table 3 about here)

4. Results

4.1 Measurement model

A confirmatory factor analysis was conducted to test the measurement model. Seven common model-fit measures were used to assess the model's overall goodness-of-fit: the ratio of v2 to degrees-of-freedom (df); goodness-of-fit index (GFI); adjusted goodness-of-fit index (AGFI); normalized fit index (NFI); non-normalized fit index (NNFI); comparative fit index (CFI); and root mean square residual (RMSR). As a result, all the model-fit indices exceeded their respective common acceptance levels suggested by previous research, thus demonstrating that the measurement model exhibited a fairly good fit with the data collected (ALL: $\chi 2$=526.705, df=172, $\chi 2$/df=3.062, GFI=.847, NFI=.922, IFI=.946, TLI=.933, CFI=.946, RMSEA = .084). On the other hand, even when divided into VR and Web groups, there was still no problem with model-fit (VR: χ^2=376.28, df=168, χ^2/df=2.240, GFI=.830, NFI=.893, IFI=.946, TLI=.933, CFI=.945, RMSEA=.092 / Web: χ^2=269.6, df=168, χ^2/df=1.6052 GFI=.900, NFI=.920, IFI=.968, TLI=.960, CFI=.968, RMSEA=.065). Therefore, we proceeded to evaluate the

psychometric properties of the measurement model in terms of reliability, convergent validity and discriminant validity. As a result of confirmatory factor analysis, ALL GFI=.847 and VR GFI=.830 was rather low. However, based on the study that says even if the GFI is slightly low, it does not matter if the results of other indices show that the measurement model is acceptable (Kumar et al., 2015), and therefore we judged that GFI is acceptable.

The reliability of the measurement items was verified through Cronbach's α value. As a result, it was judged that there was no problem in internal consistency as all variables were 0.6 or higher. Next, the convergence validity of the construct was examined through confirmatory factor analysis. As a result, since the factor loading and Average Variance Extracted (AVE) values of each variable were 0.5 or more, and the composite reliability value of each construct was 0.7 or more, it was judged that there was no problem with convergent validity. Next, the discriminant validity was verified by comparing the square root value of the mean variance extraction and the correlation coefficient of each factor. As a result, the correlation coefficient values of all latent variables appeared to be smaller than the square root values of the mean variance extraction, so it was judged that there was no problem with discriminant validity. Table 4 presents the results of the confirmatory factor analysis, while Table 5 presents the descriptive statistics and correlation analysis results of each variable.

(Table 4 about here)

(Table 5 about here)

Also, to enhance and improved the discriminant validity, heterotrait-monotrait ratio of correlations is used (see Table 6). In the evaluation, there was no case where 1 was included between the lower limit (2.5%) and the upper limit (97.5%). The results of the analysis in the measurement model indicated that the questionnaire meets the standards of reliability and construct validity.

(Table 6 about here)

4.2 Structural model

The results of hypothesis testing of the research model is shown in Table 7. Continued use intention (β=.303, p<.01) was found to have a positive (+) effect on visit intention (Hypothesis 4 supported). Spiritual experience was found to have a positive (+) effect on the intention to use continuously (β=.734, p<.01) and intention to visit (β=.325, p<.01) (Hypothesis 1.1, Hypothesis 1.2). supported). While recreational experiences (β=.238, p<.05) and deviant experiences (β=.302, p<.05) were shown to have a positive (+) effect on continued use intention (Hypothesis 2.1) and Hypothesis 2.4 supported), educational experiences (β=.024, p>.10) and aesthetic experiences (β=-.040, p>.10) did not appear to have a significant effect (Hypothesis 2.2 and Hypothesis 2.3) supported. Meanwhile, educational experiences (β=.238, p<.01), aesthetic experiences (β=.238, p<.01), and deviant experiences (β=.238, p<.01) affect spiritual experiences (+), whereas (hypothesis 3.2, hypothesis 3.3, and hypothesis 3.4 supported), entertainment experience (β=-.339, p<.01) did not have a significant effect on spiritual experience. (Hypothesis 3.1 rejected).

