The Real Effectiveness of VR: The Tourism and Cultural Organization Managers' Point of View

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Abstract: Virtual reality (VR) has become an important field of academic research investigation, firstly and obviously in relation to its technological aspects. Then, as a marketing tool for promotion and communication purposes. In this context, researchers have mainly focused on analyzing the behavior and appreciation of tourists with respect to this new technology. This article proposes an alternative approach, focusing on the company's decision-makers, mainly tourism and cultural organizations, who use this technology. This approach seeks to understand how and why VR is integrated into a company's strategy. *Methodology*: Firstly, we did a literature review and studied a systematic collection of virtual tour offers in Switzerland, which led to the analysis of characteristics of these virtual reality offers. These characteristics consider the different virtual reality systems according to the level of immersion, interactivity, and presence, which made it possible to construct a classification of virtual tour offers in Switzerland. Secondly, a qualitative method was used to conduct twelve semi-structured interviews with companies offering virtual tours of Swiss regions, in order to understand the managerial vision of VR usage and to deepen understanding of the various applications of virtual reality in the context of Swiss tourism. *Findings*: The analysis revealed that there is a distinction between the different virtual reality systems used in the Swiss tourism sector. Research has shown that non-immersive 360° videos as a marketing tool are no longer of great benefit to tourist destinations. Conversely, immersive virtual tours for promotional purposes at trade fairs and with travel partners are still of interest however are no longer considered a competitive advantage. It is the integration of VR into the in-situ tourism experience which has received a more enthusiastic response but creating fears among tourism stakeholders. *Originality/Value*: The main argument of this article is that it analyzes the use of VR tools from the point of view of managers of cultural and tourist institutions, and not from the point of view of customers. Furthermore, the article proposes a new structural classification of VR projects in Switzerland and offers practical implications for tourism and cultural organizations, as well as new directions for future studies.

Keywords: Virtual reality, 360-degree, Immersive experience, Swiss tourism, Destination marketing organizations

1. Introduction

The health restrictions associated with the Covid-19 pandemic have led to an acceleration of digitalisation in several sectors related to territorial promotion (tourism, local products, economic promotion, heritage, etc.). These sectors have had to look for new ways to promote their products. Among the new means of promotion, an increase in the integration of virtual reality (VR) has been observed. Given the widespread use of virtual reality technology as a marketing tool, one advantage of VR videos in the current context is that they offer consumers the opportunity to experience a local destination or product (such as wine), without physically visiting the region (Wen and Leung, 2021). In addition, new experience using in-situ VR have also increased in the field of territorial promotion. The latest research suggests that this technology is an invaluable resource for communicating the intangible and experiential nature of territory as a product (Hashish, 2019). Simultaneously, there is growing scientific dialogue on the ability of new technologies to contribute to the development of regions (Guttentag, 2010; Flavián, Ibáñez-Sánchez and Orús, 2021; Li, Song and Guo, 2021). Researchers have focused on studying one category of actors (visitors) and their experience but have neglected other stakeholders, such as VR project managers. This article seeks to fill this gap and understand how and why VR is integrated into business strategy.

Today, VR technology offers specific aspects of the real world to create new models of reality cognition and attract the attention of targeted audiences for a novel tourism experience (Pratisto, Thompson and Potdar, 2022). In the field of tourism, Switzerland has followed the trend of integrating VR into their marketing strategy (SECO, 2020). Regardless of the varied and more integrated uses in the practice of territorial promotion, research on Swiss cases is little explored to date (Jaquier, 2017; Cuennet, 2022), or even non-existent. In the current study we answer two key questions: RQ1 What are the types and characteristics of VR used in the tourism and heritage field in Switzerland? RQ2 What are the main motivations and limitations for public and private companies to integrate these new VR tools into their strategy?

2. Literature Review

2.1 The Definition of VR and its Characteristics

The problem of the definition and the components which describe VR have been the focus of much research. According to the definition proposed by Beck, Rainoldi and Egger (2019) and which we have retained for our study: “Virtual Reality (VR), in a tourism context, creates a virtual environment (VE), by providing synthetic or captured 360° real-life content which creates virtual tourism experiences and which also stimulate the user's visual and potentially other additional senses”.

