

Can Virtual Reality be used to create memorable tourist experiences to influence the future intentions of wine tourists?

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Abstract | Tourism business models have used several technologies in their development, such as Virtual Reality (VR). Previous studies show that VR allows tourism organizations to promote new types of relationships between tourists and destinations, to enhance the appeal and memorability of tourist experiences and to diversify consumption patterns, which could also be interesting for dealing with sustainability issues, such as seasonal demand of destinations or activities in wine tourism. Thus, we propose a conceptual model to analyze the influence of memorable tourism experiences on wine tourists' future intentions after a VR experience, providing additional details on the research methodology to empirically test the conceptual model. Innovation in business models with VR to promote new relationships with destinations or activities and diversify tourists' consumption patterns could be interesting to address seasonal activities, such as the grape harvest or grape-treading, which are not continuously available for tourist observation/ participation, despite their high appeal. On the other hand, the results could contribute to wine and other kinds of tourism, conditioned by mobility issues such as restrictions on movements or personal interaction, due to health crises or personal constraints, increasing these tourism experiences' accessibility also in times of unavailability.

Keywords | Wine tourism, Behavioral intention, Memorable tourism experience, Conceptual model, Virtual Reality

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1. Introduction

Wine tourism consists of visits to a wine region for recreational purposes and is an important component of both the wine and tourism industries (Sparks, 2007). One of the most important factors when considering visitation to a wine region is “the experience” of the visit (Losada & Mota, 2019; Sparks, 2007). Therefore, in this context, the experience of tourists is very important because a previous positive experience may increase the revisit intention (Sparks, 2007). Previous research also recognizes that the wine tourist activity can provide visitors with a high emotional involvement during the different phases of the winemaking process, leading them to commonly consider it to be a memorable experience (Slåtten et al., 2009).

Tourists visiting wine tourism sites are attracted by authentic experiences related to the wine-making process such as traditional grape treading, grape harvesting process, or wine tasting (Losada & Mota, 2019; Martins et al., 2017; Sparks, 2007). However, the core experiences of wine tourism are concentrated in certain periods of the year (Mitchell & Hall, 2003), which can negatively impact tourism destinations causing pressure on the host community, seasonal unemployment, overuse of resources and infrastructures, among other negative impacts (Butler, 1998).

In tourism, considering the evidence that it is important to generate emotional ties, there has been increased investment in innovative technological mechanisms, which can establish emotional links between potential visitors and tourist destinations (Guttentag, 2010). Alongside the importance of generating emotional ties with tourists, technology can also be important in reducing problems associated with seasonality in wine tourism. VR is a technology with the potential to provide wine tourism activities during all seasons of the year, becoming an attraction in the months of less activity in this type of tourism. The results of previous studies in which VR was used for tourism pur-

poses revealed that tourism experiences involving this technology had positive impacts on tourists. According to Guttentag (2010) and Losada et al. (2021), VR has the potential to complement ‘real holidays’ and, in some cases, could be a substitute for them. As a complement to physical journeys, VR can enhance visitor experiences, not only in the tourist destination, but also before visiting it (Bec et al., 2019). Given the ability of VR environments to recreate authentic experiences and, also, to influence consumer behavior (Tussyadiah et al., 2018), this technology would be an excellent tool to diversify the wine tourism market by recreating authentic wine-related experiences in order to provide tourists the opportunity of actively involving themselves in wine tourism activities during the low season.

During the last few years, empirical research on VR potentialities in the tourism industry has been focused on demonstrating that the impact of VR is significantly higher when compared with traditional marketing tools (Flavián et al., 2021). However, empirical research that identifies the factors influencing tourists’ behavioral intentions after an experience of tourism activities through VR is still scarce. Besides, the evaluation of the VR potential in wine tourism will allow to fill a gap in scientific knowledge, as there are no experimental studies on its application to improve the experience and to promote the connection of visitors with this tourism products.

Therefore, this study aims to propose empirical research that assesses the impact that a VR experience with wine tourism activities has on the wine tourists’ satisfaction and, consequently, on their intention to revisit or recommend the VR experience out of the season. The results of the proposed research will help to develop innovative business models based on immersive technologies, such as 360º video and multisensory VR experience, in order to provide wine tourism activities during the low season. Additionally, the use of VR can also allow tourists to better understand all the stages of

the winemaking process, and a significant amount of information to be communicated to the tourist in an enjoyable environment.