It was found that spiritual experience had a greater influence on intention to visit than the intention to continue use, which is judged to be because the tourism content experienced was a religious cultural heritage. The reason that spiritual experiences have a greater effect on continuance intention than entertainment or escape experiences seems to be because they experienced religious cultural heritage tourism contents. Spiritual experience was found to be most affected by escape experience among other experience factors, followed by educational experience and aesthetic experience. This suggests that those who devote themselves to religious cultural heritage away from daily life are more likely to have spiritual experiences. On the other hand, the result that the entertainment experience had a negative (-) effect on the spiritual experience seems natural in the religious cultural heritage VR.

(Table 7 about here)

4.3 Multiple Group Analysis

Multigroup analysis is used to determine whether the relationship established in the model has a moderating role depending on group membership or whether the model's parameter estimates differ across groups (Abbasi *et al.,* 2015). To examine whether the influence of entertainment experience, educational experience, aesthetic experience, deviant experience, spiritual experience, continuous use intention, and visit intention is different between variables according to the content experience type (VR vs. Web), a Model Measurement Invariance Testing was performed (see table 6). As a result, the

fitness indices of the unconstrained model were CFI=.945, TLI=.946, and RMSEA=.056, indicating that the model was suitable for the data, and thus the conformational identity was verified. As a result of verifying the measurement weights model in a state where conformational identity was satisfied, the amount of change in $\chi 2$ according to the increase in degrees of freedom was significant ($\Delta\chi 2(14)=34.942$, $p<.01$). However, there is a problem that the $\chi 2$ difference test is greatly affected by the sample size (Anderson and Gerbing, 1988). As a result, since the CFI change amount was .004 and did not exceed .01, it was judged that the measurement identity was established (Cheung and Rensvold, 2002).

Looking at the measurement intercepts, there was a significant difference with the unconstrained model ($\Delta\chi 2(35)=250.088$, $p<.01$), and the amount of change in CFI was also .038, exceeding .01, indicating that the intercept coincidence was rejected. Nevertheless, it was accepted that the intercept agreement was secured due to the good level of fit of the overall model. In the end, it was judged that there was no problem in performing a multi-group analysis to see if there was a moderating effect according to the type of experience (VR, Web).

(Table 8 about here)

In addition, the moderating effect of the content experience type was examined. Table 9 shows that the effect of continued use intention on visit intention was statistically higher in the WEB group than in the VR group (VR: $\beta=.030$, $p>.10$; WEB: $\beta=.577$, $p<.01$; $\Delta\chi 2=8.342$, $p<.01$).

The VR group showed that spiritual experience had a greater effect on visit intention than the group that experienced WEB (VR: $\beta=.541$, $p<.01$; WEB: $\beta=.085$, $p>.10$; $\Delta\chi 2=6.749$, $p<.01$). This suggests that enhancing the spiritual experience through VR is more effective than WEB in increasing the intention to visit religious heritage sites.

On the other hand, the WEB group had a greater effect on the spiritual experience of the educational experience than the group that experienced VR (VR: $\beta=.228$, $p<.05$; WEB: $\beta=.629$, $p<.01$; $\Delta\chi 2=5.388$, $p<.05$). This suggests that the Web can be more effective than VR in enhancing spiritual experiences through educational experiences.

(Table 9 about here)

Discussion and Conclusion

This study aimed to achieve three main objectives. First, to expand the experience economy model using spiritual experience as an additional factor. The proposed model posited that the path from the original four experience economy dimensions (entertainment, education, esthetics, escapism) towards continuance usage intentions and intentions to visit the destination is mediated by the spiritual experience. Findings from 292 participants who either tried the virtual or web-based application of the destination of Jerusalem supported the importance of this mediating effect within the religious cultural heritage context concerning education, esthetics and escapism. The only construct that was not mediated by spiritual experience was entertainment (e.g. fun factor, enjoyment). This can be explained by the type of application and the purpose of experiencing a deeply religious application. As such entertainment was still found to influence behavioural intentions but without a direct feeling of peacefulness and the relation to previous history.