In the tourism literature, researchers distinguish between two key elements: presence and immersion (Ahmed, 2018). Presence is generally defined as the subjective perception of "being there" in the environment represented by a medium (Biocca, 2001; Diemer et al., 2015; Adachi, Cramer and Song, 2022; Felton and Jackson, 2022). Steuer (1992) describes two technological determinants of presence: vividness, which symbolises the ability of a technology to produce a sensorially rich and detailed environment for the mind, and interactivity, which refers to the extent to which users of a computer medium can influence and/or modify the form and content of a virtual environment. Schuemie et al. (2001) distinguished several vividness factors which cause presence, such as field of view, presence of animated elements, pictorial realism, spatialized sound, visual and auditory cues, and stereoscopy.

The concept of immersion is related to presence however, unlike presence, “immersion” is another technical feature of VR and refers to the objective level of sensory fidelity (Slater, 2003). Immersion can be broken down into quantifiable and measurable features, such as visual, audio, 360° tracking and distinction which rely on the quality and accuracy of the presentation (Zuniga Gonzalez, Richards and Bilgin, 2021).

In view of the multiple characteristics, researchers have proposed different classifications. Some researchers have focused on the technology factor (Wu, Ai and Cheng, 2019) which includes six dimensions: 360° photos, 360° video emulation, 360° videos, directional motion, VR with interactivity and haptic landscapes. While Beck et al. (2019) put the concept of immersion at the centre of their classification, proposing a distinction between non-immersive, semi-immersive and fully immersive VR in tourism. Flavián et al. (2019) went further, proposing a classification of technologies based on three factors directly related to human-machine interaction: a technological factor (embodiment), a human dimension (presence), and a behavioural factor derived from the interaction between technology and humans (interactivity). The last classification allows us to cross the experiential dimension of presence and interactivity with a technological dimension. This integrates the other classifications mentioned, as we can consider that the type of non-immersive and semi-immersive VR is the external devices.

The above classifications have allowed us to position our case studies in the current technological context and to recognise these assets for managerial application: the average level of the consumer's feeling of presence and interactivity, as well as the level of immersion of VR projects. Following this approach, we propose our classification of cases in Switzerland.

2.2 VR and Tourism

The context of the study, the methodological approaches used, and a large number of variables were considered to examine virtual experience reflecting the interests of researchers in this field of study and the topicality of our research (Verma et al., 2022). The current research on VR and AR (Augmented Reality) in tourism was developed by Yung and Khoo-Lattimore (2019). They assessed emerging trends in the tourism sector using a systematic quantitative method. Based on this systematic literature review, the authors postulated that VR and AR have an enormous potential in the different sub-sectors of regional promotion. Whether in the context of education, marketing, cultural heritage or sustainability, this technology offers new and interactive ways of disseminating information which were previously impossible.

VR visits are not intended to replace traditional tourism, but rather to complement and revitalise it by providing informational support, which can improve the decision-making process about visiting a tourist destination. The above is supported by Huang et al. (2016), who see virtual experience in tourism as opportunities to complement real experience and promote destinations. Thus, many physical journeys can now be preceded by a non-physical (virtual) trip, intended for the tourist to familiarise themselves with the destination and minimise the number of situations in which the traveller is disappointed by their own choice. Simultaneously, access to virtual tours by potential tourists and the possibility for them to change their destination are only a click away, with the overall aim of facilitating access to information. Recent field studies, such as those by Jung et al.(2020), have come to

show the increasing satisfaction of VR application users with diversity and ease of access to information, following this virtual experience most users also want to take a field trip.

