

Chapter 34

Research of Virtual Tour Impact on Destination Image

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Abstract Although virtual reality (VR) has been well known and investigated for practical use in various industrial fields after late 1980s and 1990s, it is recently that researchers and practitioners in the tourism field have attempted to understand the virtual tour. Few researches have been done to understand the role of destination image and to examine the impact that virtual tour has on the destination image. The purpose of this paper is to empirically elaborate the relationship between the virtual tour and tourists' destination image under the context that applied VR technology. This study takes Shanghai Online-Expo as a case and participants either do or don't have expo-exhibition experiences are all recruited from the Zhejiang University. Virtual tour is expected to positively affect the destination image, and furthermore, it is also significant among tourists' without destination experience, and vice versa. These results have both managerial and theoretical implication.

Keywords Virtual reality · Virtual tour · VR technology · Shanghai online-expo

34.1 Introduction

Recently, developments in information and communication technologies (ICTs) have been transforming tourism in myriad ways, impacts on areas ranging from consumer demand to site management [1, 2]. One important area of ICT is virtual reality (VR). Since Morton Heilig began designing the first multisensory virtual

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experiences in 1956, especially after late 1980s and 1990s, virtual reality (VR) has been commonly used in diverse areas including entertainment, design and simulation training. As VR technology continues to evolve, the possibilities for using VR within the tourism sector will grow, from tourism planning to heritage preservation [3]. Recently, the existing information and communication technologies (ICTs), especially how the ICTs are applied into the tourism sector, are part of the most influential factors that impact virtual tourists' experience, which ultimately influence the tourists' decision. As Refsland et al. [4] claimed that "the majority of virtual heritage researchers believe that their work encourages people to actually go see the real site, giving the visitor extra knowledge to enhance the real site visit".

Actually, countless existing tourism sites and activities have already involved virtual, reproduced environments. For instance, at the World Showcase in Disney World's Epcot one can explore environments representing several different countries. Besides, Virtual Louvre, the Sarajevo City Hall, the Great Buddha carving from Afghanistan, the Hawara pyramid complex from ancient Egypt, are also rather prevalent among international online travellers. For china, the most remarkable affaires during 2010 must be The World Exposition held in Shanghai. Assisted with internet and multimedia technology, expo host launched the project-"online expo"-that applies the VR technology into the expo displays. Online expo constructs a network platform that providing internet experiences, real-time interact and other auxiliary functions. With the support of VR, the Shanghai World Expo will be the first World Expo that will never close.

However, little studies have been done about the virtual tourists' destination image when they immerse themselves in the virtual reality. For preceding reasons, tourism researchers and professionals should gain a greater understanding of virtual tourists' destination image within the background of virtual reality to best prepare themselves to face the challenges and take advantage of the opportunities that virtual tourism presents. Considering the profound influence of the grand ceremony and the relatively maturity of the online expo, it take the Shanghai online expo as a case to explore the factors that may have a significant effect on virtual tourists' desitination image. Questionnaire is adopted in this study before and after the respondents are asked to "travel" the online expo.

The paper starts with literature review involving virtual reality, virtual tourism, experience and their relationship. The literature review is followed by the presentation of applied methodology as well as empirical results. Implications of the results will also be introduced as well as the contributions and limitations of the whole research.

34.2 Literature Review

34.2.1 Virtual Reality and Virtual Tour

34.2.1.1 VR and VR Technology

Since Morton Heilig began designing the first multisensory virtual experiences in 1956, especially after late 1980s and 1990s, virtual reality (VR) has been well known and is currently being investigated for practical use in various industrial fields. Four technologies are crucial for VR: the visual (and aural and haptic) displays, the graphics rendering system, the tracking system, and the database construction and maintenance system [5]. So there is another question that “What’s VR”. As proposed definitions vary when describing the different features considered necessary to constitute an experience as VR [6], definition unconformity inevitably exists.

In order to do the main research more conveniently, I select the definition of VR that borrows from definitions used in books dedicated to the topic written by Burdea and Coiffet, Vince, and Gutierrez, Vexo, and Thalmann. That is “VR is defined as the use of a computer-generated 3D environment—called a ‘virtual environment’ (VE)—that one can navigate and possibly interact with, resulting in real-time simulation of one or more of the user’s five senses”.