2. Theoretical background

2.1. VR in tourism

With the main intention of attracting more visitors and generating more appealing experiences, tourism suppliers are indeed consecutively seeking new strategies that connect visitors to a tourism destination, influencing their travel decisions (Wei, 2019). Aware that this decision-making is influenced by how prospective tourists access information about the place and by the offer of impactful and innovative experiences (Jung et al., 2017), tourist resorts increasingly aspire to adopt digital tools that enable to create a greater bond with potential tourists. This is the main reason why VR has been systematically considered in the strategies and business models of this sector (Sousa et al., 2022b).

VR enables users to have impactful immersive experiences, which attracted the interest of tour operators, as a way of boosting their offers through the creation of stimulating and memorable virtual experiences (Tsai et al., 2019). This new way of experiencing tourist activities has been transforming the way people interact with tourist activities and places during the several stages of the visit (Sousa et al., 2022b). VR has moved significantly closer to real-world contextual experiences, allowing users to be transported to places and enjoy experiences as if they were physically present at specific sites (Chang, 2022). This technological progress led to an increasing use of VR in tourism for recreational and promotional purposes (Beck et al., 2019).

Tourists' desire for innovative and better experiences, favors the adoption of VR equipment for tourism purposes, which makes their tourist ex-

periences more impactful and satisfying (Kim et al., 2020). This effect highlights that VR can be equally effective in promoting a destination and attracting new visitors (Beck et al., 2019), boosting a growing use of this tool in tourism activities (Tavakoli & Mura, 2015). This technology enables users to have positive emotional sensations and experiences, which can influence the attitude towards tourist destinations, increasing the intention to visit them (Beck et al., 2019). This ability of VR to generate immersive information contexts, which have shown to be promising in tourism, as well as its association with a high sense of excitement in tourists, compared to other types of audiovisual devices, reinforces its capacity to persuade tourists' decision making, favouring the selection of a destination to visit (Quintal et al., 2015). In this context, VR begins to give significant contributions, in the recreation of experiences in immersive environments representative of cultural and historical events, characteristic of a particular place, thus enabling access to new ways of living and experiencing tourism (Martins & Costa, 2021). More specifically, its use in tourism is often discussed in areas such as planning, management, marketing, communication, entertainment, education, accessibility, and heritage preservation (Beck et al., 2019). However, VR has been most discussed for its potential to enhance or complement tourism experiences (Sousa et al., 2022a).

Although all its characteristics and capacities are known, VR is still mostly seen as an alternative type of tourism or a way to complement ongoing tourism experiences (Mura et al., 2017). In this context, VR has begun to show that it can indeed be an effective promotional tool (Hyun et al., 2009a), enabling to improve the perception of tourism content, resulting in more enriching experiences for the users (di Giuseppantonio et al., 2016). The literature clearly points out that VR not only generates satisfactory engagement, but also positively affects the intention to visit and revisit the destination. Therefore, considering the

previous research, it is predicted that VR will continue to be further discussed and studied in the tourism sector (Sousa et al., 2022b).

2.2. Memorable tourism experiences

The global economy began as a product economy, then moved to a service economy, and currently is based on an experience economy (Kim, 2017). The tourism experience should be functional, interesting, intriguing, effective and memorable (Kahraman & Cifci, 2022). Being tourism an industry that always includes experiences in service provision (Pine & Gilmore, 1998), the concept of experience economy becomes particularly useful and it should be considered that the experiences offered have an economic value (Tan, 2017).

Marketing has provided evidence that memories affect consumer choice process and influence future transactions (Baumgartner et al., 1992) because prior experience with the product is a source of information that customers use (Johnson & Russo, 1984), due to being highly credible (Sharma & Nayak, 2019a). The awareness that the same applies to tourist services (Kim & Ritchie, 2014), resulted in the conceptualization of the memorable tourist experience (MTE) and in research on this construct. Over the years, research about MTE uses knowledge from various areas of expertise, such as psychology, anthropology, sociology, tourism, and marketing, being considered a cross-disciplinary research topic (Azis et al., 2020). The basis of MTE theory is that memories influence consumers' decisions (Stavrianea & Kamenidou, 2022) since memories are important sources of information that they consider during the decision-making process about future behaviors (Kim, 2018a). According to Kim et al. (2012, p.13), MTE is defined as "a tourism experience positively remembered and recalled after the event has occurred".

