Exploring the Persuasive Power of Virtual Reality Imagery for Destination Marketing

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ABSTRACT

This study investigates the persuasive power of virtual reality (VR) imagery in destination marketing by assessing the roles of spatial presence in influencing attitude and behavioral intention to visit tourism destinations. Based on experiments and interviews with 23 participants involving the use of Google Cardboard VR viewer, this study extracted users' experience from the conceptual lenses of spatial presence and transportation theories. It was identified that users felt varying levels of spatial presence during the experience, while all recalled moments of arrival and departure (i.e., being transported) as well as moments that generate a stronger sense of being there. Further, this study identified factors that support and distract users from being fully immersed in the virtual environment, including moment of truth, representation, social experience, and continuity. These resulted in different perception on the persuasiveness of VR experience to influence intention to visit destinations. Marketing and design implications are provided.

Keywords: virtual reality, virtual environment, spatial presence, persuasive technology, destination marketing

BACKGROUND

While the roles of virtual reality (VR) technology in travel and tourism have been anticipated in literature (e.g., Cheong, 1995; Dewailly, 1999; Guttentag, 2010; Williams & Hobson, 1995), new development marked by the birth of head mounted VR displays such as *Rift* from Oculus and *Cardboard* from Google designed for personal use signifies the potentials for mass consumption of VR experiences. Combined with 3D mapping technologies and sensors that react to user engagement, these VR displays enable individuals anytime anywhere to experience a virtual walkthrough of actual places around the world, such as taking virtual trips to tourist cities and virtual hikes through national parks. As VR technology provides unbounded access to virtual tourism experiences, it raises the importance of research in the area of mobility from the philosophical and phenomenological perspectives as well as the practical viewpoints of tourism marketing and management. Research has validated the concepts of VR persuasiveness with

empirical supports in overlapping areas of communication and entertainment (e.g., Zyda, 2005), which involves experiences with fictional, simulated virtual worlds where resemblances to real places are coincidental. However, limited research has dealt with those of actual environments (i.e., virtual depictions of real environments) in contextualized hedonic experiences such as tourism. Consequently, it challenges the conceptualization of the roles of VR experiences in shaping the attitude and behavior of travel consumers, including the values of (digital) transportation via VR as well as its function in the deliberation of travel planning and reflection. Therefore, a better understanding of how travel consumers respond to experiences with VR imagery of actual tourism destinations is of theoretical and practical importance. The aim of this study is to investigate the persuasive power of VR imagery in tourism by assessing the roles of spatial presence in influencing attitude and behavior toward tourism destinations.

LITERATURE

The conceptual foundation of this study primarily draws from two research areas: presence and transportation theories. Presence research focuses on how well computer-generated environments induce the feeling of being in the world that exists outside the self (Riva, Waterworth, & Waterworth, 2004; Steuer, 1992). Presence is understood as the psychological state that media users are 'lost' or 'immersed' in the environment it portrays, the perceptual illusion of being 'unmediated' (Lombard & Ditton, 1997). Importantly for tourism, Slater, Steed, and Usoh (1993) proposed a navigation metaphor of presence in virtual environments (VE), which includes the user's sense of being there, the extent to which the VR experience becomes more real than everyday experience, and the locality of VE (users perceive it as a 'place' instead of set of images). This is further operationalized as spatial presence, which explains the relations of VE as a space with the body (e.g., Witmer & Singer, 1998; Slater, Usoh, & Steed, 1994).

Additionally, transportation theory applies in VR to the state of being transported into the virtual world through imagery with the context serves as a 'story' (e.g., tourism) and self as a character (e.g., a tourist). Kim and Biocca (1997) operationalized the transportation metaphor of presence with two factors: arrival (i.e., a feeling of being present in the mediated environment) and departure (i.e., a feeling of separation from the physical environment). They conceptualized these from Gerrig's (1993) theory that through a medium, a user is first transported, then arrives at a mediated environment, and finally returns to the original physical environment. They further argue that the arrival (being in VE) and departure (not being in physical environment) are not exactly equal and may exert different influence on the user's memory and/or attitude change (Kim & Biocca, 1997). The feeling of departure indicates the perceived disappearance of the medium, which signals deeper absorption into the VE.