Second, this study aimed to explore how the use of VR/Web-based content within the religious cultural heritage context results in the continued intention to use the VR experiences as well as to actually visit the cultural heritage site. One of the most interesting findings is that esthetics and education did not directly influence behavioral intentions as it has been multiple proven in various contexts (e.g. Jung et al., 2016; Mehmetoglu & Engen, 2011). Instead, within the context of our study, spirituality has been the missing link to explain the mediating effects. As such, our findings reveal that experience economy research within the religious context needs to consider spirituality in order to fully understand how the consumption of digital content leads to behavioral intentions.

Third, this study aimed to examine if there are differences in the proposed model when experiencing the content in VR or through a less immersive web experience. Continuous use intention and the actual intention to visit were much stronger within the group who experienced the content through the Web. This confirms previous findings from Kim et al. (2022) within the retail setting. However, and quite excitingly, the influence of spirituality on the continuous intention to use was much stronger within the VR experience group. This highlights how powerful VR can be to experience destinations, also religious, through an interactive, immersive and escaping mode. However, the multigroup analysis has also shown that the Web can be more effective than VR in enhancing spiritual experiences through educational experiences. This clearly highlights that VR is not a one fits all solution for destinations but if implemented correctly, can help tourists to experience the spiritual surroundings of a destination by allowing them to experience it in a similar way as an in-person experience would allow. Web experience on the other hand appears to have its strength in educating tourists.

Theoretical contributions

Based on these results, theoretical implications are provided. First, ‘spiritual experience’ was newly added to the existing experiential economy model to provide a richer explanation of the attitudes of those who experienced religious cultural heritage or similar cultural heritages with enhanced authenticity. In particular, this study presented an extended experience economy theory that uses spiritual experience as a mediator between traditional experience elements and outcomes (intention to continue using virtual experience, intention to visit actual religious heritage). The experiential economy model consists of four experiential factors, and considerable studies have shown that all four factors have a significant effect on the experiential effect (Zhang et al. 2021), but in some studies, only some of the four experiential factors are adopted. There were also studies (Lee et al., 2020; tom Dieck, 2018b) showing that a causal relationship exists between experiential economy factors. In addition, when the subject of experience consists of several modules, the experience provided varies according to each module (Thanh and Kirova, 2018). This implies that the original model of the experiential economy does not need to be firmly steady, but can be flexible depending on the research subject. In fact, there have been studies suggesting new experience elements according to the subject of experience. For example, a study related to art performance proposed ‘flow experience’ as a new experience and showed that flow experience mediates between existing experience economic factors and performance (Zhang et al., 2021). In line with these efforts, this study proposed 'spiritual experience' for the first time, and showed that spiritual experience significantly mediates between the existing experience economy element and the use of virtual experience. This enabled us to better explain the process by which virtual experiences of religious heritage lead to actual visits. This suggests that the experience economy model of Pine & Gilmore (1999) can be extended depending on the type or context of what people experience.

In addition, the results of this study suggest that VR is a more powerful tool than the Web to make the spiritual experience of visitors lead to actual visits in the context of religious heritage. In addition, the repeated use of VR leads to an actual visit, which is more intense than the repeated use of the Web. The results of the current study are in line with the previous study by Martínez-Molés et al. (2022) which compared fully immersive VR devices versus standard websites in the context of cruise tourism. In their study, the theory of consumer learning was applied and it was revealed that compared with web-based solutions, VR facilitated the tourists’ learning (i.e. brand attitude, product knowledge and purchase intent). This study also confirmed that VR is a more effective tool to make visitors visit the actual religious heritage, and it provides insight into the importance of the use of different types of media technologies when providing authentic immersive religious cultural heritage experiences to visitors.

This comes as no surprise as VR devices are specifically designed to create fully immersive, engaging and escaping experiences.

