The structure of memorable experiences in virtual travel:

A qualitative analysis integrating presence and technology acceptance model

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Abstract

This study aims to clarify the factors that drive people to engage in virtual travel and the structure of memorable experiences within virtual travel, by examining findings from prior research on the TAM model and Presence. Qualitative analysis of interview data extracted key dimensions of virtual experiences. Results revealed two underlying aspects: "External Factors" and "Internal Factors," which align with the push and pull factor framework in tourism psychology. Furthermore, the process of the experience comprised three stages: "perception of virtual travel," "quality of the experience," and "psychological change." This suggests that the experience during virtual travel constitutes a psychological process progressing from perceptual understanding to emotional transformation. The novelty and significance of this study lie in its reinterpretation, through qualitative analysis, of the structure of the virtual travel experience as a psychological process.

Keywords

virtual travel, presence, technology acceptance model, qualitative analysis, memorable experience

1. Introduction

Since the 1990s, interest in virtual travel utilizing the Internet and Virtual Reality (VR)/Augmented Reality (AR) technologies has grown, primarily in Western countries, leading to numerous related studies. Virtual travel is gaining attention as a potential solution to mitigate overtourism and its associated environmental issues, while also holding the potential to meet the needs of both tourism and nature conservation. Furthermore, it is expected to provide new travel opportunities for individuals facing physical or social constraints that make long-distance or extended travel difficult.

This study aims to clarify the structure of memorable experiences in virtual travel and elucidate the cognitive, sensory, and emotional processes through which participants undergo psychological changes. Specifically, it aims to clarify this by qualitatively analyzing interview data and extracting dimensions related to virtual travel experiences. Furthermore, this study aims to theoretically position the structure of virtual travel experiences by integrating the findings with existing Presence Theory and the Technology Acceptance Model (TAM).

For this study, "virtual travel" is defined as "an experience utilizing the Internet or VR/AR technology to enjoy a travel experience while being in a location different from the actual travel destination." Specific examples include online tours, travel experiences using 360-degree photographs on Google Street View, videos on platforms such as YouTube, travel events using VR goggles, and travel experiences within metaverse spaces.

2. Literature review

2.1 Definition and measurement of presence

One key element defining the virtual travel experience is "presence." Presence refers to the subjective feeling of "being there" that arises when participants, physically located elsewhere, have their senses stimulated, attention captured, and active engagement encouraged by the environment [Witmer and Singer, 1998; Witmer et al., 2005]. Presence consists of four elements: "Involvement," "Sensory Fidelity," "Adaptation/Immersion," and "Interface quality," with immersion considered the core component of presence.

Furthermore, Vorderer et al. [2004] report that recent presence research has shifted its focus from integrating concepts and theories to "measurement," leading them to develop the Spatial Presence Questionnaire (MEC-SPQ) grounded in a robust theoretical framework. This questionnaire is based on the two-stage MEC model and includes (1) Process Factors (Attention Allocation, Spatial Situation Model, Spatial Presence: Self Location, Spatial Presence: Possible Actions), (2) State and Actions Factors (Cognitive Involvement and Suspension of Disbelief), and (3) Enduring Personality Factors (Domain-specific Interest, Visual Spatial Imagery, and Absorption).

In marketing, presence has been shown to positively correlate with favorable attitudes toward advertisements and brands, brand recall, product knowledge, and even purchase intention. In tourism, presence has been reported to enhance navigation outcomes on destination websites, contribute to forming positive destination images, and increase purchase intention through effective information gathering [Choi et al., 2015; Fan et al., 2022; Lo and Cheng, 2020; Lombard and Snyder-Duch, 2001; Hyun and O'Keefe, 2012; Tussyadiah et al., 2018].