This motivational aspect of VR tours and the change in consumer behaviour towards destinations was revealed in a large body of research. Tussyadiah et al. (2018) qualitatively explored the tourist experience through 360-degree VR content, filmed with a drone, using the Lake District National Park as a case study. The results revealed the potential to use VR to engage tourists and improve their behavioural intentions to visit destinations. Other research proposes integrating the motivation theory and an acceptance of technology to determine whether VR has an influence on creating a more positive attitude and orientation of consumers' behavioural intentions towards a destination (Rahimizhian, Ozturen and Ilkan, 2020). The results confirmed that the digital experience creates awareness, enthusiasm, and movement.

To study this change in behaviour, researchers have used the previously mentioned variables: presence, immersion, and sensory stimulation (Hashish, 2019). The authors demonstrate that a higher sense of presence generates more intense emotional responses and significantly impacts consumer engagement with the destination (Yung, Khoo-Lattimore and Potter, 2020).

3. Methodology

A multiple case study approach was chosen to identify differences and similarities between the cases. We selected ten VR projects located in Switzerland, active in the tourism and heritage field (table 1).

Table 1: VR Projects and the Companies Which Integrate Them

	Project Name	Project managed by
1	Le canton du Jura à 360°	Local DMO of the canton of Jura
2	360.myvaud.ch	Regional DMO "Vaud Lake Geneva region"
3	Panorama 360° de la ville Neuchâtel	The tourism department of the city of Neuchâtel
4	360° Swiss Heritage	The Association of the Swiss Art History Society
5	Calendo MySwitzerland.com	National DMO "Swiss Tourism"
6	Basel virtuellement	Local DMO "This is Basel" (City of Basel)
7	VR Glacier Experience	Diavolezza Lagalb AG and Graubündner Kantonalbank
8	Expédition 2 degrés	World Nature Forum (WNF) in partnership with local DMO Jungfrau-Aletsch
9	Genève 1850	First Edition: Musée d'art et d'histoire de Genève and Fondation Artanim Second Edition: Dreamscape Geneva
10	Red Bull The Edge	Red Bull Switzerland in partnership with Red Bull Media House and the Swiss Museum of Transport.

Next, based on the classifications illustrated in the literature review, we established the level of immersion, interactivity, and presence, while placing our case studies in the current technological context.

The semi-structured (N=12) interviews with managers of immersive technology integration projects were conducted based on a pre-established questionnaire. The interview guidelines were developed from the literature review. The main areas of focus were: 1. What are the motivations for Swiss Destination Management Organizations (DMOs) and cultural heritage organisations to integrate VR products? 2. Which phase of the customer journey are VR products located in? 3. How do they define the limits of this technology?

Respondents were selected according to their responsibility and involvement in the VR project. The interviews were conducted between March and November 2022 and lasted between 40 to 60 minutes. The sample consisted of 12 participants including (two for complex projects): two CEOs of national and of regional DMOs; five directors of marketing and communications management of a DMO; the digital CEO of a national DMO, the head of Red Bull Media World, two digital project managers in a cultural heritage institution, the CEOs of Artanim and of Dramscape. The interviews were transcribed. NVivo, a common software solution for qualitative data analysis (Edwards-Jones, 2014) was used to develop a formal coding scheme to annotate the transcribed texts

(Yung and Khoo-Lattimore,2020) and identify relevant themes. Thematic analysis and aggregation reflect the research objectives and guide the analysis.

4. Discussion of the Results of the Interviews With VR Project Leaders

4.1 Classification of VR Products in Switzerland

We have focused on non-immersive and immersive products according to Beck, Rainoldi and Egger (2019), the most used tools in the field of regional promotion. We can distinguish between three categories of products. The first two categories are the most widespread: non-immersive products on external supports (category 1) or immersive products involving the use of a virtual reality headset (category 2). Some projects exist in two versions: non-immersive and immersive. They mainly activate two senses: sight and hearing; touch is reduced to interaction with a keyboard and/or mouse, or with the VR headset controllers. The third category creates a real experience, by touching a wider spectrum of sensations: the wind blowing, the sensation of cold, dispersed odours. They also activate the sense of touch by including the surrounding space (climbing wall, carriage ride). The table below proposes a classification of cases based on technological and 'experiential' criteria according to Flavián, Ibáñez-Sánchez and Orús (2019) (Table 2).