The conceptualization of MTE and its dimen-

sions have been defined in the literature. Kim et al. (2012) developed an MTE measurement instrument with seven dimensions, namely, hedonism, involvement, local culture, refreshment, meaningfulness, knowledge, and novelty. This instrument was widely used in further studies in different destinations with tourists of various nationalities, which was possible because this instrument has been validated in a cross-cultural context. Thereafter, Sthapit (2013) proposes the inclusion of a new dimension, the adverse feeling, which is a dimension with a negative relationship with the MTE construct, contrary to all the previously proposed dimensions, which have positive relationships with the mentioned construct. More recently, Chandralal and Valenzuela (2015) suggested the inclusion of two new dimensions – tour guide performance and surprise.

In the last years, MTE is a key issue in tourism experience research (Kim, 2018a). This concept was explored in several typologies of tourism, such as yoga tourism (Sharma & Nayak, 2019a), small islands destinations (Kahraman & Cifci, 2022), theme parks (Manthiou et al., 2016), and cultural tourism (Chen & Rahman, 2018). The previous research focused on the identification of MTE antecedents, to understand what can encourage the creation of positive memories about tourism services or destinations (Stavrianea & Kamenidou, 2022). However, literature that analyses the influence of MTE on future behaviors is still scarce, both regarding the repurchase of the tourism services or destinations and the recommendation to family and friends (Kim, 2018a; Tsai, 2016). Furthermore, it is important to more deeply understand the influence of MTE on loyalty formation, to have a framework to provide to managers of the tourism sector so that they can increase the competitiveness of this sector. The literature states that it is important for destinations to enrich tourism experiences to increase tourists' loyalty intentions. In addition, it is important to understand how technologies such as VR may affect the crea-

tion of MTE and, subsequently, loyalty.

According to Azis et al. (2020), tourists use technologies to save time during the decision-making process, but also during travel to improve the experience and enhance MTE. The research of Jeong and Shin (2020) and Lee et al. (2018) reported that the use of smart technologies has a positive effect on the development of memorable tourism experiences. However, each of these studies focused on a specific destination. Therefore, their results cannot be generalized, and further research is needed. Stavrianea and Kamenidou (2022) refer to the need to improve novelty and hedonism in tourists' experience and reinforce the importance of developing attractive and refreshing settings and environments to build MTE. To accomplish these suggestions, the authors recommend the inclusion of entertaining and educational activities using AR or VR. Additionally, Azis et al. (2020) suggest that smart technologies, such as AR or VR, may be used by tourists to receive relevant information for their tourist activities and thus have a memorable tourist experience. Following this suggestion, this article proposes experimental research in which a VR experience is provided to tourists, in order to evaluate whether it can be a memorable experience and, consequently, influence their satisfaction and loyalty.

2.3. Theoretical model and research hypotheses

Based on the previous literature review, we aim to propose properly grounded research hypotheses. Thus, in addition to the influence of VR on tourists' perceptions and intentions already pointed out in previous studies, we intend to propose a theoretical model, based on the following hypotheses that relate to the latent variables proposed in the present study.

MTE theoretical frameworks have emphasized tourist acceptance in participating in new destina-

tion touristic experiences (Coudounaris & Sthapit, 2017). In this sense, VR can become an effective tool, improving the tourist experience, through the recreation in immersive environments, cultural and historical events characteristic of a particular destination (Hyun et al., 2009b). Hence, this technology may generate positive feelings and experiences, capable of influencing the attitude towards certain tourist destinations, and also improving the intention of visiting them, in order to live these experiences in a real environment (Tussyadiah et al., 2018). Even though the literature already presents evidence that MTEs in the tourism sector produce positive and significant effects on tourists' satisfaction and their behavioral intention, it would be important to analyze if VR experiences during the visit were sufficiently impactful and innovative to improve such effects in tourists. Therefore, the following hypotheses are established:

H1: MTEs have a positive effect on tourist satisfaction with VR experience.

H2: MTEs have a positive effect on the tourist's intention to revisit.

H3: MTEs have a positive effect on the tourist's intention to recommend the VR experience out of the season.

In a tourism context, previous studies have evidenced that tourists' satisfaction has a positive effect on their behavioral intentions, such as the intention to revisit and the intention to recommend the destination or the experience to others (Kim, 2018b; Sharma & Nayak, 2019b). Therefore, in the context of VR technology applied to tourism, it not only can generate a satisfactory experience but also, affect positively the visit and revisit intention (Leri & Theodoridis, 2019). Based on these previous results, the following hypotheses are proposed:

H4: Satisfaction with the VR experience has a positive effect on the tourist's intention to revisit.

H5: Satisfaction with the VR experience has a positive effect on the tourist's intention to recommend the VR experience out of the season.

