

IMPLICATIONS OF VIRTUAL REALITY IN DEVELOPING TOURISM - THE CASE OF TRANSYLVANIA, ROMANIA

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Abstract

Technological advancements are constantly changing developing industries and impacting all players in the field. Among the most well-known revolutionary technologies is virtual reality (VR), a three-dimensional concept that offers its users the possibility to simulate new environments by visualizing the real world from their own location. This research article raises the question of the extent to which such technologies can influence the tourism potential of a much-discussed region in Romania, namely Transylvania. As a result, case study research with qualitative data was conducted, leading to an extended analysis of the current topic. By adopting a three-fold division of VR's potential destination: marketing tool, planning and managerial and entertainment tool, the study aimed at providing relevant insights upon the importance of VR for both service providers in the field, but also potential beneficiaries of touristic services. The results show that VR is of great benefit to the development of the tourism industry, but that factors such as costly implementation costs and "resistance" to innovation can occur. The research findings have implications for researchers in the field, but also for stakeholders in the tourism and technology sectors.

Keywords: Virtual Reality, tourism, innovation, Transylvania, Romania.

JEL Classification : M10, M31, O31, Z32

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1. Introduction

Companies in almost every industry are affected by new and disruptive technologies. As technologies advance, they are increasingly integrated into daily operations and impact how companies interact with their customers.

The present article brings under attention the concept of Virtual reality (VR) as one of the most important advancements in information and communication technology (ICT), with a broad spectrum of applications that is anticipated to have a significant impact on the tourism sector in the future (Guttentag, 2010; Tussyadiah et al., 2017). The evolution of VR is made possible by the latest innovations, including VR systems, devices, and multimedia production tools.

VR is frequently explained as a technology that utilizes a computer-generated 3D world, sometimes referred to as a "virtual environment." Navigation through and interaction with this simulated environment often results in real-time replication of one or more of the user's five senses (Gutierrez et al., 2008). It is therefore the immense benefits it can bring that raises the question of how such transformative technology can impact the tourism industry.

Organizations in the tourism and hospitality industry become our primary interest as they should be pushed to become more future-focused and fully equipped to plan for technological change. The paper aims to provide an insight into the way recent trends in VR may affect the tourism industry in a well-known region of Romania, namely Transylvania. The research attempts to show a link between the VR concept and the tourism potential of this region by highlighting both positive and negative impacts. The manuscript therefore develops within the framework of a case study, trying to encourage current and future companies in the relevant industry to become more future-oriented and fully equipped for the technological revolution we are experiencing.

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2. Literature review

2.1 *The concept of Virtual Reality*

The word VR is used ambiguously in the literature (Dorner et al., 2013). The term generally refers to programs that provide artificial experiences. It can also refer to a language-like mode of communication or the experience itself (Kim, 2005; Pujol, 2004). Immersion and presence are the foundations of VR, and these ideas distinguish it from previous forms of entertainment (Slater and Sanchez-Vives, 2016). In contrast to presence, which is a subjective structure, the authors refer to immersion as an objective construct that explains the physical configuration (Gutiérrez et al., 2008). Furthermore, presence stands for a mental product that is not limited to a specific technology and characterizes the human feeling of “being there” (Ijsselsteijn and Riva, 2003).

Despite the fact that Jaron Lanier coined the term "virtual reality" (VR) in 1987 (Virtual Reality Society, 2017), the very first attempts to utilize virtual reality (VR) equipment occurred in 1957 by the filmmaker Morton Heilig, who developed ‘Sensorama’, a booth that could offer individuals the impression that they were in a different location, covering similar smells, sounds and tactical sensations (Dormehl, 2017).

2.2. *Virtual Reality in Tourism*

Many researchers working on this topic agree that VR can make an important contribution to the tourism industry. As agreed by Beck, et al. (2019), such emergent technologies have a direct impact on multiple actors in the industry, considering the tourism supply side and tourists alike. For instance, tourists can benefit from the fact that tourist destinations appear attractive to them in the preview. Virtual tours can therefore encourage more people to travel and offer new perspectives to current and potential travelers. VR can therefore bring an element of authenticity to tourism marketing, which is sometimes associated with connectedness (Wu et al., 2016) and appeal (Neuburger et al., 2018) and is a factor in the decision-making process (Guo and Barnes, 2011).