Practical implications

First, this paper demonstrated the connection between continued use intention and visit intention on actual religious heritage. It was an interesting topic whether the repetition of virtual experiences on religious cultural heritage was also linked to the intention to visit actual religious cultural heritage sites. This is because, if virtual experience and real experience are mutually substitutional, the institutions which should encourage people to visit actual religious heritage will be reluctant to provide virtual experiences. However, through the results of this study, it was possible to demonstrate that the continued use of VR and/or the Web plays a positive role in the intentions to actually visit cultural heritage sites. Therefore, DMOs and religious heritage institutions should be more proactive in opening the way for potential visitors to have virtual experiences. The recent pandemic has shown the importance of being at the forefront of technological innovations to capitalise on what digital experiences have to offer. First, proving digital experiences could be seen as a sustainable way of generating revenue in the future without actually harming the real destination and attraction. On the other hand, while not being allowed or able to travel, tourists can use digital experiences to plan ahead and make arrangements for their actual visit as shown in this study. Second, through this study, it was possible to understand the factors that enable repeated virtual experiences. One of the important success factors of VR or Web-based content is repeated use by users.

Although VR has been developed for various religious and cultural relics such as virtual Jerusalem, it has been a concern for VR developers and operators in many cases where the effectiveness of VR development is low, such as not being actively used by people. However, this study showed that people's spiritual experiences can be generated from traditional experiential economy factors, and the religious experiences thus obtained are a positive cause of repeated use of VR. One thing to note is that entertainment experiences do not contribute to religious experiences. Therefore, in the case of religious heritage, it is necessary to be careful about inserting an element of fun too much in religious heritage VR.

Limitations and future research

This study has the following limitations, and further research is suggested. First, this study had difficulties in recruiting people who experienced COVID-19 in the social distancing situation. In particular, those who were reluctant to go outside, such as the test site, for fear of infection were naturally excluded from the test subjects. This means that people who are more sensitive to

environmental threats were excluded from the subject, which may bias hypothesis testing. Therefore, caution is required in generalizing the results of this study. Second, since the subjects who participated in the experience were people from East Asia such as Korea and China, the results could have been somewhat different if the experiment was conducted in a region with a different cultural and religious distribution from East Asia such as the Middle East or the West. In particular, since the subject of this study was a religious cultural experience, these cultural differences should be interpreted with caution. Therefore, in the future, it is necessary to increase the diversity of the experimental participants and to test the hypothesis by controlling the religious beliefs of the experiencers. Finally, interest in the metaverse is rising (c.f. Shin, 2022) which will also impact cultural heritage destinations and religious institutions. Recreating these in the metaverse, enabling social interactions and transactions will create ever more immersive experiences and new business models that need exploration. In addition, in the future, it is recommended to compare VR experiences with metaverse experiences.

References

Abbasi, M. S., Tarhini, A., Elyas, T., & Shah, F. (2015). Impact of individualism and collectivism over the individual's technology acceptance behaviour: A multi-group analysis between Pakistan and Turkey. *Journal of Enterprise Information Management*.

Ahmad, N., Omar, A., Ramayah, T., "Consumer lifestyles and online shopping continuance intention," *Business Strategy Series,* Vol. 11, No. 4, 2010, pp 227-243.

Allal-Chérif, O. (2022). Intelligent cathedrals: Using augmented reality, virtual reality, and artificial intelligence to provide an intense cultural, historical, and religious visitor experience. *Technological Forecasting and Social Change*, *178*, 121604.

Atzeni, M., Del Chiappa, G., and Mei Pung, J., "Enhancing visit intention in heritage tourism: The role of object-based and existential authenticity in non-immersive virtual reality heritage experiences," *International Journal of Tourism Research, 2021.*

Barfield, W., and Hendrix, C., "The effect of update rate on the sense of presence within virtual environments," *Virtual Reality*, Vol. 1, No. 1, 1995, pp. 3-15.

Besoain, F., González-Ortega, J., & Gallardo, I. (2022). An evaluation of the effects of a virtual museum on users' attitudes towards cultural heritage. *Applied Sciences*, *12*(3), 1341.

Bhattacherjee, A., "An empirical analysis of the antecedents of electronic commerce service continuance," *Decision Support Systems,* Vol. 32, No. 2, 2001a, pp. 201–214. http://dx.doi.org/10.1016/S0167-9236(01)00111-7.

Bhattacherjee, A., "Understanding information systems continuance: An expectation-confirmation model," *MIS Quarterly,* 2001b, pp. 351-370.