The conceptual model is presented in the figure 1. This model aggregates the theoretical hypotheses discussed before. With this model, it is pro-

posed to evaluate causal relationships that allow us to understand if VR, considering the theoretical background on memorable tourism experiences (MTEs), can help explain its influence, not only on the creation of a wine tourism memorable experience, but also in the intention of revisiting and recommending an experience of wine tourism of this type out of the season.



Figure 1 | Conceptual model
Source: own elaboration

3. Methodological Design

A possible methodological design for validation of the suggested model is presented next. For the development of the VR experience, multisensory equipment should be used (Martins et al., 2017). The virtual environment must be representative of the winemaking process in a winery and, at the same time, must provide the distinctive smells of this process. The VR contents should be of high quality and contain images of a core activity that takes place in this context, such as the grape harvest and traditional grape treading, integrating respective multi-sensory stimuli.

Alongside the development of the VR experience, a survey should be developed, with a questionnaire including measurement items for each variable of the conceptual model, representing scales validated by previous literature to measure the latent variables. A pre-test should be conducted

with a set of experienced researchers, and in a second phase with some visitors, in order to validate how the questionnaire is presented to the participants.

The data collection process should be carried out at a wine tourism spot of interest, such as a wine tourism accommodation, a winery, or a vineyard, following the process described by Cunta et al. (2021). This option for the location will ensure that a sample of wine tourists is addressed. Tourists' participation must be individual. The data collection process should be divided into three parts in order to guarantee a structured process that ensures that all individuals in the sample have been through the same phases. First, tourists who are just finishing their visit are invited to participate in this study, and in case of acceptance will be briefed on the terms of the study and asked for informed consent. Second, the VR experience previously described should be provided to all sub-

jects of the sample with the same duration. Third, tourists would be requested to complete the questionnaire that was described above.

It is expected, in this study, to obtain the participation of above 300 tourists that are present in a wine tourism destination. After the collection process, survey data will be registered in a database, permitting data treatment, specifically through Structural Equation Modeling (SEM) to empirically test the proposed hypotheses, under research in the quantitative approach.

4. Final remarks

4.1. Implications

This empirical execution of this proposal may become an important landmark in the evolution of the knowledge necessary for the development of innovative business models in tourism using emerging technologies, such as VR. In particular, it will be possible to analyze a feature not yet addressed by existing studies in this area: the determinants that influence tourists' intention to revisit or recommend the VR experience out of the season. Besides, the research proposed can also provide important insights on the usefulness of this technology to improve the environmental sustainability of wine tourism destinations, namely by decreasing their seasonality.

The present article aims to discuss innovation in tourism business models using VR technology, to promote new types of relationships with wine tourism businesses and diversify consumption patterns, boosting behaviors that could be interesting to deal with seasonal wine destinations or activities. This technology can result in additional sources of revenue for a business or act as an activity to entertain tourists during the low season. Moreover, VR could enable people with mobility restrictions to access wine tourism activities. It could also

help to overcome some potential crises, generating positive impacts on the wine tourism industry. For instance, immersive technologies can be used as an alternative to real travel in situations of restricted mobility, as in the present crises caused by the COVID-19, generating alternative sources of income for the sector. The results of the empirical research that was proposed can have particular relevance in the post-pandemic era to the preparation of contingency plans for possible future health crises on a local or global scale.

4.2. Future research agenda on VR in Tourism

The literature review presented previously not only justifies a particular research model, but also provides suggestions for other aspects of a future research agenda on VR in Tourism. To make relevant contributions in VR tourism research, it is important to focus on a set of topics which are highlighted below as four main lines of future research.

First, despite the perception that VR is beginning to be applied in tourism enterprises for promotional actions and to complement the activities provided, it is essential to develop further studies that clarify which are the determinants of VR acceptance by tourists. Second, although managers from tourism organizations have the intention to look for VR to boost success, published research is not conclusive regarding the identification of determinants of VR adoption and how this technology will be included in the tourism business models. Based on this understanding, it is fundamental that future research seeks to understand which factors drive and inhibit the adoption of VR systems by tourism companies. Third, another aspect that should be widely analyzed in future studies is the innovative profile of tourists. Since VR allows to adapt the contents according to the tourists' expectations, it is necessary to better know the profile of each user in a particular tourism con-

text. In this way, it will be possible for businesses to adapt their VR offers in a more effective way to their users, so that their experiences are more impactful and memorable. Finally, there is a trend of previous studies to associate sustainable practices in tourism with the use of VR. However, few studies examine this relationship. With sustainability in tourism being one of the key themes in this sector, it is hoped that future research about VR discusses the use of this technology as a mechanism that promotes sustainability in tourism.

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