The key propositions and findings in presence research point to its persuasiveness, where enhanced sense of reality increases enjoyment and values of VR experiences (in itself) and generates positive consequences on attitude, belief, and intention. Kim and Biocca (1997) demonstrated that both factors of presence transportation, arrival and departure, have a positive effect on buying intention among consumers through confidence in brand as well as factual and recognition memory of the brand. VR allows for subjective experience whereby stimuli (e.g., virtual walkthrough or sightseeing) can eventually translate into real behavior (i.e., actual visitation).

METHOD

The first phase of the study was to design a framework capturing the values of VR imagery in shaping people's attitude toward tourism destinations. A focus group discussion was conducted with 12 participants after an experimental session. Participants are professional students (i.e., career continuing education) enrolled in business and digital media programs in the United States. Using Google Cardboard VR viewers, they were asked to use *Urban Hike Urban Hike* within *Cardboard* for iOS app starting with Paris and were encouraged to navigate to all other places. The VR experience took 30 minutes, followed by a 45-minute discussion on perceived sense of presence. Four participated in follow-up interviews where they were asked to use *YouVisit VR* app to experience Berlin, a new destination not featured on *Cardboard*, as a tourist. Insights from Phase 1 were used to finalize the interview protocol for Phase 2.

In Phase 2, in-depth interviews were conducted with 19 participants who are a mix of students and professionals residing in Hong Kong. They first answered questions regarding prior knowledge and experience. Then, due to restricted access in *YouVisit VR* and to avoid bias in light of recent negative events in Paris, they were asked to experience Tokyo (i.e., the second in the sequence) on *Cardboard* for 10 minutes; verbal expressions and physical movement during VR experience were recorded. Afterward, they answered questions about sense of presence (Slater, Usoh, & Steed, 1994), attitude toward Tokyo, and roles of VR imagery in influencing attitude and behavior. All interviews were recorded and transcribed. Following the phenomenological tradition, data analysis was conducted to extract themes and patterns emerging from the transcript by way of interpretive coding.

RESULTS AND DISCUSSION

All participants have not visited Berlin before (Phase 1), while six out of 19 have visited Tokyo (Phase 2). Nearly all participants indicated interest in visiting the destinations, but only four stated having a specific travel plan for the near future. Most have certain images in mind with regards to the destinations: Tokyo was associated with a bustling metropolis, modern, many people, shopping streets, pop culture, and cherry blossom, while Berlin with (dark) history, Berlin Wall, and European charm. Participants learned about Tokyo mostly from TV drama and anime, internet, news, and friends, while Berlin from history books (in school). The VR experience typically started with verbal expressions of excitement and amusement. All participants interacted with the device through click/touch/tap, head (vision) adjustment, and body movement.

A. Spatial Presence

Participants were divided when asked if they felt a strong sense of being there. The majority of them recalled a number of times during the experience that they thought they were (getting lost) in the VE, indicating spatial presence. In terms of locality, about two thirds indicated that the VE felt like a place they visited rather than a series of images they saw. While all of them stated that they felt they were "somewhere" (a place), some were not sure if it was Tokyo (e.g., it could be a place in China), except for those who were able to recognize the city's landmarks (e.g., Tokyo Skytree). Some stated strongest sense of presence during "stomach churning" experiences, such as being on top of a tower viewing the city beneath them, as they had the same strong sensation from being afraid of heights as if it was reality. The following patterns emerged:

- *Moment of Truth.* The *Cardboard* app first takes users to Asakusa Temple in Tokyo. While it is one of the most popular tourism attractions, it is inconsistent with the images held by many participants (traditional vs. modern/metropolis/urban). Attractions in Berlin signified the image of European city with historic buildings and monuments; participants indicated that the city looked more beautiful (and sunnier, inducing positive feelings) than expected.

  "The Japanese characters and people's clothes were like Tokyo. When I walked in the lane, I felt I was in somewhere in Asia, but not Tokyo." – Suki, Tokyo

  "It is different than expected. There are many historical landmarks, but it's sunnier, not hot, but sunny. People were dressed light, so it is not cold… I imagined it to be dark, rainy, in nighttime… it is more modern as opposed to more traditional/historic." – Hannah, Berlin

- *Attraction vs. Destination.* In Tokyo, many participants spent most of their time navigating the temple and finding ways to move out of the compound and, hence, were not exposed to the city streets and other attractions. In Berlin, participants went through several attractions, made easier with floating arrows embedded in VE. It is noteworthy that participants attach the VR experience with a destination in mind. Associating only one attraction to a destination can cause bias in self-reported measurement of spatial presence.