Bingaman, K. A. (2020). Religious and spiritual experience in the digital age: Unprecedented evolutionary forces. *Pastoral Psychology*, *69*(4), 291-305.

Bogicevic, V., Seo, S., Kandampully, J. A., Liu, S. Q., & Rudd, N. A. "Virtual reality presence as a preamble of tourism experience: The role of mental imagery," *Tourism Management*, Vol. 74, 2019, pp. 55-64.

Carreira, V., González-Rodríguez, M. R., and Díaz-Fernández, M. C., "The relevance of motivation, authenticity and destination image to explain future behavioural intention in a UNESCO World Heritage Site," *Current Issues in Tourism,* 2021, pp. 1-24.

Chang, T. Y., and Chuang, Y. J., "Cultural Sustainability: Teaching and Design Strategies for Incorporating Service Design in Religious Heritage Branding," *Sustainability*, Vol. 13, No. 6, 2021, pp. 3256.

Cheung, G. W., and Rensvold, R. B., "Evaluating goodness-of-fit indexes for testing measurement invariance," *Structural Equation Modeling,* Vol. 9, No. 2, 2002, pp. 233-255.

Cohen, E. H., "Religious tourism as an educational experience," In Tourism, *Religion and Spiritual Journeys,* 2006, pp. 94-109, Routledge.

Egea-Vivancos, A., and Arias-Ferrer, L., "Principles for the design of a history and heritage game based on the evaluation of immersive virtual reality video games," *E-Learning and Digital Media,* Vol. 18, No. 4,

2021, pp. 383-402.

Embalsado, J. V. M., Yabut, H. J., Miranda, J. O., Medina, A. K. S., Cruz, R. N. C., & Dumaop, D. E. (2022). Mediating role of communion, agency, and private practice on the relationship of spiritual experience and prosocial behavior of the Catholic Youth in the Philippines. *Journal of Beliefs & Values*, 1-16.

Errichiello, L., Micera, R., Atzeni, M., & Del Chiappa, G. (2019). Exploring the implications of wearable virtual reality technology for museum visitors' experience: A cluster analysis. International Journal of Tourism Research, 21(5), 590-605.

Froschauer, J., Arends, M., Goldfarb, D., Weingartner, M., and Merkl, D., "Designing socio-cultural Learning Games: Challenges and lessons learned," *In International Conference on Information Society* IEEE, June 2011, pp. 56-61.

Guttentag, D. (2020). Virtual reality and the end of tourism? A substitution acceptance model. Handbook of e-Tourism, 1-19.

Guttentag, D. A., "Virtual Reality: Applications and Implications for Tourism," *Tourism Management,* Vol. 31, No. 5, 2010, pp. 637–51.

Han, J., Zhu, Z. Y., & Kim, H. C. (2021). Determinants of Positive Word of Mouth for a Contemporary Art Exhibition on Web-based Virtual Reality. *International Journal of Internet, Broadcasting and Communication*, *13*(3), 137-147.

Hill, P. C., K. I. Pargament, R. W. Hood Jr., M. E. McCullough, J. P. Swyers, D. B. Larson, B. J. Zinnbauer, et al. (2000). "Conceptualizing Religion and Spirituality: Points of Commonality, Points of Departure." Journal for the Theory of Social Behavior 30 (1): 51–77.

He, M., Liu, B., & Li, Y. (2021). Tourist inspiration: How the wellness tourism experience inspires tourist engagement. *Journal of Hospitality & Tourism Research*, 10963480211026376

Hooi, R., and Cho, H., "Virtual world continuance intention," *Telematics and Informatics*, Vol. 34, No. 8, 2017, pp. 1454-1464.

Hsu, J. S. C., Lin, T. C., Fu, T. W., & Hung, Y. W. (2015). The effect of unexpected features on app users' continuance intention. *Electronic Commerce Research and Applications*, *14*(6), 418-430.

Huang, C. M., Liao, J. Y., Lin, T. Y., Hsu, H. P., Charles Lee, T. C., and Guo, J. L., "Effects of user experiences on continuance intention of using immersive three-dimensional virtual reality among institutionalized older adults," *Journal of Advanced Nursing,* 2021.

