METAVERSE TRAVELER: AN EXPEDITION BEYOND REALITY

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Abstract

Purpose – The aim of this research is to discuss the influence of metaverse platforms on travel experiences and behavioral intention: how much there are inter-relationships between immersion, the technical aspect, and user experience in virtual travel environments. This study proposes and empirically tests a theoretical framework incorporating perceived enjoyment and user curiosity as mediating variables.
Methodology/Design/Approach – The sample size used in the present study was 431 undergraduate students from an Indian university. The data collection was done through a controlled experimental design using the drivenlisten platform.
Findings – The current study has evidence for significant positive relationships between the technical aspect, user experience, feeling of immersion, and metaverse travel experiences. Evidence of direct influences on travel intentions and indirect influences via perceived enjoyment and user curiosity can be seen in this study. The structural model has shown robust fit indices. The most important predictor of the metaverse travel experience was found to be technical aspects, pointing toward critical technological infrastructure.
Originality of the research – This study extends the presence theory by updating knowledge on the influence of virtual environments on travel behavior. The research makes a contribution to the theoretical understanding of how immersive virtual environment technologies mold travel-related decision-making processes.
Keywords Metaverse, Travel, Controlled Experiment, Immersion, Curiosity

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INTRODUCTION

The rapid emergence of metaverse platforms is revolutionizing the travel and tourism industry by providing users with immersive and interactive virtual experiences. These platforms leverage cutting-edge technologies such as virtual reality (VR), augmented reality (AR), and blockchain to enable users to explore and engage with digital environments. These environments can either replicate real-world destinations or create entirely new, imaginative spaces (Prados-Castillo et al., 2024; Suganya & Kalaivani, 2024; Rosário & Dias, 2024). By overcoming the physical and economic barriers associated with traditional travel, metaverse platforms can enhance accessibility, reaching a broader audience and making travel experiences more inclusive (Prados-Castillo et al., 2024; Chen, 2024).

However, despite their potential, metaverse platforms face significant challenges. These include technical limitations, high financial costs, and issues around the accessibility of users from diverse backgrounds (Demir et al., 2023). Additionally, the engagement of users is hindered by uncertainties related to success indicators and the authenticity of cultural exchanges in virtual environments (Luo et al., 2023). One of the key theoretical frameworks, presence theory, which has traditionally been used to evaluate user immersion in virtual spaces, has not yet been adequately applied to metaverse travel experiences (Tsai, 2022). Existing research has also fallen short in exploring the effects of technical elements, user experience, and immersion on both virtual and real-world travel intentions (Yersüren & Özel, 2023; Anaya-Sánchez et al., 2024; Shin & Jeong, 2022; Latifi et al., 2024). In the context of tourism and virtual experiences, the vast majority of the existing works have concentrated on traditional VR applications, and they have focused on destination image enhancement or simulated tour experiences (Anaya-Sánchez et al., 2024; Xu et al., 2023; Shin & Jeong, 2022). Anaya-Sánchez et al. (2024) looked at the moderating effects of immersion and destination familiarity on the effect of VR on visit intentions. Shin and Jeong (2022) investigated how virtual nostalgia affects users' intention to visit. These works largely treat VR as a supplementary marketing tool rather than a behavioral catalyst in itself. Many works fail to account for that fact that the emerging metaverse platforms, where social presence, persistent digital environments and gamified interaction are all combined, present a different conceptual and functional model compared with traditional VR (Buhalis et al., 2023; Behera et al., 2023). Moreover, previous literature offers inconsistent theoretical integration for how emotions and cognitions (e.g., enjoyment, curiosity) mediate the virtual-real travel behavior relationship. This gap is filled by the present research, which investigates the impact of these distinct traits on the digital native travel behavior, and extends presence theory by including perceived enjoyment and user curiosity as the mediators.

This study investigates the interrelationships among various metaverse travel factors, including user experience, technical aspects, and immersion, and examines how these elements influence real-world travel intentions. Specifically, the research seeks to address the following questions:

1. How do user experience, technical aspects, and immersion in metaverse platforms influence travel experiences?
2. In what ways do metaverse travel experiences impact real-world travel decision-making?
3. How do perceived enjoyment and user curiosity mediate the relationship between metaverse travel experiences and travel intentions?
4. What psychological factors link real-world travel decisions to virtual travel experiences in the metaverse?

By addressing these questions, the following research objectives have been established to explore the psychological processes linking virtual and real-world travel behaviours.

1. To explore the impact of user experience, technical aspects, and immersion on travel experiences within metaverse platforms.
2. To examine how metaverse travel experiences influence real-world travel decision-making
3. To identify the mediating roles of perceived enjoyment and user curiosity in the relationship between metaverse travel experiences and travel intentions
4. To investigate the psychological mechanisms that link real-world travel decisions to virtual travel experiences in the metaverse

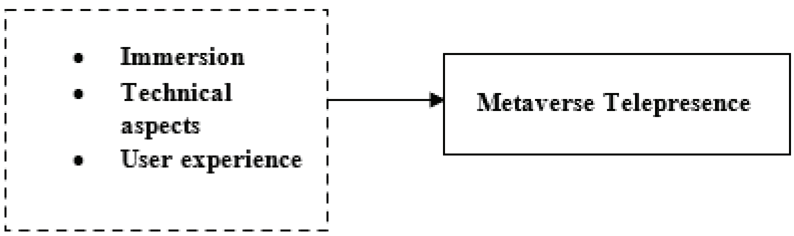
This study builds upon presence theory and adds emotional (perceived enjoyment) and cognitive (user curiosity) mediators to account for how metaverse travel experiences impact on real world travel intentions. As for practice, the present study can help tourism and technology practitioners understand how to create immersive metaverse platforms to increase users' engagement and stimulate real tourism travel intentions, especially among digital natives. This research contributes by filling identified research gaps and presents an empirically confirmed framework that can serve as the foundation for further examination of the impact of virtual travel on tourism in the future.