Through this interactivity, experience and immersion, brands and tourism organizations are able to directly and effectively influence users' opinions and decisions, according to research that examines consumer behavior in VR tourism using the stimulus-organism-response model (Kim et al., 2020). It is assumed that emotions and hedonistic experiences play an important role.

Additionally, effective planning and appropriate management are registered in the identified trends in the tourism business. The potential of VR continues to expand as the near-realistic, simple and detailed navigations offered by such technology are easily accessible to travelers as an aid in planning their activities. The development of various simulators that enable a virtual experience where potential visitors can experience a place in advance is another way of recognizing the trend (Tussyadiah et al., 2018).

2.3 *The Transylvanian context*

One of the oldest and most picturesque historical and folkloristic areas of Romania is Transylvania. It consists of ten counties and is the largest region on the Romanian territory, as it is located in the center of the country (Csoka, 2020), as can be seen in Figure 1.



Figure 1. Geolocation of Transylvania on the Romanian map

Source: Fortified Churches Foundation, 2023.

Many of Europe's best-preserved medieval towns and breathtaking rural landscapes can be found in Transylvania. Among the most famous tourist sites in Transylvania are the famous villages of Brasov (Kronstadt) with the largest Gothic church in Eastern Europe, Sibiu (Hermannstadt) with its winding streets and Transylvanian Baroque architecture and Sighisoara (Schaessburg), a hilltop citadel with hidden tunnels and a 14th century clock tower. The famous Bran Castle (Dracula's Castle) and Corvin Castle are also located in Transylvania (Jade, 2022).

The current research is therefore designed around the impact of VR upon the tourism in Transylvania. To emphasize the importance of this region for the Romanian economy, we present the results of the National Institute of Statistics of Romania from 2023, showing the most visited counties in the country in 2022 (Figure 2).

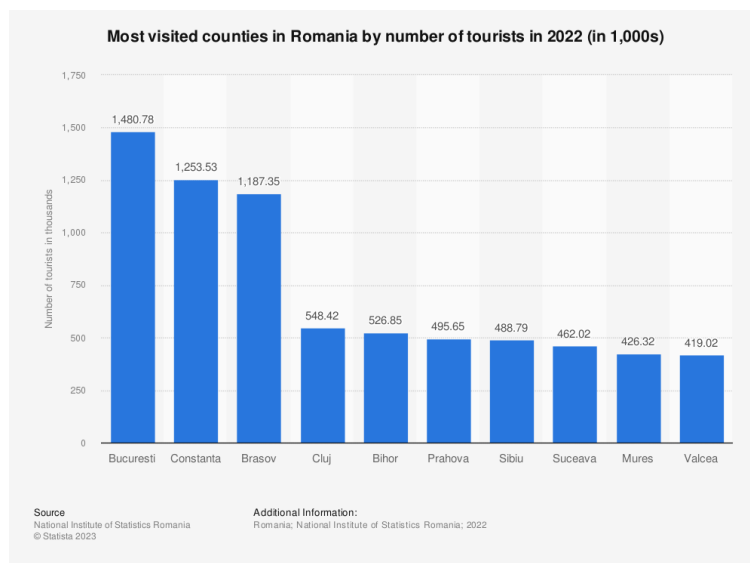


Figure 2. Most visited counties in Romania in 2022

Source: National Institute of Statistics Romania, 2023

The research results show that both Romanian residents and foreigners are very interested in visiting Transylvania. Among the most visited counties in Romania in 2022 are several regions belonging to Transylvania, namely Cluj, Sibiu and Mures. In terms of the number of visitors, the value for Cluj is the highest with 548,420 visitors, followed by Sibiu and Mureş (Transylvania). This can be explained if we talk about the important cultural assets located on the territory of Transylvania, because according to the Presidential Commission for Built Heritage, Historical and Natural Sites (2009), 37% of the total Romanian cultural heritage is located here.

The growing interest in the Transylvanian region, but also the immense touristic opportunities it can offer, underline the importance of the region and provide additional arguments for the choice of this Romanian territory as the main context for our analysis.