Huang, S., and Hsu, C. H., "Effects of travel motivation, past experience, perceived constraint, and attitude on revisit intention," *Journal of Travel Research*, Vol. 48, No. 1, 2009, pp. 29-44.

Hung Lee, T., Jan, F. H., and Lin, Y. H., "How authentic experience affects traditional religious tourism development: evidence from the Dajia Mazu Pilgrimage, Taiwan," *Journal of Travel Research*, Vol. 60, No. 5, 2021, pp. 1140-1157.

Hwang, K., and Yoo, K., "The Effect of Experience Economy of VR Contents on Satisfaction," *Asia Pacific Journal of Business Review,* Vol. 5, No. 2, 2021, pp. 45-57.

Jeng, M. Y., Pai, F. Y., and Yeh, T. M., "The virtual reality leisure activities experience on elderly people," *Applied Research in Quality of Life,* Vol. 12, No. 1, 2017, pp. 49-65.

Jung, T., tom Dieck, M.C., Lee, H., and Chung, N. "Effects of virtual reality and augmented reality on visitor experiences in museum," In *Information and communication technologies in tourism 2016* , 2016, pp. 621-635. Springer, Cham.

Kim, G., Jin, B., & Shin, D. C. "Virtual reality as a promotion tool for small independent stores," *Journal of Retailing and Consumer Service*s, Vol. 64, 2022.

Kim, M. J., Lee, C. K., and Jung, T., "Exploring consumer behavior in virtual reality tourism using an extended stimulus-organism-response model," *Journal of Travel Research*, Vol. 59, No. 1, 2020, pp. 69-89.

Koşun, S. B., and Turan, M. H., "A quantitative approach for evaluating intervention-value relations: historic mosques of Manisa, Turkey," *Journal of Cultural Heritage Management and Sustainable Development,* 2021.

Kumar Piaralal, S., Piaralal, N. K., & Bhatti, M. A. (2015). A structural equation modeling of perceived justice in Malaysian telecommunication sector. *Asian Social Science*, *11*(4), 77-89.

Lee, H., Jung, T. H., tom Dieck, M. C., & Chung, N. (2020). Experiencing immersive virtual reality in museums. *Information & Management*, *57*(5), 103229.

Lee, M., Lee, S. A., Jeong, M., and Oh, H., "Quality of virtual reality and its impacts on behavioral intention," *International Journal of Hospitality Management,* Vol. 90, 2020, pp. 102595.

Lombard, M., & Ditton, T. "At the heart of it all: The concept of presence", *Journal of computer-mediated communication*, Vol. *3* No. 2, (1997).

Marasco, A., & Balbi, B. "Designing accessible experiences for heritage visitors through virtual reality," *E-review of Tourism Research*, Vol. *17 No.* 3. 2019.

Martínez-Molés, V., Jung, T. H., Pérez-Cabañero, C., & Cervera-Taulet, A. (2022). Gathering pre-purchase information for a cruise vacation with virtual reality: the effects of media technology and gender. *International Journal of Contemporary Hospitality Management,* Vol. 34 No. 1, pp. 407-429.

Maxham III, J. G., and Netemeyer, R. G., "Modeling customer perceptions of complaint handling over time: the effects of perceived justice on satisfaction and intent," *Journal of Retailing*, Vol. 78, No. 4, 2002, pp. 239-252.

Mehmetoglu, M., & Engen, M. (2011). Pine and Gilmore's concept of experience economy and its dimensions: An empirical examination in tourism. *Journal of Quality Assurance in Hospitality & Tourism*, *12*(4), 237-255.

Mehrabian, A., and J. A. Russell., "An Approach to Environmental Psychology," *Cambridge, MA: MIT Press,* 1974.

Moreno-Lumbreras, D., Minelli, R., Villaverde, A., Gonzalez-Barahona, J. M., & Lanza, M. "CodeCity: A comparison of on-screen and virtual reality," *Information and Software Technology*, Vol. 153, 2023.

Mura, P., R. Tavakoli, and S. P. Sharif., "Authentic but not too much: Exploring perceptions of authenticity of

virtual tourism," *Information Technology and Tourism,* Vol. 17, No. 2, 2017, pp. 145–59.