1. LITERATURE REVIEW

1.1. Theoretical Framework

Digital spaces which duplicate actual spaces as well as enable real-time connections generate within users a powerful feeling of physical presence in their virtual spaces. Steuer (1992) identified telepresence as the ability to measure how much users shift their focus between actual environments and virtual spaces. A strong feeling of "presence" emerges from virtual environments that duplicate actual locations together with systems that let users have live virtual meetings between one another. According to Steuer (1992) telepresence describes the extent to which users shift their focus away from actual surroundings toward virtual environments. Building on Steuer's foundation, researchers like Sheridan (1992) and Zeltzer (1992) proposed models emphasizing technical aspects of virtual environments, such as sensory information extent, control mechanisms, and system responsiveness. These models began to differentiate between immersion (the objective level of sensory fidelity) and presence (the subjective psychological experience). As research progressed, the understanding of presence expanded to include multiple dimensions. Lombard and Ditton (1997) identified dimensions like spatial presence, social presence, and engagement. Heeter (1992) introduced concepts of personal, social, and environmental presence, highlighting the multifaceted nature of presence experiences in virtual environments. Tourism research depends on this concept because scientists analyze how augmented and virtual reality technologies boost visitor experiences (Adachi et al., 2020; Flavián et al., 2019; Iisp et al., 2018). A user experiences more of the real-world in virtual environments when they report stronger presence with the environment. System capabilities together with visual display quality determine the strength of the telepresence experience according to Bystrom et al. (1999). The telepresence sensation should intensify as the overall sensory experience becomes deeper and richer. Metaverse platforms receive their present users' feelings about these virtual spaces through the combination of technical system capabilities and user experience quality (Han et al., 2020).

Figure 1: **Theoretical adoption**



The present analysis both refines and extends presence theory in two important respects. First, it expands the traditional sensory-oriented approach by adding perceived enjoyment as a positive affective result of immersive virtual travel. Enjoyment is affect-related user engagement in the virtual environments that leads to satisfaction, presence, and usage intention. Second, the research integrates user curiosity as a cognitive-emotional mediator, linking virtual exploration and real-life travel intention. Curiosity encapsulates a user's intrinsic motivation for exploring new experiences and knowledge—a fundamental psychological motivator that presence theory has thus far largely neglected. Through the combination of these two affective mediators, this research proposes a holistic model to situate immersion not only in terms of perceived presence but also in terms of users' subsequent decision making and behavioral intention.

1.2. Immersion and Metaverse Travel

The ability of technology to create virtual reality illusions depends on how well it blocks user sensory perceptions from their physical surroundings is called immersion (Nilsson et al., 2016). Mental depth characterizes this state of engagement because it produces a psychological separation from physical surroundings (Agrawal et al., 2020). Spatial presence is improved through this concept allowing users to experience virtual environments as if they were physically present thus increasing emotional ties to places and travel plans for real destinations (Yoon & Nam, 2024; Zhang & Wang, 2023). Virtual tourists who experience immersive metaverse activities improve their cognitive abilities through enhanced satisfaction levels that lead to improved loyalty (Jafar & Ahmad, 2023). Strong emotional responses through virtual immersion lead to enjoyment while providing escapism which determines tourist satisfaction regarding visits and recommendations of virtual places (Shamim et al., 2024). Our first hypothesis investigates the effect of immersion on consumers.

H1: Immersion increases the Travelling experience in the Metaverse platform

1.3. Technical Aspects and Metaverse Travel

The functional definition of metaverse platforms depends heavily on technical aspects. Virtual reality and augmented reality technologies provide users with highly responsive interactive systems (Ampountolas et al., 2023). The system performance speed alongside its minimal delay lengths directly influence the Quality of Experience (QoE) when users travel through the metaverse. User engagement depends heavily on the combination of 5G technology and Multi-access Edge Computing (MEC) because these solutions reduce response times and fight motion sickness (Singh et al., 2022; Fonseca et al., 2019). Users can use metaverse platforms to search and book actual destinations through their interface according to Behera et al. (2023). Through customized travel choices together with social functions tourists experience improved engagement during their journeys (Chen, 2024; Prabakaran & Patrick, 2024). Our research depends on limited studies on technical aspects about metaverse travel which inspired our second hypothesis.

H2: Technical aspects positively influence the Travelling experience in the Metaverse platform

1.4. User Experience and Metaverse Travel

User experience (UX) in the metaverse involves how users interact with immersive virtual environments that merge physical and digital realities. This experience is enhanced by avatars, which provide a sense of presence. Effective UX requires intuitive interfaces and accessible designs for easy navigation (Festa et al., 2022; Lee & Gu, 2022; D. Lee et al., 2023). Key factors influencing UX include headset comfort, simulation sickness, prior knowledge, and ease of use, which affect the relationship between user involvement and metaverse usage (Shamim et al., 2024). Psychological principles like the IMPACT model (interesting, meaningful, personalized, effective, collective, transportive) enhance engagement by aligning with users' goals and emotional needs (Kurta & Freeman, 2022). Based on this literature, we propose our third hypothesis to examine the influence of user experience on metaverse travel.

H3: User experience positively influences the Travelling experience in the Metaverse platform

1.5. Metaverse Travel and Travel intention

Travel intention refers to an individual's willingness to engage in travel activities, which is crucial for understanding traveller behaviour and preferences in the tourism industry (Sudhagar & Sweety, 2021; Hennessey et al., 2010; Lam & Hsu, 2005). Virtual tours developed thoughtfully improve both confidence about traveling and decrease anxiety levels for senior travelers which in turn strengthens their travel plans (Hao et al., 2024). Travel decision-making heavily depends on the immersive characteristics of virtual reality (VR) because high-quality simulated destination environments drive increased interest in travel (Xu et al., 2023; Kieanwatana & Vongvit, 2024). VR proves to be highly effective in destination marketing because it generates strong mental images and emotional reactions, according to Jaya and Jaw (2023). The fourth hypothesis gains support from the way organized behaviours function in metaverse travel.

