Enhancing the Museum Experience on the Metaverse: The Blend of Technological Embodiment and Social Presence

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Abstract. The metaverse is currently highlighted as one of the technologies with the greatest potential, particularly in the tourism industry. Despite this fact, most of the research on this topic has been of a conceptual nature. This research aims to contribute to this nascent research field by analyzing how the use of the metaverse for viewing a museum can influence the different dimensions of the customer experience. For this purpose, the degree of technological embodiment of the device, as well as the presence (or not) of other users in the digital environment, will be taken into account. Two focus groups were conducted to explore this matter. The results bring to light the importance of the affective and cognitive states that customers feel when they are in the museum through the metaverse. In addition, participants indicate that they prefer to experience the metaverse museum with other people, noting that this closeness to other users may be greater when embodied technologies are applied. This research contributes empirically to this field of research by trying to delineate how the museum experience should be constructed to offer value through the metaverse.

Keywords: Metaverse · Museum · Social Presence

1 Introduction

Recent years have seen a surge in the emergence of the metaverse, which is considered one of the technologies with greater prospects for the future [1]. The metaverse aims to be a more advanced form of virtual experience, facilitated by an amalgam of several cutting-edge innovations such as virtual reality (VR), augmented reality, artificial intelligence, or blockchain, among others [2, 3]. Its potential is highlighted in some reports noting that this platform can generate up to $5 trillion in value by 2030 [4].

Despite the potential of the metaverse, current literature is mainly of theoretical basis (e.g., [5, 6]), asking for empirical contributions on the use of the metaverse for tourism purposes. Considering the nascent nature of this research realm, this article conducts a qualitative study to explore how the use of a metaverse museum can influence the different dimensions of the customer experience [7, 8]. Based on its results, a subsequent study is proposed which aims to quantitatively analyze how social presence and the type of device used can affect the overall metaverse museum experience. This research aims to

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2 Theoretical Background

2.1 Theoretical Foundations: Social Presence Theory and the Theory of Technological Mediation

The social presence theory [9] and the theory of technological mediation [10] are the main theories on which this article is based. The social presence theory [9] explains how digital technologies influence the feeling of being with another in human-technology interactions. Social presence is defined as the "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships" [9; p. 65]. Social presence is an inherent feature of any medium and the varying capabilities of the medium to transmit it are key to how individuals relate to others in online communications [12]. Thus, the ability of the technology to convey information related to facial expressions, eye gaze, body posture, attire, and nonverbal cues collectively contribute to the extent of social presence within a communication medium [12].

The theory of technological mediation [10] seeks to elucidate the processes through which humans interact with technology. This theory investigates how technology acts as an intermediary between individuals and the world around them. Among the different types of human-technology interactions, technological embodiment is considered as a situation in which the technology mediates the user experience and the device becomes an extension of the human senses [11]. According to the proposal of [11], technological devices can be divided into external and internal devices. External devices are not attached to the human body (e.g., from stationary devices like desktop PCs to portable external devices such as smartphones) and internal devices reach a higher level of fit into the human body (from wearables such as VR headsets to implanted devices) [11]. A great sense of technological embodiment of the device promotes the immersion, the sensory stimulation and the realism of the interaction in a digital experience [11].

The customer experience is composed of several dimensions: affective, cognitive, sensory, conative, social, and personal [7, 8]. The metaverse can generate superior experiences by driving all these components of experience. Particularly, based on the social presence theory [9, 12], we propose that as individuals feel connected and accompanied by others within the virtual museum environment, their overall perceptions about the experience will be improved. By being able to feel closer to others, this higher level of social presence can enrich their experience by allowing them to explore, discuss and interact in a natural way. This effect is proposed to be reinforced when embodied devices (e.g., VR headsets) are applied to the interaction in the metaverse, compared to low embodies ones (e.g., desktop PCs). Drawing from the theory of technological mediation [10], the heightened immersion and the provision of realistic and organic interactions through high embodied devices are expected to closely mimic real-world interactions [11]. This emulation will reinforce the effect of social presence on the dimensions of the customer experience in the metaverse. Thus, two proposals are presented:

P1: High levels of social presence will positively affect the perceptions about the different dimensions of the customer experience in the museum through the metaverse.

P2: High levels of technological embodiment of the employed device will strengthen the effect of social presence on the different dimensions of the customer experience in the museum through the metaverse.