Newberg, A. B., & d'Aquili, E. G. (2000). The neuropsychology of religious and spiritual experience. Journal of consciousness studies, 7(11-12), 251-266.

Oberdeck, K. J. (1999). *The Evangelist and the impresario: Religion, entertainment, and cultural politics in America, 1884-1914*. Johns Hopkins University Press.

Oh, H., Fiore, A. M., and Jeoung, M., "Measuring experience economy concepts: Tourism applications," *Journal of Travel Research*, Vol. 46, No. 2, 2007, pp. 119-132.

Olya, H., Jung, T. H., Dieck, M. C. T., & Ryu, K. (2020). Engaging visitors of science festivals using augmented reality: asymmetrical modelling. *International Journal of Contemporary Hospitality Management*, *32*(2), 769-796.

Orakwe, J. T., "Joyful noise and violent prayer: Music and charismatic worship performance in Nigerian Catholic communities in Rome, Italy," *Doctoral Dissertation,* 2017, Indiana University.

Parker, E., & Saker, M. (2020). Art museums and the incorporation of virtual reality: Examining the impact of VR on spatial and social norms. *Convergence*, *26*(5-6), 1159-1173.

Pine, I. I. BJ, and Gilmore, JH, "Welcome to the experience economy," *Harvard Business Review*, Vol. 76, No. 4, 1998, pp. 97-105.

Podara, A., Giomelakis, D., Nicolaou, C., Matsiola, M., & Kotsakis, R. (2021). Digital storytelling in cultural heritage: Audience engagement in the interactive documentary new life. Sustainability, 13(3), 1193.

Poulsson, S. H., and Kale, S. H., "The experience economy and commercial experiences," *The Marketing Review*, Vol. 4, No. 3, 2004, pp. 267-277.

Qurashi, J., & Sharpley, R. (2018). The impact of Smart Media Technologies on the spiritual experience of Hajj pilgrims. *International Journal of Religious Tourism and Pilgrimage*, *6*(3), 37-48.

Raj, R., and Griffin, K. A. (Eds.)., "Religious tourism and pilgrimage management: An international perspective," *Cabi,* 2015.

Ramasesh, C. P., & Rao, D. N. (2010). Knowledge Transfer for Spiritual Enlightenment: Master-Disciple Tradition in Ancient India. Information Studies, 16(4), 215-228.

Rizvic, S., Saszak, A., Ramic-Brkic, B., and Hulusic, V., "Virtual museums and their public perception in Bosnia and Herzegovina. International Archives of the Photogrammetry," *Remote Sensing and Spatial Information Science*, Vol. 38, 2011, pp. 421-427.

Romanowski, W. D. (2006). *Pop culture wars: Religion and the role of entertainment in American life*. Wipf and Stock Publishers.

Schaik, P. V., Turnbull, T., Wersch, A. V., & Drummond, S. (2004). Presence within a mixed reality environment. *CyberPsychology & Behavior*, *7*(5), 540-552.

Selmanović, E., Rizvic, S., Harvey, C., Boskovic, D., Hulusic, V., Chahin, M., and Sljivo, S., "Improving accessibility to intangible cultural heritage preservation using virtual reality," *Journal on Computing*

and Cultural Heritage (JOCCH), Vol. 13, No. 2, 2020, pp.1-19.

Shahab, H., Mohtar, M., Ghazali, E., Rauschnabel, P. A., & Geipel, A. "Virtual Reality in Museums: Does It Promote Visitor Enjoyment and Learning?". *International Journal of Human–Computer Interaction*, (2022), pp. 1-18.

Shin, D. "Empathy and embodied experience in virtual environment: To what extent can virtual reality stimulate empathy and embodied experience?", *Computers in human behavior*, Vol. 78, 2018, pp. 64-73.

Shin, D. "How do users experience the interaction with an immersive screen?" *Computers in Human Behavior*, Vol. 98, 2019, pp. 302-310.

Shin, D. "The actualization of meta affordances: Conceptualizing affordance actualization in the metaverse games," Computers in Human Behavior, Vol. 133, 2022.