H4: Travelling experience in the Metaverse platform increases the travel intentions

1.6. Metaverse Travel and Perceived Enjoyment

Travel experiences created within the metaverse boost users to full satisfaction levels. Hotel and attraction virtual tours during the booking process enhance visitor involvement according to Behera et al. (2023). The combination of metaverse immersion with enjoyment experiences directly impacts tourists both in their satisfaction levels and their loyalty toward service providers (Jafar & Ahmad, 2023). In metaverse shopping, perceived enjoyment drives consumer participation, highlighting the importance of enjoyable experiences for user engagement (Zhong & Hamouda, 2024). While research has focused on metaverse platforms in tourism and hospitality, the overall travel experience remains underexplored. Based on these findings, we propose our study's fifth hypothesis:

H5: Travelling experience in the Metaverse platform increases the perceived enjoyment

Perceived enjoyment mediates the relationship between value co-creation and consumer satisfaction in virtual tourism. It enhances positive outcomes, influencing both virtual and actual travel intentions (Escandon-Barbosa et al., 2024). Enjoyable elements of the metaverse, such as sensory and hedonic values, impact users' intentions to use virtual travel platforms and visit physical destinations (H. Shin & Kang, 2024). Storytelling enhances users' presence and immersion, improving destination image and increasing real-world visit intentions (Zhang & Wang, 2023). Metaverse experiences serve as effective marketing tools for travel engagement (Behera et al., 2023). Strong evidence suggests that enjoyment of metaverse platforms influences travel plans; thus, we propose our sixth hypothesis:

H6: Perceived enjoyment mediates the relationship between metaverse travelling and travel intentions.

1.7. Metaverse Travel and User Curiosity

The metaverse's exciting nature and the Fear of Missing Out (FOMO) drive users to explore both virtual experiences and real-world locations (Natarajan et al., 2024; Buhalis et al., 2023; Yoon & Nam, 2024). Generation Z members develop heightened curiosity because they choose to connect with metaverse adventure trips. User participation in the metaverse depends on its capability to deliver excitement and novelty and enjoyment (Kılıçarslan et al., 2024). We have formulated hypothesis number seven to explore the relationship between metaverse-based travel experiences and curiosity despite existing research on metaverse interaction and curiosity.

H7: Travelling experience in the Metaverse platform increases the User's Curiosity

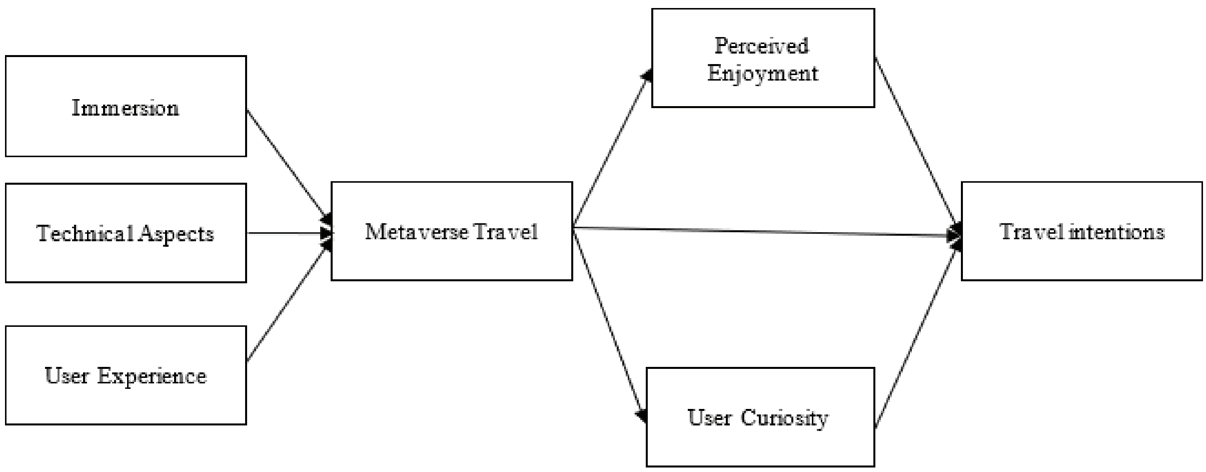
The highly immersive characteristics of Metaverse platforms deliver sensory experiences which enable users to discover unrealistic virtual environments so they create unattainable experiences in reality. Stimulated curiosity emerges through unique and novel experiences which the metaverse provides such as virtual historical events together with space expeditions and natural phenomena (Garg et al., 2024; Buhalis et al., 2023). The metaverse generates booking experiences along with virtual tours which enable users to explore different destinations before making decisions for travel. The improved travel inspiration leads users to become more curious about destinations thus driving their desire to explore them in detail (Behera et al., 2023). The literature confirms that user curiosity drives travel intentions while metaverse interaction generates more curiosity which boosts user travel intentions in reality. The above discussion provides following hypothesis eight from our analysis.

H8: Users' Curiosity from metaverse increases the travel intentions

The metaverse offers unique opportunities to stimulate user curiosity through immersive and interactive virtual travel experiences. These experiences, by presenting novel and engaging digital environments, can act as a catalyst for curiosity, which in turn mediates the relationship between the metaverse travel experience and real-world travel intentions (Zhang et al., 2025). The process involves users engaging with virtual destinations, developing a heightened sense of curiosity about these places, and subsequently translating that curiosity into a desire to visit the actual physical locations (Petousi et al., 2023). The discussed studies give the following hypothesis nine from our analysis:

H9: User Curiosity mediates the relationship between metaverse travel experience and intentions.

Figure 2: **Conceptual framework**



2. RESEARCH METHODOLOGY

2.1. Sampling Strategy

The study employed judgmental sampling to select university students who were actively engaged in recreational travel and leisure activities, ensuring that participants were relevant to the research on metaverse travel experiences. The primary criteria for participant selection included students aged 18-26 years, as this age range represents digital natives who are likely to be familiar with metaverse technologies and virtual platforms. Additionally, only students with prior experience using virtual reality (VR) or similar immersive technologies within the past six months were included. This ensured that participants are familiar with the technology, which is crucial for accurately assessing the impact of metaverse platforms on their travel behaviours. This criterion was set to prevent biases that might arise from participants who are unfamiliar or uncomfortable with VR technology, as their lack of experience could significantly affect their engagement with the virtual travel simulation. Participants were also required to engage in recreational travel or leisure activities at least once a month, ensuring they had experience with travel behaviours that could provide valuable insights into how virtual travel influences real-world travel decisions. The study specifically targeted students who enjoyed pleasurable, leisure-driven travel experiences, as opposed to those focused on standard, destination-bound activities. Students who did not meet these criteria were excluded from the study. This judgmental sampling approach allowed the research to focus on individuals most likely to benefit from and engage with metaverse travel experiences, ensuring the relevance and quality of the data collected.