2.2 TAM

The TAM is a representative theoretical model proposed

by Davis [1989] to explain the adoption behavior of information technology. This model aims to clarify how individuals perceive new technologies, and the factors through which they form usage intentions. The TAM is primarily composed of two cognitive elements: "perceived usefulness" and "perceived ease of use." The former indicates the degree to which an individual perceives that using technology is effective for accomplishing their goals and tasks. The latter indicates the degree to which an individual perceives that the technology is easy to use and requires little effort.

According to TAM, individuals first perceive the ease of use of a new technology, which subsequently enhances their perception of its usefulness. These two perceptual evaluations form an attitude toward using technology. This attitude in turn leads to actual use, mediated by behavioral intention.

In virtual tourism research, the TAM is also widely used as a theoretical foundation for understanding technology acceptance mechanisms. For instance, studies on cultural tourist attractions indicate that perceived usefulness and perceived ease of use mediate factors such as AR usage intention, attitude toward the destination, and even visit intention [Chung et al., 2015; Chung et al., 2018]. Furthermore, perceived usefulness and perceived ease of use are associated with intrinsic motivation and positive emotions toward virtual tourism sites [Huang et al., 2016]. These findings indicate that the TAM is an effective theoretical framework for explaining the intention to use and experiential value of new tourism technologies such as VR and AR.

2.3 Market trends for virtual travel in Japan

This study examines diverse forms of "virtual travel", including online tours, travel experiences using 360-degree photographs on Google Street View, videos on platforms such as YouTube, travel events using VR goggles, and travel experiences within metaverse spaces. Reviewing these market trends in Japan, the tourism industry suffered a severe blow in 2020 due to the impact of the entry/exit and domestic movement/outing restrictions caused by the spread of COVID-19 pandemic. In this context, "online tours" offered by travel agencies have emerged as an alternative to real travel or as preparatory content before traveling. According to Mitsubishi UFJ Research and Consulting [2022], the online tour market size in 2020 was 9.59 billion yen, with an annual growth rate of approximately 30 %.

Even after the COVID-19 pandemic subsided and demand for real travel recovered, virtual travel continues to play a vital role as a "new sales and promotion channel" leveraging digital distribution platforms, and as a means to collect data such as viewing logs and participant attributes. Furthermore, Kubota [2024] reported that over half of companies offering online tours in 2023 intended to continue providing virtual travel experiences even after real travel resumed. This intention to continue is particularly strong among small businesses. The reasons cited include the perceived usefulness of virtual tours for pre-travel research, their unique appeal that sets them apart from real travel, and the potential to serve individuals for whom real travel is difficult, such as the elderly and people with disabilities. Although not limited to the tourism sector, Japan's metaverse market continues to grow [Yano Research Institute, 2024], suggesting potential for continued growth in markets related to virtual travel.

3. Methods

3.1 Participants and research period

Semi-structured interviews were conducted with eight Japanese males and females, aged 20 years or older, who had experienced virtual travel.[1] Each interview lasted approximately 30 min. The interviews were conducted from August 30 to September 2, 2025.

3.2 Interview content

Participants were asked about the type of virtual travel they participated in (device and media), destination, duration, and cost (Table 1). They were then asked what motivated their participation ("Please tell me about the most memorable virtual travel you experienced and the reason you participated in it. ") and what their most memorable experience was during virtual travel ("Please tell me about the most memorable experience or scene during the travel. Also, please tell me why it was memorable.").

3.3 Analysis method

Interviews were conducted with participants' prior consent and recorded. Recordings were transcribed verbatim and or-

Table 1: Outline of virtual travel

	Device	Media	Destination	Duration	Fee	Participant(s)
A	Smartphone	Metaverse	Yokohama	15 minutes	Free	Family
B	Smartphone	Metaverse	Okinawa	1 hour	Free	Alone
C	VR goggle	VR video	Cappadocia (Türkiye)	5 minutes	Free	Alone
D	PC	Mmetaverse	Okinawa	1 hour	Free	Family
E	PC	GoogleStreetView	Mie	1 hour	Free	Friends
F	PC	Video	Northern Europe	10 minutes	Free	Alone
G	PC	Video	Hawaii	1 hour	Paid	Alone
H	PC	Video	Taiwan	30 minutes	Free	Friends

ganized into text. Each utterance unit consisting of several sentences was formatted to correspond to the speaker, question category, and utterance content. Subsequently, coding and abstraction procedures were performed.