Sie, L., Pegg, S., and Phelan, K. V., "Senior tourists' self-determined motivations, tour preferences, memorable experiences and subjective well-being: An integrative hierarchical model," *Journal of Hospitality and Tourism Management*, Vol. 47, pp. 237-251.

Spiers, E., Slocombe, W., Maltby, J., Dedopulos, T., Stolze, G., Goodenough, P., ... & Norris, J. "Estrangement, immersion, and the future: Designing the speculative environments of the virtual reality "Museum of the Future2,"*Futures,* Vol. 138 (2022).

Thanh, T. V., & Kirova, V. (2018). Wine tourism experience: A netnography study. *Journal of Business Research*, *83*, 30-37.

Tom Dieck, D., tom Dieck, M. C., Jung, T., & Moorhouse, N. (2018a). Tourists' virtual reality adoption: an exploratory study from Lake District National Park. Leisure Studies, 37(4), 371-383.

Tom Dieck, M. C., Jung, T. H., & Rauschnabel, P. A. (2018b). Determining visitor engagement through augmented reality at science festivals: An experience economy perspective. *Computers in Human Behavior*, *82*, 44-53.

Trunfio, M., Lucia, M. D., Campana, S., & Magnelli, A. (2022). Innovating the cultural heritage museum service model through virtual reality and augmented reality: The effects on the overall visitor experience and satisfaction. Journal of Heritage Tourism, 17(1), 1-19.

Tussyadiah, I. P., Wang, D., Jung, T. H., & Tom Dieck, M. C. (2018). Virtual reality, presence, and attitude change: Empirical evidence from tourism. Tourism management, 66, 140-154.

Underwood, L. and Teresi, J., "The daily spiritual experience scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity Using Health-Related Data," *The Society of Behavioral Medicine*, Vol. 24, No. 1, 2002, pp. 22-33.

Verma, S., Warrier, L., Bolia, B., & Mehta, S. (2022). Past, present, and future of virtual tourism-a literature review. International Journal of Information Management Data Insights, 2(2), 100085.

Vistad, O. I., Øian, H., Williams, D. R., and Stokowski, P., "Long-distance hikers and their inner journeys: On motives and pilgrimage to Nidaros, Norway," *Journal of Outdoor Recreation and Tourism*, Vol. 31, 2020, pp. 100326.

Watson, P. J., & Morris, R. J. (2005). Spiritual experience and identity: Relationships with religious orientation, religious interest, and intolerance of ambiguity. Review of religious research, 371-379.

Wong, I. A., Huang, G. I., & Li, Z. C. (2022). Axiology of tourism shopping: A cross-level investigation of value-in-the-experience (VALEX). *Journal of Hospitality & Tourism Research*, 10963480221108907.

Wu, S. H., Wei, N. C., Hsu, H. C., & Pu, T. C. (2021). Exploring the intention of visiting the museum using immersive virtual reality technique and flow experience. *International Journal of Organizational Innovation (Online)*, *14*(1), 25-40.

Yang, H., and Han, S. Y., "Understanding virtual reality continuance: an extended perspective of perceived value," *Online Information Review, 2020*.

Yoo, K. W., Hwang, K., and Kwon, O., "The effects of VR-based cultural heritage experience on visit intention," *The Journal of Society for e-Business Studies*, Vol. 26, No. 2, 2020, pp. 95-122.

Yung, R., and C. Khoo-Lattimore., "New realities: A systematic literature review on virtual reality and augmented reality in tourism research," *Current Issues in Tourism,* Vol. 22, No. 17, 2019, pp. 2056–81.

Zhang, Q., Liu, X., Li, Z., & Tan, Z. (2021). Multi-experiences in the art performance tourism: Integrating experience economy model with flow theory. *Journal of Travel & Tourism Marketing*, *38*(5), 491-510.

Zhang, Q., Liu, X., Li, Z., & Tan, Z. (2021). Multi-experiences in the art performance tourism: Integrating experience economy model with flow theory. *Journal of Travel & Tourism Marketing*, *38*(5), 491-510.