Table 1: **Sample Distribution and Demographics (N=431)**

Characteristic	Category	n	Percentage (%)
Gender			
	Male	245	56.8
	Female	186	43.2
Age			
	18-20	167	38.7
	21-23	198	45.9
	24-26	66	15.4
Academic Program			
	MBA	156	36.2
	BBA	143	33.2
	B.Com	89	20.6
	Other	43	10.0
Family Monthly Income (INR)			
	Below 30,000	67	15.5
	30,000-60,000	143	33.2
	60,001-1,00,000	156	36.2
	Above 1,00,000	65	15.1
Residential Background			
	Tier 1 City	167	38.7
	Tier 2 City	156	36.2
	Tier 3 City	78	18.1
	Rural Area	30	7.0
Monthly Travel Frequency			
	1-2 times	187	43.4
	3-4 times	156	36.2
	5+ times	88	20.4
Primary Mode of Travel			
	Two-wheeler	198	45.9
	Car	124	28.8
	Public transport	76	17.6
	Other	33	7.7

2.2. Data Collection

The data collection process began with an invitation email circulated through the university intranet, inviting students who were genuinely interested in participating and contributing to the study. The email provided detailed information about the research objectives and the eligibility criteria, encouraging students who met the requirements—such as having prior experience with virtual reality (VR) platforms and engaging in recreational travel—to volunteer. Once students expressed interest, they were invited to participate in a controlled virtual travel experience experiment. Data collection for this study was conducted over a period of 72 days, during which participants were carefully guided through a series of steps to ensure consistent and reliable results. Once they consented to participate, each participant engaged in a controlled experiment where they allowed to interact with a platform. After completing the experiment, participants were asked to fill out a structured online survey, which was administered via google forms. Responses were automatically recorded to maintain accuracy and anonymity. To ensure the reliability of the data, each participant completed the survey within 20 minutes, and the data collection process was monitored daily, with six participants processed each day. A total of 431 students participated, contributing valuable data that would later be analysed to assess the impact of metaverse travel experiences on real-world travel intentions.

2.3. Experimental Procedure

Judgemental sampling was employed to select participants from the management campus, ensuring that those chosen had relevant characteristics for the study, such as prior experience with virtual reality (VR) platforms. Each participant underwent a 40-minute standardized session, designed to minimize biases and maintain consistency across all participants. To begin, participants were provided with a brief introduction about the study, ensuring they understood the procedures and objectives. Water was offered to participants before the session to ensure comfort and readiness for the experience. Participants then donned VR equipment and were introduced to drivenlisten.com, where they immersed themselves in a virtual travel simulation designed to enhance their experience of virtual travel. The DrivenListen.com platform is a virtual travel simulation tool that allows users to explore a variety of immersive virtual destinations. The participants experienced a range of destinations, including well-known real-world tourist locations, such as famous landmarks and cities. These destinations were designed with interactive features to create a more engaging experience, such as virtual transportation modes (e.g., virtual flights, trains, or cars) and immersive sightseeing experiences. For 20 minutes, participants explored a variety of virtual destinations and modes of transportation, designed to replicate real-world travel scenarios. During this time, randomly selected music played in the background to enhance the immersion and provide a sensory experience that simulated real-life travel conditions. Following the 20-minute virtual exploration, participants completed a 20-minute survey to capture their experiences and insights. All participants experienced the same set of virtual destinations under standardized conditions to ensure consistency and comparability. This approach maintained the integrity of the study, with a focus on providing a uniform experience for reliable data collection, rather than testing separate metaverse travel scenarios. The survey was administered in a controlled environment to ensure consistent data collection across participants. The entire procedure, from the virtual travel experience to the survey completion, adhered to standardized protocols to ensure experimental consistency, minimize biases, and support the reliability of the data collected.

2.4. Measures

2.4.1. Metaverse Travel Experience

A five-item questionnaire served to measure Metaverse travel experiences by adopting scales from Han et al.'s (2020) Metaverse Telepresence research. Participants used a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) to report their agreement. The reliability measures of this scale reached 0.892 according to Cronbach's alpha.

2.4.2. Immersion

The metaverse immersion scale contained five items adapted from Fornerino et al. (2008) that required respondents to use a seven-point Likert scale ranging from 1 (strong disagreement) to 7 (strong agreement). The scale established strong internal reliability measured through Cronbach's alpha which returned a value of .887.

2.4.3. Technical Aspects

A modified technology-rich environment scale developed by Yang and Huang (2015) allowed researchers to evaluate technological aspects within metaverse travel environments. The scale featured a seven-point Likert scale structure which comprised five dimensions containing five items for a total of twenty-five items. Respondents used a seven-point scale (1 = almost never, 7 = almost always).

Table 2. **The technical aspect's dimensions and its description**

Dimension	Description
Showing	Assessed the ease of connection and presentation capabilities within the platform
Manageable	Evaluated users' ability to utilize platform facilities effectively
Accessible	Measured access to digital resources and internet connectivity
Tracking	Assessed intelligent control of display quality, electricity, and sound systems
Enhancement	Evaluated how effectively the platform's technology facilitated the travel experience

The measurement tool achieved strong internal consistency as proven by a Cronbach's alpha value of .945 and each dimension exhibited adequate reliability ranging from .884 to .891. Researchers changed original items to fit the characteristics of the metaverse travel platform yet maintained the fundamental measurement objectives.

2.4.4. User Experience

The User Experience Questionnaire was modified to measure six dimensions including attractiveness, efficiency, perspicuity, dependability, stimulation, and novelty as described in Hinderks et al. (2019). Each dimension got ratings on a seven-point Likert scale ranging from 1 (totally unimportant) to 7 (complete importance) by participants. The version exhibited outstanding reliability because Cronbach's alpha came out to .901 which ensured suitable evaluation of interface design along with usability and interactivity elements.