The analysis adopted part of the Steps for Coding and Theorization (SCAT) procedure, a qualitative data analysis method. In qualitative research, generating codes from text data obtained through interviews is often challenging; SCAT was developed to overcome this issue [Otani, 2011]. The SCAT analysis features a four-stage coding process and incorporates an analytical procedure for constructing theory by describing narratives (chronological developments) based on derived themes and conceptual constructs. Specifically, it consists of placing segmented data onto a matrix and assigning codes to each segment in the following four steps: (1) "Key phrases within the data," (2) "Phrases outside the data that rephrase them," (3) "Phrases that explain them," and (4) "Themes and construct concepts extracted from them." The purpose of this study is to analyze the raw voices of virtual travel participants to clarify how existing research on virtual travel, primarily presence and TAM, manifests in this context. To this end, steps 1-3 were applied to extract codes from the collected text data.

4. Results
4.1 Reasons for participating in virtual travel
Analysis of statements from eight participants yielded 55 utterances, each consisting of several sentences, including the interviewer's questions. Through coding and categorization, the data were abstracted and organized into three dimensions: categories, sub-categories, and items to identify and derive factors (Table 2).

As a result, two major categories were derived: "External Factors" and "Internal Factors." For "External Factors," the following sub-categories were identified: "Benefit of Virtual Travel (e.g., Enjoyable with just a smartphone.)," "Destination Attractiveness (e.g., I'm interested in Hawaii.)," "Situational Factor (e.g., Staying home (due to COVID-19 pandemic.)," "External Influences (e.g., Received a travel agency brochure.)," "Barriers to Real Travel (e.g., Can't find the time or afford it.)," and "Secondary Behavior (e.g., An extension of (online) gaming.)." For "Internal Factors," sub-categories included "Novelty Seeking (e.g., I wanted try the metaverse because I didn't understand what the metaverse was.)", "Re-experience Orientation (e.g., It was a place I first visited on my honeymoon.), " "Exploratory Information Search (e.g., I wanted to visit that place on my next trip)," and "Desire to Travel (e.g., I wanted to get a taste of the (travel) mood at least.)."

4.2 Memorable experiences
Analysis of statements from the eight survey participants, including interviewer questions, yielded 52 utterances consisting of several sentences each. Through coding and categoriza-

Table 2: Reasons for participating in virtual travel

Category	Subcategory	Item
External Factor	Benefit of Virtual Travel	Financial Advantage
		Ease of Participation
	Destination Attractiveness	Aspirational Place
	Communication Tool	Tool for Conversation with Friends
	Situational Factor	Unexpected Free Time
		Travel Restrictions during the COVID-19 Pandemic
		Availability of Participation Incentives
	External Influences	Media Influence
		Travel Agency Promotion
	Barriers to Real Travel	Aging of Oneself or Family
		Physical Burden of Travel
		Changes in Life Stage
		Practical Difficulties of Traveling
	Secondary Behavior	Travel as an Incidental Activity (e.g., while Shopping)
Internal Factor	Novelty Seeking	Interest in New Technology
		Testing or Exploring Unfamiliar Technology
	Re-experiencing Orientation	Relation with Life Events
		Emotionally Significant Place
		Unresolved Emotions from Past Trips
	Exploratory Information Search	Researching Potential Travel Destinations
		Gathering Travel-related Information
	Desire to Travel	Desire to Experience the Feeling of Travel