  "The place should be a famous attraction, but I don't know it. But I saw some Japanese characters. I knew I was in Japan, but not sure if it was Tokyo." – Xia, Tokyo

  "When I saw [the] characters, I know it's Japan. But when I saw [the] buildings, they looked like ancient Chinese style. So I didn't think it was Tokyo. I am not sure where was it since I didn't go out of the temple area." – #9, Tokyo

- *Social Experience.* Participants stated that lack of social experience (not being able to ask or interact with anyone) lower the extent of presence. *Cardboard* app blurs people's faces (for privacy) in VE and many participants found it distracting and made the VE unreal. Some also felt the static images of moving things (e.g., people frozen on the streets, birds frozen in the sky) and features disappearing when seen from different angles as reminders that they are not in a real environment. Some described it as being in a ghost city.

  "Imagery-wise it's the same memory I have as with places I have been today, experience-wise [it's] a little different. I missed talking to people." – Hannah, Berlin

  "There were many people doing all kinds of activities and I can see details of the scenes. If I only saw the buildings, I [would have] felt I was looking at a picture."– #4, Tokyo

- *Arrival and Departure.* Most participants described the feeling of arriving in the destination after a moment of familiarization with VR viewer. Some stated the moment a feature caught their attention (e.g., focusing on a landmark, recognizing text) as a point of arrival. Most felt they departed (were separated) from the interview room at the same time or a few seconds after arrival, implying the state of transition and the feeling of being transported into VE through imagery (some described it as a leap or a jump).

  "[I felt I arrived in VE] after several minutes [of] wearing the device. I almost hit a tree while walking along the street. When I turned around, I almost hit a car. The feeling was quite real." – Xia, Tokyo

"[I] have feelings about transportation […] The time between feeling dizzy at beginning and seeing the view clearly later makes me feel being transported. When I operated the device smoothly, I felt I was not here (classroom). [But] the technology limitation was disturbing my experience." – Yvonne, Tokyo

- *Discontinuity.* The constraints of the interview room influence participants' feeling of presence in VE. Participants were sometimes reminded not to bump into a wall during the VR experience, which "brought them back" to the real world (i.e., constant reminders in their mind). Some participants also stated seeing the floor or light coming from the sides of the device or hearing a conversation in the room as 'distractions' from being fully immersed in the destinations. These are all indications of a lower extent of departure in Kim and Biocca's (1997) metaphor, preventing a deeper immersion into the VE. Discontinuity issues specific to app were also identified. Some experienced fatigue from holding the device and tapping on the screen multiple times (in *Cardboard* app), creating the perception of a slow movement, especially for those who stood still, but tried to advance in VE. Users of *YouVisitVR* app perceived the clickable arrows and bubbles hovering in VE as distractions. A few reported dizziness and general discomfort.

  "I didn't have strong feelings of being in Tokyo or in this classroom. I understand that I was personally in this classroom. I was worried about where I was and I didn't want to hit anything. But since I was watching the scenes in VR, I didn't know where I was in this classroom. I think if I have a huge space, I will not worry about hitting anything and it will feel like I am in the scene." – #3, Tokyo

  "[I felt] too dizzy. [I] was afraid of hitting the wall. Bad internet connection made the image unclear and not smooth. [I] have to hold the device all the time, [I] felt tired." – Suki, Tokyo

  "I really enjoyed it. I was able to go somewhere, navigation was easy, simple control with hover and bubbles, very intuitive. But I could see the floor and the ring rises that you could click, a little distracting." – Chris, Berlin

B. Attitude and Behavioral Intention

Nearly all participants indicated interest in visiting Tokyo before the VR experience. After the VR experience, all but one participant stated interest in visiting the destinations. However, only a few thought that the VR experience influenced their attitude. For some, the VR experience exposed them to "samples" of the destination and they are more inclined to travel in order to have the "full" experience. For a participant, however, the VR experience decreased her intention to visit Tokyo because what she saw was not what she had expected to see and it was hard to navigate around due to lack of directions (before VR, she was not sure if she was interested in visiting Tokyo).