2.4.5. Perceived Enjoyment

A modified four-item scale from Yi and Hwang (2003) was used to assess perceived enjoyment in the metaverse travel context. Responses were collected on a seven-point Likert scale (1 = strong disagreement, 7 = strong agreement), demonstrating good reliability with a Cronbach's alpha of .898.

2.4.6. Travel Intentions

The researchers measured travel intentions using a set of four questions from Bae and Chang (2020). They used a seven-point Likert scale, with responses ranging from 1 to signify strong disagreement and 7 to express complete agreement. The instrument showed strong internal consistency because its Cronbach's alpha score reached .885.

2.4.7. User Curiosity

The study assessed user curiosity using Kashdan et al.'s 2020 scale, which includes six dimensions with 24 items (4 per dimension) rated on a seven-point Likert scale (1 = Does not describe me at all, 7 = Completely describes me).

Table3. **User Curiosity Dimensions and Descriptions**

Dimension	Description
Joyous Exploration	Assessed participants' desire to learn and discover new information
Deprivation Sensitivity	Measured the drive to solve problems and find answers
Stress Tolerance	Evaluated ability to handle uncertainty in new situations
Thrill Seeking	Assessed preference for adventure and excitement
Overt Social Curiosity	Measured direct interest in learning about others
Covert Social Curiosity	Evaluated indirect information-seeking about others

The scale showed strong internal consistency with a Cronbach's alpha of .942, and individual dimension reliabilities between .874 and .882, effectively capturing different aspects of curiosity in the metaverse travel context.

3. ANALYSIS

To test the proposed conceptual model and hypotheses regarding relationships between latent factors, Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were used in this study in a strict way. CFA tested the reliability and validity of the measurement model, and it verified that the observed variables truly reflect the unobservable constructs of immersion, user experience, and user curiosity, indicating strong construct validity in consideration of acceptable factor loadings, composite reliability, and convergent validity (Fornell & Larcker, 1981; Cheung et al., 2023). SEM was chosen to investigate the relationships, using both direct and indirect effects, among the constructs, including the mediation of perceived enjoyment and curiosity on travel intentions, because it is well suited to testing complex models with latent variables and allows for simultaneous assessment of measurement and structural paths, which exceeds the limitations of traditional path analysis (Lowry & Gaskin, 2014). Thus, CFA and SEM collectively offer a comprehensive toolset for evaluating measurement quality and testing theoretically based hypothesized relationships in the study of metaverse travel.

Table 4. **Descriptive Statistics for Metaverse Travel Experience Variables and Their Subgroups (N = 431)**

Variable Groups and Subgroups	Items	M	SD	Median	Min	Max	Scale Range
Metaverse Travel	5	4.00	1.46	4.00	1.00	7.00	1-7
Immersion	5	3.99	1.46	4.00	1.00	7.00	1-7
Technical Aspects	25	4.00	1.47	4.00	1.00	7.00	1-7
Showing	5	4.00	1.47	4.00	1.00	7.00	1-7
Manageable	5	4.00	1.47	4.00	1.00	7.00	1-7
Accessing	5	3.99	1.48	4.00	1.00	7.00	1-7
Tracking	5	3.99	1.48	4.00	1.00	7.00	1-7
Enhancements	5	4.00	1.47	4.00	1.00	7.00	1-7
User Experience	6	4.00	1.47	4.00	1.00	7.00	1-7
Perceived Enjoyment	6	4.00	1.47	4.00	1.00	7.00	1-7
User Curiosity	24	4.00	1.47	4.00	1.00	7.00	1-7
Joyous Exploration	4	4.00	1.46	4.00	1.00	7.00	1-7
Deprivation Sensitivity	4	4.00	1.49	4.00	1.00	7.00	1-7
Stress Tolerance	4	4.00	1.46	4.00	1.00	7.00	1-7
Thrill Seeking	4	3.99	1.48	4.00	1.00	7.00	1-7
Overt Social Curiosity	4	4.00	1.48	4.00	1.00	7.00	1-7
Covert Social Curiosity	4	4.00	1.47	4.00	1.00	7.00	1-7
Travel Intention	4	3.99	1.48	4.00	1.00	7.00	1-7

The descriptive statistics reveal consistent patterns across all measurement variables. The Metaverse Travel construct has a mean of 4.00 (SD = 1.46), indicating moderate engagement. The Technical Aspects, with five sub-dimensions, also show similar means around 4.00 (SD ≈ 1.47). User Curiosity, consisting of six sub-dimensions, reflects the same trend (M = 4.00, SD = 1.47). All variables have a uniform minimum (1.00) and maximum (7.00), indicating balanced responses across the scale.

Table 5. **Reliability and Validity Analysis of Metaverse Travel Experience Measures**

Constructs and Subgroups	α	CR	AVE	√AVE	1	2	3	4	5	6	7
1. Metaverse Travel	.892	.921	.701	.837	-						
2. Immersion	.887	.913	.678	.823	.624	-					
3. Technical Aspects	.945	.952	.662	.814	.598	.612	-				
Showing	.891	.919	.694	.833	.587	.601	.812				
Manageable	.884	.915	.683	.827	.592	.589	.798				
Accessing	.889	.917	.689	.830	.578	.595	.805				
Tracking	.886	.914	.681	.825	.583	.602	.801				
Enhancements	.890	.918	.692	.832	.589	.608	.809				
4. User Experience	.901	.924	.669	.818	.587	.634	.645	-			
5. Perceived Enjoyment	.898	.922	.664	.815	.601	.622	.612	.678	-		
6. User Curiosity	.942	.949	.657	.811	.567	.589	.601	.623	.645	-	
Joyous Exploration	.876	.908	.712	.844	.556	.578	.592	.612	.634	.823	