Table 3: Memorable experiences

Category	Subcategory	Item
Enhancement of Perception of Virtual Travel	Perceived Convenience of Virtual Travel	Burden of Actual Travel
		Ease of Participation
	Information Quality	Clear Explanation
		Detailed Explanation
Evaluation of Quality of Experience	Indirect Experience	Simulated Travel Experience
		Sense of Achievement
		Feeling of Understanding
	Visual Stimulation	Change in Visual Perspective
		Aesthetic Value
		VR Sickness
	Sense of the Extraordinary	Extraordinary Scenery
		Differences from Japan
	Sense of Presence	Sense of Immersion
		Feeling of Being There
		Everyday Life at the Destination
		Realism
		Uniqueness
		High Degree of Realistic Reproduction
Psychological Change	Clarification of Image	Discovery
	Recall of Memory	Evocation of Memories
		Talking about Past Trips
		Sharing Memories with Friends
		Nostalgia
		Sense of Time Passage
	Arousal of Travel Desire	Desire to Travel
		Imagination of Future Travel Experience
		Places Never Visited

tion, abstractions were made and factors were organized and derived by classifying them into three dimensions: categories, sub-categories, and items (Table 3).

As a result, the following major categories were derived: "Enhancement of Perception of Virtual Travel," "Evaluation of Quality of Experience," and "Psychological Change." Within "Enhancement of Perception of Virtual Travel," the sub-categories "Perceived Convenience of Virtual Travel (e.g., I liked how easy it was to experience it from home.)" and "Information Quality (e.g., The explanations were thorough.)" were identified. "Evaluation of Quality of Experience" consists of "Indirect Experience (e.g., It made me feel like I was actually there.)," "Visual Stimulation (e.g., The (ocean) colors were beautiful and stunning.)," "Sense of the Extraordinary (e.g, It was an amazingly otherworldly (scene).)," and "Sense of Presence (e.g., I got completely absorbed in (the experience).)." "Psychological Change" consists of "Clarification of Image (e.g., I've never seen the real thing, but this is what it must feel like inside.)," "Recall or Memory (e.g., It felt nostalgic.)," and "Arousal of Travel Desire (e.g., (It made me want to go there (in real life).)."

5. Discussion

5.1 Factors promoting participation in virtual travel

Analysis identified two dimensions of factors motivating participation in virtual travel: "External Factors" and "Internal Factors." These can be explained by the push and pull factors outlined in the psychology of motivation framework. Push factors refer to psychological tension or heightened desires within the individual, serving as an internal energy source that motivates action. Conversely, pull factors refer to rewarding or attractive stimuli in the external environment that direct an individual's behavior.

Factors classified as "External Factors" correspond with pull factors. These relate to the characteristics of virtual travel and environmental conditions, primarily showing how experience motivation is shaped by external elements such as convenience, environmental stimulation, and social influence.

Factors classified as "Internal Factors" correspond with push factors. That is, energies originating within the individual, such as curiosity about unknown stimuli, an internal desire to reconstruct past experiences, or a yearning for psychological fulfilment gained through participating in travel, are thought to

promote participation in virtual travel. This corresponds with "intrinsic motivation" in psychology [Deci, 1975], suggesting that individuals' internal desires are the primary driving force behind virtual travel.

5.2 Changes resulting from virtual travel experiences

Through discourse analysis of survey participants, this study identified three major categories of change experienced by virtual travel participants: "Evaluation of Quality of Experience," "Enhancement of Perception of Virtual Travel," and "Psychological Change." This structure suggests that virtual travel experience involves a series of psychological processes, ranging from perceptual understanding to emotional transformation, rather than merely temporary visual stimulation.

First, "Evaluation of Quality of Experience" indicates the subjective experiential value gained from actual virtual travel. "Indirect Experience" and "Sense of the Extraordinary" are elements that enable the simulated experience of travel while maintaining psychological distance from the real world, contributing to the formation of immersion. Furthermore, "Visual Stimulation" and "Sense of Presence" are elements that evoke a "sense of being there" through the high visual fidelity and sensory realism unique to virtual travel. These align with the components of presence described in Presence Theory [Witmer and Singer, 1998; Witmer et al., 2005].