3. Methodology

The present research is part of a qualitative research design in which non-numerical information is examined with the main aim of understanding current concepts, attitudes and experiences. This type of research was deemed appropriate to investigate the exposed topic as it is able to explore new insights into evolving phenomena while generating innovative ideas and reshaping business trends (Bhandari, 2020).

The data was collected based on extended research, using documentary analysis and secondary data analysis. Therefore, for realizing in-depth content analysis of the proposed topic, the research tool of document analysis was engaged, a qualitative type of research method consisting in reviewing and evaluating publicly available documents (Bowen, 2009), resulting in gaining new meanings, improved understandings and achievement of empirical knowledge (Corbin and Strauss, 2008). Document

analysis is formed of a systematic evaluation of sources such as advertisements, press releases, agendas, diaries and event programs, under either printed or electronic formats (Bowen, 2009).

On the other side, in order to increase trustworthiness of the study, the research constructed its approach on **secondary data analysis** as well, a technique where data previously collected is reanalyzed and investigated by other researchers (Punch, 2005). When analyzing secondary data, the researcher is not involved in any way at the moment of data collection (Bryman, 2004) and is not responsible for its actual commissioning (Reason and Bradbury, 2001). Secondary data can belong to different sources such as statistical data, journals, reference books, technical reports etc. (Chivaka, 2018).

To illustrate the impact of VR technology on the tourism industry, researchers have chosen the case study technique as it allows for an "in- 'depth, multi-faceted exploration" of complex approaches in real-life examples by providing a specific problem in a well-defined context (Crowe et al., 2011). Therefore, in our current research, we propose a comprehensive analysis of the Transylvanian regional context, covering cultural heritage and traditions. The importance of choosing the Transylvanian case study context is related to the high interest of national and international tourists, as highlighted in the previous section. The region is developing new population markets at a rapid pace, while at the same time managing to preserve its traditions, customs and natural landscapes. By targeting Transylvania, the research therefore seeks to answer the research question: 'Is virtual reality capable of reshaping tourism perspectives in such a rustic place?' This question is contrary to the traditional view that technology is usually used in high-tech environments and digitalized structures. On the contrary, the chosen case study context rather raises the question of whether VR technologies are able to recreate historical structures and landscapes and provide consumers with a comprehensive sense of immersion. (Zhang, et al. 2018)

Moreover, the analysis of the proposed phenomenon has been following a pre-existing theoretical approach in the domain of VR-based technology. Kulakoğlu-Dilek et al. (2018) and Polishchuk et al. (2023) have categorized the implications VR within the tourism industry in three main categories, according to its usage:

- *Marketing tool*
- *Planning and management tool*
- *Entertainment tool*

In order to strengthen the reliability of the current analysis, the research conducted in the present context will follow the aforementioned categorization. In other words, the categorization already identified in the literature will serve as the analytical framework for conducting our research.

4. Results and discussion

The results obtained from applying the previously discussed methodology are highlighted in a structured way under the subsections below.

4.1 VR as a marketing tool- How many people really know about Transylvania?

Visual imagery has been employed most frequently to support the advertising and marketing aspects of the tourism industry (Aziz and Zainol, 2011). The intangible qualities of tourism as a service are a constant reminder to marketers that new types of visual representations need to be developed regularly to promote a positive image of the destination and enhance its reputation (Griffin et al., 2017).

Due to its ability to evoke the highlighted tactile and emotional experience, VR can often be used by marketers to establish the communication of feelings and sensations to influence consumers and tourists. In the case of Transylvania, the power of new marketing strategies could lead to significant changes. Foreigners know little about the immense tourism experiences this region can offer. A survey design study conducted by Inscop Research in 2018 among 1050 Americans shows the nation's high interest in Transylvania. 70% of respondents answered that they have heard of Transylvania, but

23% only know that it is the land of Dracula without knowing that it is part of Romania (Inscop, 2018).