Constructs and Subgroups	α	CR	AVE	√AVE	1	2	3	4	5	6	7
Deprivation Sensitivity	.881	.911	.719	.848	.545	.567	.587	.601	.623	.815	
Stress Tolerance	.879	.910	.716	.846	.534	.556	.578	.595	.612	.819	
Thrill Seeking	.874	.906	.708	.841	.523	.545	.567	.589	.601	.812	
Overt Social	.878	.909	.714	.845	.512	.534	.556	.578	.595	.817	
Covert Social	.882	.912	.721	.849	.501	.523	.545	.567	.589	.821	
7. Travel Intention	.885	.913	.724	.851	.612	.589	.578	.601	.634	.578	-

The psychometric properties show strong measurement quality, with Cronbach's alpha ranging from .874 to .945—Technical Aspects having the highest at .945. Composite Reliability values are between .906 and .952, above the .70 threshold. Average Variance Extracted (AVE) ranges from .657 to .724, exceeding the .50 criterion. The square root of AVE values (√AVE) surpasses inter-construct correlations, confirming discriminant validity. Inter-construct correlations range from moderate to strong (.501 to .812), indicating distinct yet related constructs.

Table 6. **Model Fit Indices for Metaverse Travel Experience Model**

Fit Indices	Values	Threshold	Interpretation
χ2/df	2.341	< 3.00	Good fit
RMSEA	0.048	< 0.08	Good fit
SRMR	0.042	< 0.08	Good fit
GFI	0.923	> 0.90	Good fit
AGFI	0.911	> 0.90	Good fit
NFI	0.934	> 0.90	Good fit
NNFI (TLI)	0.947	> 0.90	Good fit
CFI	0.952	> 0.90	Good fit
IFI	0.953	> 0.90	Good fit
RFI	0.928	> 0.90	Good fit
PNFI	0.801	> 0.50	Good fit
PGFI	0.784	> 0.50	Good fit

The structural model demonstrates excellent fit across multiple indices. The normalized chi-square (χ2/df) of 2.341 indicates a good model fit, falling well below the conservative threshold of 3.00. The RMSEA value of 0.048 and SRMR of 0.042 suggest a good fit, both below the .08 threshold. Incremental fit indices (NFI, NNFI, CFI, IFI) all exceed .90, ranging from .934 to .953, indicating strong comparative fit. Parsimony indices (PNFI = .801, PGFI = .784) demonstrate good model efficiency while maintaining explanatory power.

Figure 3. **Direct and Indirect effects of the model**

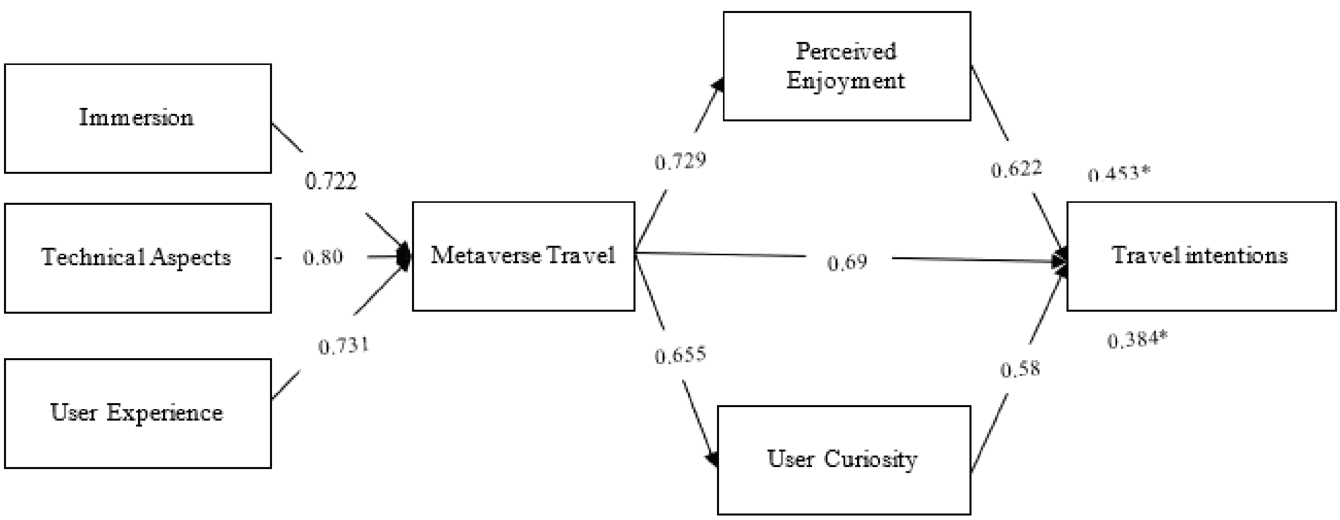


Table 7. **Direct and Indirect Effects in the Metaverse Travel Model**

Path	β	t-value	p-value	Relationship
Immersion → Metaverse Travel	0.722	15.634	< .001	Direct
Technical Aspects → Metaverse Travel	0.806	18.245	< .001	Direct
User Experience → Metaverse Travel	0.731	16.123	< .001	Direct
Metaverse Travel → Perceived Enjoyment	0.729	15.987	< .001	Direct
Metaverse Travel → User Curiosity	0.655	13.456	< .001	Direct
Metaverse Travel → Travel Intentions	0.697	14.789	< .001	Direct
Perceived Enjoyment → Travel Intentions	0.622	12.345	< .001	Direct
User Curiosity → Travel Intentions	0.587	11.234	< .001	Direct
MT → PE → Travel Intentions	0.453	9.234	< .001	**Partial mediation**
MT → UC → Travel Intentions	0.384	8.123	< .001	

The path analysis reveals important insights into the metaverse travel experience. All hypothesized relationships were supported, with technical aspects being the strongest predictor of metaverse travel ($\beta = 0.806$, $p < .001$), followed by user experience ($\beta = 0.731$, $p < .001$) and immersion ($\beta = 0.722$, $p < .001$). These results highlight the significance of technology and user-centric design in virtual travel. Additionally, perceived enjoyment ($\beta = 0.453$, $p < .001$) and user curiosity ($\beta = 0.384$, $p < .001$) were found to mediate the relationship, indicating that emotional and cognitive engagement are key to linking metaverse travel with travel intentions. Overall, all nine hypotheses (H1-H9) received strong empirical support.