34.2.1.2 VR Experience

A VR experience can be described by its capacity to provide physical immersion and psychological presence [7]. “Immersion” refers to the extent to which a user is isolated from the real world, and it can be classified into three levels, “fully immersive system” the user is completely encompassed by the VE and has no interaction with the real world, while in a “semi-immersive” or “non-immersive system” the user retains some contact with the real world [8]. When it comes to presence, it is when people behave in a VE in a way that is close to the way they would behave in a similar real life situation [9]. Feelings of “presence” are naturally subjective, being associated with a user’s psychology, but they undoubtedly are influenced by a VR system’s ability to provide high quality data to the users senses [10]. Besides, the level of immersion offered by a VR system is one factor that may influence a user’s feelings of “presence” [11].

34.2.1.3 Virtual Tour

Tourists often make decisions under substantial uncertainty when visiting a particular destination and Nelson (1970) referred to these uncertainties as “experiential attributes” because they can be identified only through experiences.

Obviously, the best way to examine experiential attributes of a destination and thus form a mental image of the destination is to experience the destination by actually visit. However, it is impossible to do so due to the unique nature of tourism products [12].

There is now some evidence that such “experience” can be conducted by VR technology, such as the virtual tour. It is useful and important for destination image due to its ability to provide more extensive/rich information thereby increasing the quality of the destination image. Previous researches indicate that Web-based virtual tour can modify tourist’s destination image.

34.2.2 Destination Image

The term “destination image” has been a popular concept used in tourism studies in a variety of contexts. Mayo used the term “simplified impressions” to describe the concept of destination image. Walmsley and Jenkins defined destination image as a product of the mind that results from huge amounts of data about a place. Fridgen defined it as a mental representation of a place that is not physically before the traveler. In this paper, it follows the commonly accepted one that is, destination image consists of the information, beliefs, impressions, attitudes and emotional thoughts an individual has regarding a particular place.

A number of tourism and recreation researchers have studied the topic of a destination image in tourism, such as destination image change, destination formation and destination image assessment and measures. Tourist destination images are important because they influence both the decision-making behavior of potential tourists and the levels of satisfaction regarding the tourist experience.

Previous studies suggest that a tourist’s decision to travel to a particular destination is linked to the destination image held by that tourist and once at the destination, and satisfaction largely depends upon a comparison of expectations based on previously held images and the actual reality encountered at the destination. Researchers also suggest that individuals can have an image of a destination even if they have never visited it or even been exposed to more commercial forms of information. Thus, understanding the differing images that visitors and non-visitors have of a destination is invaluable.

34.2.3 The Process of Image Formation and Hypothesis

The formation of image has been described as the development of a mental construct based upon a few impressions chosen from a flood of information.

As Selby and Morgan put it [13]:

Before consumption, imagery can add value and influence decision making. After consumption, imagery can have a reconstructive role via memories and experience.

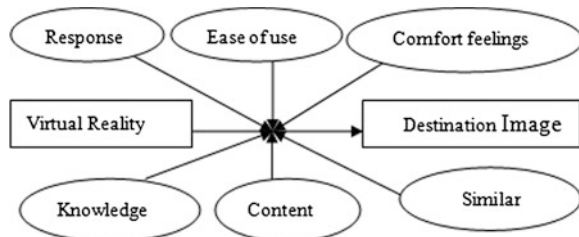
Gunn puts various travel information into a stage-theory which consists of 3 stages: organic, promoted and modified image and it implies that the images held by potential visitors, non-visitors and returned visitors will differ. There is evidence showing that images held by returned visitors tend to be more realistic [14]. Previous researches indicate that Web-based virtual tour can modify tourist’s destination image. For this concern, destination image can be expected to be improved through virtual tour Fig. 34.1.