Next, "Enhancement of Perception of Virtual Travel" corresponds with the cognitive evaluation stage in which participants assess the means of virtual travel. "Enhancement of Perception of Virtual Travel" relates to perceived ease of use; that is, the perception that virtual travel offers effortless exposure to different cultures and tourist destinations compared to physical travel. This aligns with the initial stages of technology acceptance outlined in the TAM [Davis, 1989]. Meanwhile, "Information Quality" reflects aspects of perceived usefulness that underpin experiential value, such as the precision of virtual experience content and the clarity of explanations. These cognitive elements form a foundation that determines immersion level and emotional response in subsequent experiential stages.

Finally, "Psychological Change" indicates internal shifts in meaning and emotional impact arising from virtual travel. "Clarification of Image" and "Recall of Memory" represent phenomena in which destination imagery becomes more concrete through visual information supplementation, while simultaneously evoking past travel memories. Furthermore, "Arousal of Travel Desire" indicates that virtual travel experiences can heighten motivation for real-world travel, supporting the potential for virtual travel to function as an "introductory experience to real travel."

6. Conclusion

The significance of this study lies in elucidating the structure of virtual travel not merely as a technical or visual experience, but as a psychological process. Previous virtual tourism research has primarily relied on the TAM or Presence Theory, often quantitatively examining individual elements such as usefulness, immersion, or satisfaction. In contrast, the novelty of this study lies in its qualitative analysis of participants' narratives obtained through interviews, clarifying three distinct processes: cognitive understanding of the experience, the experience itself, and psychological changes which individuals undergo.

However, several challenges remain, necessitating future research. The first regards sample size. The analysis was based on a relatively small group of eight participants, imposing constraints on data diversity and representativeness. Notably, this study did not specify the devices used for virtual travel, meaning that the psychological processes observed may vary depending on the characteristics of the devices, content, and immersive environment. Future research should explore how variations in experiential conditions (such as intensity of presence, operability, and viewing environment) affect the structure of the experience.

The second limitation regards how virtual travel participants perceive their experiences vary depending on individual characteristics. Hanai et al. [2023] and Hanai et al. [2024] demonstrated that in real travel experiences, individuals with lower mindfulness tend to rate their travel experiences more highly, suggesting that the experience and enjoyment of virtual travel may also depend on users' psychological traits and cognitive tendencies. Mindfulness is defined as maintaining awareness of the events and experiences arising in the present moment [Brown and Ryan, 2003]. Verifying how individual differences such as mindfulness traits and sensitivity influence the sense of presence and satisfaction in virtual travel is suggested as a future research direction.

Finally, perceptions and valuations of virtual travel may be influenced by cultural backgrounds and social norms. As this study primarily involved Japanese participants, future research
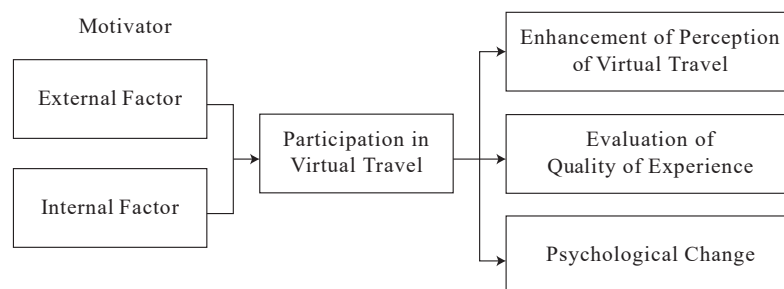

Figure 1: Psychological processes in virtual travel

should verify both the universality and cultural specificity of virtual travel through cross-cultural comparisons and analysis of social influence factors.

Notes

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