Table 8. **Common Method Bias Analysis Results (Harman's Single-Factor Test)**

Component	Initial Eigenvalue	% of Variance	Cumulative %
Single Factor	12.456	28.342	28.342
Remaining Factors	31.544	71.658	100.000

Harman's single-factor test shows the primary factor accounts for 28.342% of total variance, with remaining factors explaining 71.658%. This indicates minimal common method bias, as no single factor dominates.

Table 9. **Common Latent Factor Analysis**

Construct	Original λ	CLF λ	Δλ	Significance
Metaverse Travel	0.845	0.832	0.013	n.s.
Immersion	0.823	0.811	0.012	n.s.
Technical Aspects	0.814	0.802	0.012	n.s.
User Experience	0.818	0.805	0.013	n.s.
Perceived Enjoyment	0.815	0.801	0.014	n.s.
User Curiosity	0.811	0.798	0.013	n.s.
Travel Intentions	0.851	0.838	0.013	n.s.

The CLF analysis shows minimal differences in factor loadings ($\Delta\lambda$: 0.012 to 0.014), with all differences being non-significant, indicating robust construct measurements that are largely unaffected by common method variance.

Table 10. **Marker Variable Analysis**

Relationship	Original r	Marker-Adjusted r	Δr	Significance
MT → PE	0.729	0.715	0.014	n.s.
MT → UC	0.655	0.642	0.013	n.s.
MT → TI	0.697	0.684	0.013	n.s.
PE → TI	0.622	0.610	0.012	n.s.
UC → TI	0.587	0.575	0.012	n.s.

The marker variable analysis shows minimal changes to correlation coefficients (Δr from 0.012 to 0.014) across key relationships, indicating no substantial method bias.

Table 11. **Method Bias Statistics**

Indicator	Value	Threshold	Assessment
Average Method Factor Loading	0.183	< 0.300	Acceptable
Method Bias Impact (ΔR^2)	0.024	< 0.050	Acceptable
Average Substantive Factor Loading	0.825	> 0.500	Good
Ratio of Substantive to Method Variance	20.34:1	> 10:1	Good
Maximum Method Factor Correlation	0.187	< 0.300	Acceptable

Method bias statistics indicate acceptable levels across all indicators. The average method factor loading is 0.183, below the 0.300 threshold, and the substantive to method variance ratio exceeds 20:1. The method bias impact ($\Delta R^2 = 0.024$) is below the 0.050 threshold, confirming minimal influence on the study's results..

4. DISCUSSION

Immersion in metaverse travel experiences allows users to transform their awareness into a virtual reality, creating significant travel experiences. This immersive quality helps suspend physical awareness, leading to stronger emotional connections to the virtual world (Chan et al., 2023). Similar brain pathways are activated in both virtual and real-world travel, making metaverse experiences a powerful stimulus for meaningful virtual trips (Ku et al., 2012). There are fundamental technical requirements in metaverse platforms that determine how well users experience virtual travel. The right implementation of features removes obstacles which enable users to maintain their focus during their journey (Van De Sand et al., 2019). Users gain control through responsive controls as high-quality graphics and sound together establish virtual authenticity (Aoyagi et al., 2021). When virtual platforms possess stable technical capabilities users gain trust which leads them to explore the platform. Modern technical advancements deliver realistic results by enabling seamless transitions and realistic physics simulations and natural user interactions according to Lindlbauer et al. (2016) thus allowing users to complete their virtual journey with optimal satisfaction. Utmost attention should be paid to the creation of user interfaces to maximize virtual travel quality in metaverse platforms. User interface effectiveness lowers cognitive strain which enables users to focus better according to Filman (2004). A simple navigation system boosts user engagement and exploration (Hinds, 2011). Positive encounters with the virtual environment led users to advance their typical practices and develop increased confidence (Kiknadze & Leary, 2021). The implementation of strategic design principles eliminates system obstacles hence users have productive interactions with content while maintaining an enjoyable virtual travel journey that attracts them for repeated visits. This aligns with Steuer's (1992) conceptualization of presence, which emphasizes sensory richness and immersive fidelity. Our results extend this theory by showing that both system-level (technical quality) and user-level (interface & design) factors contribute to a potent sense of "being there."

People who seek adventure through the metaverse develop intense mental pictures that spark their fascination for physical destinations. Virtual exploration enables users to develop emotional bonds which lowers their worries about physically going to new places. Virtual first interactions with destinations help users become more interested in real-life exploration of those places (Assiouras et al., 2024). The metaverse allows users to experience destinations through its platforms which builds their confidence in selecting travel destinations (Zheng et al., 2021). Virtual exploration creates innovative travel ideas and links people to destinations they have never known before thus expanding their mental reach. Clients experience additional enjoyment through the blending of virtual spaces with real-world travel that creates interactive settings by Metaverse technology. Users have the opportunity to explore locations at their preferred speed as Skard et al. (2021) reported in their research. The combination of active participation allows users to enjoy emotions in ways that traditional travel methods cannot achieve. User perception of enjoyment determines how virtual travel affects actual travel planning according to Shamim et al. (2024). People who experience positive virtual destinations will select these places for travel because their emotional connection to locations generates visitation motivation (Yoon & Nam, 2024). To make travel decisions people benefit from virtual travel content that enhances their memory and image retention of destinations.

Users explore their curiosity about Metaverse travel because it shows stunning views together with enigmatic elements which lead them to seek more information (Paul & Ragan, 2020). The platform displays locations through different perspectives which makes viewers ask themselves about potential realities outside the digital world (Hruby et al., 2020). The secure platform lets users explore freely which motivates them to think about converting virtual experiences into real-life possibilities (Dudakov, 2021). The desire for self-discovery leads individuals to make travel decisions independently without guidance from others since they want to connect virtual experiences with reality (A. Singh & Murayama, 2024). Human curiosity makes people want to experience sensory aspects that virtual representations fail to accurately depict. Users transition from passive virtual engagements to real-world travel planning because they seek answers to their open questions (Chang et al., 2023). The impulse validates the link between virtual activities that motivate individuals to take actual travel journeys. Traditional presence theory does not explicitly account for emotional outcomes. Our findings confirm its extension: immersive presence doesn't just feel real—it feels *good*, which then drives behavioural intention. By incorporating curiosity, we integrate a motivational dimension into presence theory, capturing the cognitive-emotional impetus to turn virtual exploration into real-world action.