3 Methodology

Considering the nascent nature of the research in this area, two focus groups (with 5 participants per session) were conducted to explore the users' experience in a museum held in the metaverse. The participants were recruited from a Spanish university (6 men and 4 women; aged between 21 and 28 years old). The participants reported having different levels of knowledge on the use of new technologies and low levels of use of the metaverse. The sessions lasted between 60 and 90 min and were audio-video recorded. Three experts in marketing and new technologies conducted the analysis.

The script of the focus groups follows two stages to explore the consumer experience in the metaverse, particularly in a museum. First, participants were asked to indicate the general characteristics they believe the metaverse has. In the second stage, participants were required to connect to the museum experience in the metaverse using a low embodiment device (computer [11]) and together with the other participants (high social presence). The metaverse platform that was employed was Spatial.io. This platform, with a structure similar to a museum, displayed different artworks shown in paintings. Once all the participants were on the platform, they had some time (10–15 min) to view all the artwork and interact/discuss with the other participants. After their experience, they were instructed to return to the video call, where they reflected and discussed various questions about the dimensions of the experience.

4 Results and Discussion

The results of the first stage of the focus groups show that participants consider the metaverse to be a virtual/digital/online space. Participants also acknowledge the multitude of opportunities offered by the metaverse considering it as creative/imaginative/fictitious. Finally, participants emphasize the social dimension of the metaverse (e.g., social/interactive), where people can connect, interact, and collaborate within a digital realm. Once they had the experience in the museum on the metaverse, the participants reported their perceptions of the dimensions of the customer experience. A summary of the results is displayed in Table 1.

Overall, participants note the potential of the metaverse for displaying museums, particularly regarding the affective and cognitive responses. As a result, they consider it as a platform that encourages the actual visitation of these tourism products and they may consider repeating this metaverse experience in the future. This aligns with the pattern observed in other technologies, such as VR [13]. The findings also highlight that users prefer having the metaverse experience with others, reinforcing the social nature of this platform. However, despite participants having the experience together, they feel that they were not close to the others. One reason pointed out is the lack of embodiment of the device they used (computer), believing that the use of highly embodied devices (e.g., VR headset) would increase their perception of being together with others.

Table 1. Summary of the results of the qualitative study.

Dimension	Explanation
Affective	Curiosity (e.g., P10) was the predominant emotion, mainly due to the novelty of the platform, along with laughter or joy (e.g., P3) (possibility of dancing, etc.). Negative emotions also were noted, as frustration and disorientation (e.g., P1) (lack of instructions or technical problems of the platform)
Cognitive	As it is immersive and realistic, participants consider it to be useful to transmit knowledge in an effective way (e.g., historical representations). Technical improvements are needed. *"For knowledge sharing, it is useful if you get people to mimic the environment visually and aurally, it can be close to reality"* P4
Personal	Some participants selected an avatar similar to themselves (feeling represented by their avatars), but many others chose their avatars without reflecting on it. *"The avatar I chose the first time, it is true that I looked for it to represent me, the only brunette girl there was, because it is important to feel represented"* P7
Social	Participants indicated that they prefer to use the metaverse with more users because it brings more immersiveness and fun. However, in general, they did not feel close to the rest of the users. A possible cause identified is the low embodiment of desktop computers. *"I would like to be able to interact with people, I think it's cool to share it, but there is a lack of tools to be able to feel the closeness of the users"* P8
Sensory	Some participants noted the vivid colors of the experience. Most, however, did not feel very sensorially stimulated and believe that the metaverse in the future will only be able to stimulate sight and sound, at least when using low embodied devices such as computers. "*Reaching the senses is very difficult through a PC screen, there is a long way to go"* P10
Conative	Participants reported that it is an interesting tool for having pre-experiences of museums and other tourism products. None would use it as an alternative to travel. *"I would find it useful, for example, as an experience prior to going, as an advertising tool, it would achieve that 'WOW' effect. I see it as a complementary element to travel"* P6

Based on these results and the importance given to the social experience in the metaverse, a subsequent experimental study will be conducted. In this experiment, participants will be required to experience the same museum on the metaverse, and it will be manipulated the level of social presence (having the experience alone vs. with another person) and the level of technological embodiment of the device employed to access the metaverse (desktop computers vs. VR headset). By conducting this study, it is expected to confirm the importance of the social dimension within the metaverse, particularly in museum experiences. This significance is expected to be amplified when embodied technologies are utilized to enhance the sense of proximity and connection among users.

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