Tourist interest in Transylvania is growing: 2.5 million tourists visited the region between 2018 and 2019, an increase of 9.2% compared to the previous year (Erdélystat, 2020). Foreign visitors, attracted by the region's mixed multi-ethnic heritage, highly value Transylvania's cultural heritage, which is underutilized and under-protected because it is easier to integrate into Europe (Dulău and Coros, 2009).

Nevertheless, the region's villages and cultural heritage have not yet been digitized. The tourism perspectives are based on a traditional type of tourism, where the physical interaction between service provider and customer is at the center of interest. A survey study conducted in 2020 on the level of digitalization of industries in Romania has shown that while 67% of tourism service providers expect technology to have a strong impact on the company's performance, 76% of the same sample state that they do not have the necessary managerial expertise to implement such changes, with almost half claiming excessive costs for digital transformation. (Magdalina, 2020).

However, the European Commission commits all Member States to participate in the digitization of cultural goods and to develop a policy and strategy to this end: "The EU Strategy for Digitization and Preservation builds on the work done in recent years under the Digital Libraries Initiative." (Official Journal of the European Union, 2011) Many nations in Europe are digitizing immovable cultural heritage on a larger scale, and more than a third of Member States have revealed funding initiatives for the digitization of monuments, historic buildings and archeological sites. (Official Journal of the European Union, 2011)

It is therefore the transition towards technology and digitization that is encouraging regions to become more innovative and open up to the public with new tourism opportunities. VR-based marketing strategies will allow service providers in Transylvania to personalize tourists' experiences, visualize their journeys, anticipate which attractions they might visit and where they might stay. There is a whole range of services that can benefit from the advantages of VR, from a virtual tour of Bran Castle, where you can learn about the mysterious Dracula story, to the real surroundings of the beautiful village of Braşov and the 600-year-old Black Church in the city center. This innovative way of presenting reality can connect tourists with the authenticity and traditions of the region in a unique way, while appealing to new market segments.

4.2 VR as a planning and management tool- more organized vacations

Planning a vacation can usually become more difficult than expected, as barriers of identifying exact locations, managing time and evaluating prices can occur. A lack of knowledge about these aspects can make it difficult to develop an effective plan and affect the quality of the experience itself. When coming from abroad, it can be difficult for a foreign tourist to get in touch with the Romanian service providers and get all the necessary explanations to create a plan. By providing simple visualization and easy testing of the touristic product (Kulakoğlu-Dilek et al., 2018; Polishchuk et al., 2023), including road access, facilities, surroundings and attractions, VR can represent the innovative solution for better planning and management of vacations.

The 'try before you buy' approach mentioned by Osten (2022) could save time and contribute to faster decision-making and is also applicable in the tourism industry. The rationale behind this approach offers customers the opportunity to experience the 'product' and can become highly efficient in the Transylvanian context. Transylvania consists of an entire region within the arc formed by the Romanian Carpathians and is made up of numerous sub-regions, each of which contains a number of tourist attractions, but which are far apart from each other. For example, having the opportunity to sense the geographical location of Brasov village, but also its attractions, seeing the architectural monuments of Sighisoara village along with its medieval atmosphere, but also learning the history behind the Saxon villages such as Viscri or Saschiz (Romania tour store, 2017) can make a big difference than just seeing a photo on a blog. The whole process of planning a vacation can therefore vary depending on the feeling that the village triggers in each tourist.

In addition, the room booking process has undergone a complete transformation as many hotels have shown that the VR trend is also very helpful in the area of destination marketing (Neuburger et al., 2018). The well-known hotel chain Marriot now gives its visitors the opportunity to virtually observe their rooms together along with the hotel's surroundings so that the customer can see the hotel's location for themselves. One of the most appreciated concepts about Transylvania is authenticity. International tourists highly value the possibility of staying at a local's place, observe their customs and communicate directly with them. However, when first presented with such an opportunity, many are skeptical as they do not know the locals and perceive the conditions offered as unsafe or uncomfortable. Experiencing the authenticity and quality of such services through VR technologies would benefit both service providers and tourists. It would provide a virtual image of the place where they would be staying, along with the beautiful surroundings that can be found in the old Transylvanian villages. VR can therefore become a valuable alternative in the decision-making process when choosing accommodation in Transylvania, offering real perspectives and better customization.