4.1. Implications

This study reveals methods to use presence theory in travel-oriented virtual worlds which enlarges its potential applications. Conventional presence theory focused on complete virtual reality experiences yet the obtained results highlight specific elements which characterize travel-related presence. Our study demonstrates that metaverse travel experiences highly contribute to the user's psychological ability to feel a "being there" experience because of immersion (Steuer, 1992). According to this expanded version of presence theory users seek genuine encounters at new destinations which boosts their sense of being present in travel-based virtual encounters. However, this study extends this theory by incorporating the concepts of user experience and immersion, examining how these elements in metaverse platforms influence travel behaviour and decision-making. The study not only considers the cognitive aspects of presence but also integrates emotional responses such as enjoyment and curiosity, which are crucial for understanding user engagement in virtual travel experiences. By focusing on both emotional and functional aspects of the metaverse experience, this research challenges existing assumptions in digital tourism, which have often overlooked the role of user enjoyment and satisfaction in shaping travel decisions. The research investigates fundamental components which affect user engagement on metaverse travel platforms and proves that these elements surpass their basic role of technical support since they act as powerful predictive factors. A new direction for comprehensive virtual environment design needs to develop because the study indicates that technological quality must be combined with user experience and immersion. Travel behaviour theory received an advancement through this research when the investigators showed that virtual experiences directly impact travel intentions while enjoyment and curiosity work as mediators that connect these relationships through emotional and cognitive processes.

The developing technology of Metaverse travel builds interactive simulated worlds to boost the quality customers experience in their virtual adventures. To serve user needs properly the technology needs robust infrastructure together with performance metrics and scalable solutions (Chai et al., 2023; Zhou et al., 2023). Businesses need to maintain platform stability by using high-speed data processing methods and edge computing in addition to failover systems. Object rendering and texture loading functions should be the top priority elements in an optimal technical framework that prioritizes asset streaming systems (Zhou et al., 2023). Users need to experience a smooth interface with responsive navigation elements along with natural hand gestures that also include context-based support and standardized interaction patterns. The focus of designers should include making UI components improve presence while developing seamless transitions between environments. A key finding of this study is that user curiosity not only increases through metaverse travel but also mediates travel intention. This presents a major opportunity for destination marketing organizations to design gamified metaverse experiences that trigger exploration and behavioural action. Meta travel applications should incorporate curiosity elements such as scavenger hunts, mystery-based quest and time-based task to convert the virtual interest into physical visit (Flavián et al., 2023). Immersion has a strong impact on percieved enjoyment of virtual travel. Metaverse experiences should integrate multi-sensory features such as ambient sounds, dynamic lighting and interactive environments in order to increase user engagement. Adding cultural storytelling such as folklore or local rituals can raise the emotional connection and authenticity.

CONCLUSION

This research expands our knowledge regarding metaverse platform effects on travel behavior of university students particularly regarding their intentions and experiences. The successful delivery of virtual travel depends on immersion along with technical factors and user experience and technical aspects emerge as the primary predictor. This research exposes new pathways for understanding how virtual platforms affect travel decisions and proves the value of advanced technological systems in the process. A properly designed metaverse platform displays effective capabilities to motivate users toward actual travel choices which suggest that virtual and physical travel will merge in the future. More research in this rapidly changing field is necessary to fully understand the virtual environment-travel behaviour relationship as established in this initial study. These research findings will become the foundation for developing innovative virtual travel platforms which motivate people to select travel destinations in real life.

Although the present study provides valuable insights into metaverse travel experiences, the results should be interpreted with some caveats given the following limitations. While the experiment has been carefully controlled, replicating natural usage conditions may be limited where users interact with metaverse platforms in their preferred environments and time frames. Moreover, the study is cross-sectional and, hence, captures user responses at a single point in time. It may miss out on important temporal aspects of how virtual travel experiences evolve over time as users repeatedly engage with similar experiences and become more familiar with them.

Our findings highlight several opportunities for future research. Longitudinal studies could examine how user engagement with metaverse travel platforms evolves, particularly regarding the stability of relationships between technical aspects, user experience, and travel intentions. Additionally, incorporating control groups—comprising participants who are not exposed to the metaverse experience—would allow for a more robust comparison, helping to isolate the impact of virtual travel on real-world travel intentions. Pre- and post-engagement surveys could also be utilized to measure participants' baseline travel intentions and more clearly assess the changes directly attributable to the metaverse experience. Investigating the interaction between metaverse travel experiences and demographic factors, especially age and technology adoption, would be valuable.

Cultural context comparisons could show how cultural factors influence virtual travel engagement and real-world travel intentions. Additionally, it is important to explore the role of social interaction in metaverse travel experiences and its impact on group dynamics and travel decisions. Future research should also assess how extensive use of metaverse travel affects users' fulfillment and experiences of virtual fatigue. Developing precise measurement systems for monitoring presence and immersion in travel-focused virtual environments presents an exciting avenue for exploration. Lastly, testing metaverse platforms for specialized applications such as educational tourism or accessible travel could lead to more effective virtual solutions tailored to specific user needs.

Looking ahead, the future of metaverse tourism is poised for growth as technological advancements continue to enhance the virtual travel experience. With innovations in virtual reality (VR), augmented reality (AR), and artificial intelligence (AI), metaverse platforms will likely become more immersive, interactive, and tailored to individual preferences. The integration of real-time interactivity, personalized journeys, and seamless virtual-to-physical transitions will reshape the tourism landscape, offering more inclusive and accessible travel options. As technology evolves, the metaverse has the potential to not only revolutionize how we explore the world but also transform the tourism industry by providing new opportunities for engagement, sustainability, and personalization. Future research should explore these advancements and their impact on user behavior, as well as the broader implications for the travel and tourism sector.

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