Table 2: Classification of VR Cases

	Project Name	**Product Type**	**Level of**		
			technological embodiment	**interactivity**	**presence**
Category 1. Non-immersive on external devices					
1.1	Le canton du Jura à 360°	360° desktop video	low	low	mi-middle
1.2	Panorama 360° de la ville Neuchâtel; 360° Swiss Heritage; Bâle virtuellement	360° desktop platform photo	low	mi-middle	mi-middle
1.3	360.myvaud.ch; Calendo MySwitzerland.com	360° desktop platform video	low	mi-middle	mi-middle
Category 2. Immersive on internal devices					
2.1	Le canton du Jura à 360°	HMD 360° video	high	middle	middle
2.2	Panorama 360° de la ville Neuchâtel; 360° Swiss Heritage; Bâle virtuellement	HMD 360° platform photo	high	middle	middle
2.3	360.myvaud.ch; Calendo MySwitzerland.com	HMD 360° platform video	high	middle	middle
2.4	VR Glacier Experience; Expédition 2 degrés	VR HMD	high	middle	mi-high
Category 3. Immersive with haptic devices					
3.1	Genève 1850; Red Bull The Edge	VR HMD with haptic devices	high	high	high

4.2 Integration of Products Into the Customer Journey

Virtual Reality (VR) is a solution which potentially allows tourism providers to design technological experience throughout the customer journey. We have noted that six of the ten cases focus on pre-trip experiences. They are offered ex-situ, at the pre-trip stage to introduce the traveller to the region. VR tours can be conducted from home, or can also be offered during an ad hoc event (e.g. a trade fair abroad). They also enable the comparison of destinations and the refinement of the traveller's choice. Respondents specified that these products are also used in-situ, during the trip itself, for example at tourist offices or in tourist accommodation, or at the sites themselves by offering a virtual visit of other sites (360° Swiss Heritage).

The other four cases offer a purely in-situ experience and are a product in themselves. They have different objectives. “The Edge" provides access to an exceptional natural site in Switzerland, the Matterhorn; "Genève 1850" allows visitors to relive a historical period which marked the site, by highlighting a historical heritage

object of the city of Geneva. The other two cases allow the visit to be enriched by exhibitions (Expédition 2 degrés and VR Glacier Experience), with the aim of raising visitors' awareness of environmental issues.

We have not identified any products in the Swiss tourism market which use VR in the post-trip phase.

5. Motivation

The analysis of the semi-structured interviews with VR project managers or co-managers revealed the variety of motivations which currently drive companies to introduce this technology into the company's communication strategy, or to offer new tourism or cultural products which are based on VR technology. The content analysis carried out identified elementary units of context, i.e. significant responses, and grouped them into three segments of discourse relating to motivation.

5.1 Attractive

Respondents often mention the main objective of the DMOs or the heritage institution: to attract visitors, whether to Switzerland in general, or to a particular canton, city, or museum. The content analysis of the interviews highlighted this desire to attract visitors as a priority, emphasising that “immersive inspiration” helps to “convince people to come to Switzerland”, that it helps tourists to “project themselves into a place” and serves as “additional motivation to choose our destination”. This attraction is achieved by making potential visitors dream through the use of VR. This facet of VR is essentially linked to its ability to show the region in an attractive way, “especially to make people dream of that region”, “to offer the notion of fresh air” and to try to effectively recreate this part of exoticism and dream for people. This is in line with the research cited in the literature, which confirms that the VR tour is an effective way to increase motivation to visit a region or area.

5.2 Innovative

The respondents' discourse insists on the fact that VR technology is an additional asset thanks to its novelty of use, indeed this innovation can take different forms. The tourism promotion site MySwitzerland.com, launched in 2019, offers an immersive experience and many innovations, including an "inspiration calendar" and a 360-degree map. In 2020, the site won the "Best of Swiss Web" award for its innovative and immersive nature. For museums, VR is "a new attraction" which enables "attracting younger audiences to the museum or audiences who may not have thought of going to the museum and will come just for the VR experience". This statement was also made by the head of the Geneva 1850 project, who mentioned that the exhibition tickets, which included an immersive experience, were sold out in two days, an exceptional speed for a museum.