4.3 VR as an entertainment tool- part of the experience

Apart from the fact that VR can fundamentally improve tourists' experiences and needs (Pestek and Sarvan 2021), it can also serve as an entertainment tool. Initially popularized by filmmaker Morton Heiling (Dormehl, 2018) for his entertaining purposes, VR can still be used for such purposes today. Nowadays, virtual reality (VR) is mainly used as an entertainment tool in theme parks, museums and as one of the services in tourist destinations (Pallud and Straub, 2007).

Our research points huge potential for local attractions in Transylvania to engage such technologies for entertainment. As previously mentioned in the article, one of the most discussed attractions located in Transylvania is Bran Castle, also known as Dracula's Castle, a fortress located not far from Brasov. Although the castle offers a mysterious historical story about how Count Dracula lived in the castle in the past and was characterized as a vampire, little visualization is offered to tourists. The introduction of innovative VR technology will transport visitors back in time and provide them with a source of entertainment that enhances the authenticity and validity of the area. Several museums, castles and villages in Transylvania could use VR to bring visitors closer to historical events and increase their knowledge. This implicitly enhances the region's reputation for being both history- and technology-oriented.

5. Future perspectives and current barriers

Innovations in technology will continue to advance, including the development of VR technologies. In this way, growth opportunities in the tourism sector will expand at an ever-faster pace. However, the speed of technological progress may also pose some difficulties. Firstly, adapting to new technologies is not always an easy process. Despite the gradual progress, the trend has been shown to pose some difficulties for travelers who find it difficult to keep up with modern technology (Pestek and Sarvan, 2020). It is important for service providers to clearly define their target audience and assess their attitude towards new technologies so that 'resistance' to new technologies is avoided. This could be achieved through effective and efficient marketing strategies that lead to knowing the customer and personalizing the offers according to their needs.

Additionally, a reverse marketing effect could be witnessed, as a result of implementing VR-based technologies. Individuals projecting their vacation with VR could develop a sense of incompatibility with the place through the virtual tour. If the quality of the virtual services offered is not adequate and contains unclear or incorrect graphic details, service providers could receive negative feedback and lose their success over time. We therefore raise the question of whether service providers in Transylvania are adequately equipped for adopting VR at high standards.

On the other hand, the introduction of new technologies can be a costly process. It can be challenging for tourism organizations to allocate budgets for VR technologies (Mallinguh et al., 2022), as a certain level of business maturity may be required. However, in Transylvania there are many small businesses, some of which are even owned by locals (with the exception of castles and natural monuments), for which the introduction of VR could be very costly. As previously mentioned in this

article, almost half (43%) of the stakeholders operating in the Romanian tourism industry state that digital transformation is too costly (Magdalina, 2020).

6. Conclusions

This paper started from the emerging concept of Virtual Reality (VR) to develop an extended analysis of its potential to impact a touristic region located in Romania, namely Transylvania. The study gathered information from the relevant literature to highlight the significance behind the main concepts.

By addressing the tripartite division of potential VR destinations: marketing tool, planning and management tool and entertainment tool, the research provided a qualitative analysis of the proposed problem. The results show the ability of VR to reshape the Transylvanian tourism sector through the benefits it can bring: authentic destination tours, a higher level of detail and contributions to the decision-making process. It is clear that conventional perceptions towards tourism will need to adapt in order for this niche to grow. However, it is important to ask whether a two-way approach is possible: can both the tourist and the service provider cope with such technological advances?

Further research is considered essential, particularly implicating primary data gathering, so that a clear perspective is collected from the public. This could include stakeholders directly involved in tourism in the proposed area or beneficiaries of the touristic product - Romanian tourists and international travelers. In this way, the study would broaden its perspective and increase its validity. Additionally, we propose extended research, such as comparisons with some other regions of Romania, such as Muntenia or Moldova, in order to compare and contrast the tourism perspective and openness to new technologies in the different tourist areas.

To sum up, the present study sheds light on VR's potential to change the travel and tourism sector in Transylvania, while also offering useful knowledge into both its advantages and disadvantages. We highlight that VR can provide a distinctive and approachable substitute for physical tourism through the real-life simulations they can provide.

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