"Yes (I have a stronger desire to go), I have a better idea of what to see when I travel there." – Chris, Berlin

"I am more willing to go, more inclined. I have experienced the sample, now I want a full blown experience, with sounds, people, colors…" – Hannah, Berlin

"Not really. The experience time is not long enough. I still want to visit the attraction after I saw it in VR. I want to visit it personally because I can experience more, like taste foods at the attraction." – #7, Tokyo

Most participants stated that VR experience was not more powerful in influencing interest and plan to visit the destinations, placing it behind (detailed) travel guides. Many lamented that the VR imagery was not "beautiful", which is due to the fact that the app was not designed for promotional purposes. However, some of them suggested that VR would be more influential if the content was made more interesting.

"Not much difference (from other types of imagery). Normally, I will use a travel guide. It's more practical and detailed. For VR, though I can see the attractions, I still don't know how to get there and how much the entrance ticket is. VR is similar to google map." – Interviewee 9, Tokyo

"This three dimensional view is better the the plane images. I will use VR to get to know the places where I am going to visit before my trip. It's a very good reference." – Jianwei, Tokyo

CONCLUSION AND IMPLICATION

This study revealed several factors that influence spatial presence in experience with VR of actual tourism destinations. These factors include destination image (i.e., congruence between images held and stimuli presented in VR) and (dis)continuity (i.e., the feeling of being transported back often to the physical environment due to distractions). In line with SUS questionnaire (1994), the qualitative data from this study revealed that users experience the feeling of navigation (i.e., walking around) and locational aspects of VE (i.e., VE was experienced as a place rather than seen as series of images) to a varying extent. The findings in this study also demonstrate the potentials of VR imagery to induce interest in experiencing tourism destinations and provide implications for marketing strategies as well as design and usability aspects of VR technologies. In order to enhance the persuasive power of VR, it is imperative to heighten the sense of presence by highlighting easily recognizable artifacts or presenting the destinations in creative ways to induce a high level of arousal and positive valence. In terms of content, it is important to provide aesthetically pleasing imagery and a compilation of sites that support positive destination images in the mind of (potential) tourists. It is also important to ensure continuity during VR experience by eliminating distractions. This could be achieved by simplifying interactions to make sure that users do not have to be constantly conscious of surrounding elements.

References

Cheong, R. (1995). The virtual threat to travel and tourism. *Tourism Management* 16(6), 417-422.

Dewailly, J.-M. (1999). Sustainable tourist space: From reality to virtual reality? *Tourism Geographies*, 1(1), 41-55.

Guttentag, D.A. (2010). Virtual reality: Applications and implications for tourism. *Tourism Management* 30(5), 637–651.

Kim, T., & Biocca, F. (1997). Telepresence via television: Two dimensions of telepresence may have different connections to memory and persuasion. *Journal of Computer-Mediated Communication*, 3(2), n.d.

Lombard, M., & Ditton, T. (1997). At the heart of it all: the concept of presence. Journal of *Computer Mediated-Communication* 3(2), n.d.

Riva, G., Waterworth, J.A., & Waterworth, E.L. (2004). The layers of presence: a bio-cultural approach to understanding presence in natural and mediated environments. *CyberPsychology & Behavior* 7, 405–419.

Slater, M., Steed, A., & Usoh, M. (1993). The virtual treadmill: A naturalistic metaphor for navigation in immersive virtual environments. In Goebel, M. (ed.), *Eurographics Workshop on Virtual Reality Environments* (pp. 71–83), Polytechnical University of Catalonia.

Slater, M., Usoh, M., & Steed, A. (1994). Depth of presence in virtual environments. *Presence*, 3, 130–144.

Steuer, J.S. (1992). Defining virtual reality: dimensions determining telepresence. *Journal of Communication* 42, 73–93.

Williams, P. & Hobson, J.S.P. (1995). Virtual reality and tourism: fact or fantasy? *Tourism Management* 16(6), 423-427.

Witmer, B.G., & Singer, M.J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence* 7, 225–240.

Zyda, M. (2005). From visual simulation to virtual reality to games. Computers 38(9), 28-32.