5.3 Accessibility

The motivation "to give access to all these buildings, to culture", "to make historical or artistic content accessible to the widest possible public" drives the managers of heritage projects. This concern relates not only to the desire to share knowledge and information with a wide audience but also to provide access to people with disabilities (360° Swiss Heritage). VR also helps to access sites which are temporarily inaccessible due to restoration of part of an object or areas which are difficult to access, such as in the case of “The Edge”.

However, most of the tourism companies interviewed do not have the goal of making the area more accessible. Their main objective remains the promotion of the region and the increase of in-situ visits.

6. Limitations

6.1 Complexity of the Projects

Unlike 360° products, experiential VR products are expensive (often the budget is not stated or varies between 600,000 CHF to 1.5 million CHF). The creation of these products requires a complex consortium, with multiple partnerships between private and public institutions. This differentiates VR products from 360° video or photo platform productions which require a more modest budget.

6.2 Technological Advance/Complexity

Most tourism managers informed us that the organisation does not plan to develop this area in the future, as the technological advancement of VR headsets is too rapid and requires constant updating. This is beyond the budgetary and operational capacity of some regions. For project managers of 'experiential' products, the problem lies in the need of having trained staff involved on a permanent basis, which implies additional costs. In addition, they often have to deal with equipment failures (lack of attention from visitors who do not follow

the instructions). These and other problems can lead to the total abandonment of the VR project (World Nature Forum and Neuchâtel Panorama).

6.3 Public Interest

While the integration of 360-degree tours was seen as a competitive advantage in the years 2017-2019, virtual tours for promotional purposes are no longer seen as such. Many destinations have introduced a "VR tour" in their communication, which has reduced the novelty effect. Managers prefer to develop other means of communication, such as, strengthening their presence on social networks. In contrast to 360° tours, the creation of a tourism experience in VR is still relevant. The democratisation of certain technologies enables the creation of the VR experience at lower costs than those mentioned above.

7. Conclusion

Faced with issues of attracting tourism to their region, a growing number of stakeholders have become interested in the opportunities offered by VR. This research proposes a classification of VR products implemented by regional promotion actors, in order to better understand their nature.

Different types of VR products have been identified. Furthermore, diverse and contrasting effects of VR products were distinguished. The 360° projects represent the form of products most used by the regions, because they help to increase the number of visitors on site. Nevertheless, a certain ambiguity of discourse exists between the postulate that VR is an innovative means of regional promotion and the observation that 360° VR tours are becoming more and more widespread, which leads to a decrease in their popularity.

In addition, rapid technological advancement does not allow some destinations to continue with the projects and leads to the abandonment of such types of communication/products. This rather disappointing result leads us to propose that current VR tours need to be rethought, for example through storytelling or product gamification.

As VR tours become a mainstream product in the tourism market, DMOs no longer see a competitive advantage in this type of communication. However, we can observe that 'experiential' VR is starting to take over and that the integration of such attractions into the customer journey is seen as a win-win by project managers. This feedback from the field confirms the hypothesis that a high level of presence leads to a higher level of visitor interest (Lo and Cheng, 2020; Yung, Khoo-Lattimore and Potter, 2021).

From a more operational point of view, the identification and structuring of VR types in the study propose a framework for territorial actors to reflect on the usefulness and feasibility of a VR project. The results highlighting the limits of VR for promotional purposes can assist companies in developing VR products which propose an offer adopted to regional needs.

8. Limitations of the Research and Avenues for Future Research

As an extension of this work, and given the exploratory nature of this study, it seems necessary to further investigate the results obtained in subsequent research. For example, a measure of VR product effectiveness could be proposed through the creation of a multidimensional measurement scale, based on VR characteristics, as described in the literature. Such a tool would allow the optimisation of the usage of VR in the tourism and heritage field.

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