Physical immersion, from another perspective, refers to the response triggered by the user, which means interactivity. Steuer suggests that response speed contributes to interactivity. Ease of use, referred to the navigational characteristics of the web site, is the final factor that contributes to interactivity. Whether or not, virtual tour is still a travel experience, which always calls for comfort feelings. As discussed before, virtual tour has a positive impact on the destination image on the promoting process [15]. So I develop the hypotheses as follows:

- H1: During the virtual tour, response speed positively impact on destination image.
- H2: During the virtual tour, “Ease of use” positively impact on destination image.
- H3: During the virtual tour, comfort feelings positively impact on destination image.

Psychological presence is another important point in the process of image formation. What you have perceived is really what you care. As mentioned before, virtual tour is also an information-seeking behavior. Challenge comes from the information that is the content of virtual destination. Marchionini believes that each information seeker possesses particular experiences, abilities, and preferences [16]. Therefore, an individual’s personal knowledge affects overall performance. The attractiveness of the virtual tour spot, another factor influencing the perceived destination image, reflects the representation’s richness and quality. It was expected that among many other factors that contribute to the attractiveness of a virtual tour spot, people’s experience with similar ones in general might affect their impression of the attractiveness of the Web site. So I can image that:

Fig. 34.1 Research model



- H4: During the virtual tour, tourist's knowledge about internet and tourist spot positively impact on destination image.
- H5: During the virtual tour, the content, especial richness and authenticity positively impact on destination image.
- H6: During the virtual tour, the content, similar virtual tour website experience negatively impact on destination image.

34.3 Method

34.3.1 Experimental Design

In order to study the effect of VR technology applied with tourism sector on the destination image of the virtual tourists, the following conditions should be declared:

I select the online expo as my research objective virtual tour for its great significance for China and relatively perfect VR application.

Two groups of participants, non-Expo experience and ever-Expo experience, are recruited to verify the discrepancy of destination image before and after experience.

34.3.2 Measures

34.3.2.1 Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) is the most widely used personality assessment instrument for measuring psychological preferences in how people perceive the world and make decision among both research and application settings [17]. Four pairs of preferences or dichotomies are shown as follows:

Extraversion (E)—(I) Introversion
Sensing (S)—(N) Intuition
Thinking (T)—(F) Feeling
Judgment (J)—(P) Perception

In order to simplify the research, I just abstract two kind of personality from the MBTI test results-X and Y.

34.3.2.2 Revised ITC–Sense of Presence Inventory

The revised ITC-SOPI is a pre-test subjective presence measure composed of 20 items, divided in two parts. Part A (5 items) refers to a respondent's personal information, such as sex, grade, and so on. Part B (15 items) refers to a respondent's impressions/feelings before a virtual tour experience. A 1–5-point Likert scale (from Strongly Disagree to Strongly Agree) is used for responding to the items in Part B. Factor analysis were applied to determine the essential variables. Internal reliability coefficients (alpha) were computed for each of the four factors.

34.3.2.3 Destination Image of Virtual Tour Questionnaire

Destination Image of Virtual Tour Questionnaire (DIVTQ) is a post-test subjective presence and reality judgment measure. A short version of this self-built scale, with 29 items, was used.

34.3.3 Virtual Environments

As explained previously, I select the online expo (2010 Shanghai World Expo) as my research objective virtual tour, with the URL, "<http://www.expo.cn/#&c=home>". There are five parts, including site tour, expo carnical, community and future city, for visitors to sightseeing freely by the help of a plug-in. What it is a surprise that Haibao, the mascot of Expo 2010 Shanghai, will be visitors' personal guider. According to the project sponsor's initial plan, online expo is a highly computer simulation to "bring" the virtual tourists into exhibition. Any senses of sight and hearing are available in the virtual environment.

34.3.4 Procedure

Sixty participants are recruited for the study from the Zhejiang University, with a range from freshmen to Ph.D students. Stratified sampling method are adopt into this study. As a result, 20 students of each level (bachelor, master and Ph.D) will be enrolled in, 10 students with Expo experience and the rest non-Expo experience. They are given a description of the study and guidelines as well. After completing the MBTI questionnaire and revised ITC-SOPI to ascertain participants' characteristics. They will be assigned to two groups according to their reality expo experience and practice in the training virtual environment. After the online-expo tour, participants should complete the destination image of virtual tour questionnaire. All participants were debriefed following the experiment.

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