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Which Platform Provides Better Virtual Tourism Experiences? Comparing VR and Multimedia Videos Using Eye Tracking Technology and Skin Conductance Sensors

Introduction

VR and multimedia videos provide relaxing content and bring happiness. However, the debate on which platform proves superior for virtual tourism remains unsettled. Potential challenges associated with VR encompass feelings of exhaustion, tedium, and social isolation (Wei et al., 2023). On the other hand, multimedia videos (MV) have the limitation of lacking interactivity. The objective of this study is to conduct a comparative assessment of the efficacy of VR and MV. A comprehensive approach was adopted including eye trackers, skin conductance sensors, surveys, and interviews.

Literature Review

Interactivity, authenticity, and presence are critical for virtual tourism. Interactivity and presence impact people's virtual experiences and engagement; and authenticity affects tourists' perceptions and behavior (Leung et al., 2022; Thompson et al., 2018). The more the user was devoted to the virtual experience, the more they got out of the experience, including mindfulness and psychological well-being (Adachi et al., 2022). People like to use virtual tourism to check out destinations and hotels because they can preview hotel rooms as well as facilities, and make an informed decision (Yoon et al., 2021).

Methodology

University students were recruited as participants in this experimental design research. They had a certain degree of homogeneity, which helped to control extraneous variables and reduce variability within the sample. Sixty-four participants were recruited and randomly assigned to one of the eight conditions, and each condition will have 8 participants: Video (VR or MV) x Familiarity (SLO or Japan) x Sequence (SLO or Japan first). Each participant first watched a tourism video while wearing an eye

tracker and E4 wristband and completed a survey regarding the evaluation of that tourism video, and then watched the other video following the same procedure. After watching two videos, the participants had an interview with the researcher.

Results

SLO VR video was rated with the highest scores regarding interactivity, authenticity, presence, flow, emotional value, wellbeing, and intention to recommend based on a 7-point scale. Japan MV received higher scores than Japan VR in terms of knowledge and intention to visit the destination, indicating that VR is not always better than MV. VR was more interactive, fun, and enjoyable compared to MV, but VR did not necessarily lead to higher educational value. Logos and phrases in VR were more eye-catching than those in MV (Figure 1 and Figure 2). Tourism VR could include texts to make the content more engaging and offer a greater area of focus.
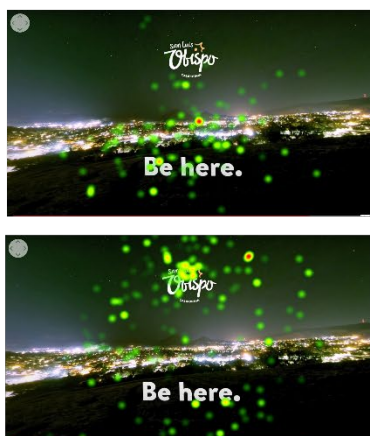

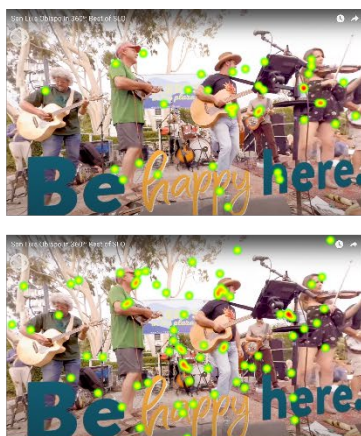**Figure 1.** Heat Map of SLO Video – Logo (MV vs. VR)

Figure 2. Heat Map of SLO Video – Event (MV vs. VR)

Figure 3. Heat Map of Japan Video (MV vs. VR)

Compared to MV, VR could be better format for delivering text content. Participants mainly looked at the central area when watching MV, while attention was more scattered in the VR condition (Figure 3). The fast-paced VR Japan video caused participants to feel overwhelmed; the slower paced VR SLO video made participants feel more relaxed and increased their well-being. Participants explained that the

SLO video seemed more genuine than the Japan video since the scenes felt more real and less staged. The text phrases (e.g., Be Happy Here, Be Inspired Here) in the SLO VR video were favored by participants. The interactive VR allows people to explore a familiar destination in an interesting way (i.e., SLO video, Figure 4). VR could be more effective than MV in promoting local tourism offerings, such as local park tours, events, and recreation programs. The elements that aroused people's emotional changes included city view, band performing, football entrance, skateboarding, and sushi in the videos.
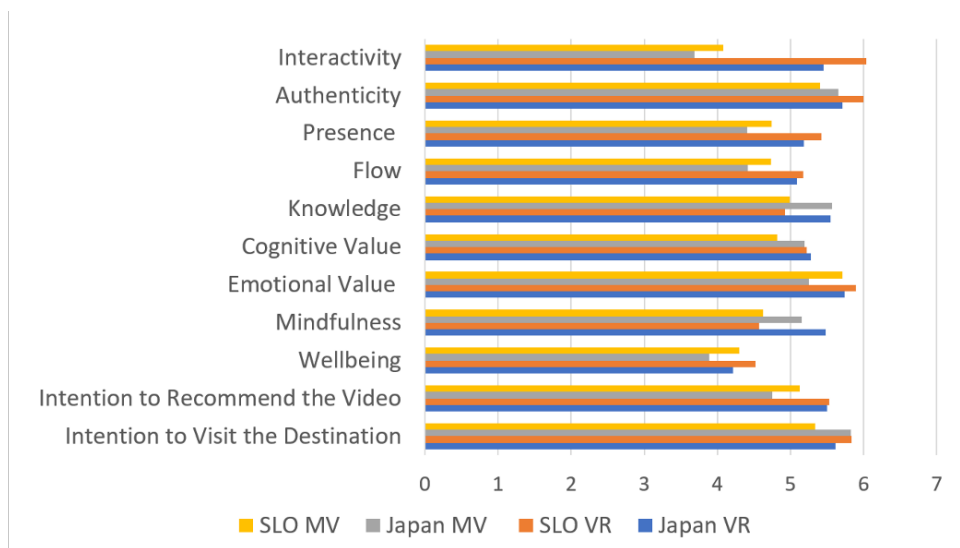

Figure 4. Mean values of the statements

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