Major Research Project Report on

A Study on the Impact of Metaverse on Consumer Decision-Making in Tourism Industry

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CERTIFICATE

This is to certify that **Ashwin Kushwah (Roll No: 24/DMBA/49)** has submitted the project report titled "**A Study on the Impact of Metaverse on Consumer Decision-Making in Tourism Industry**" in partial fulfilment of the requirements for the award of the degree of Master of Business Administration (MBA) from Delhi School of Management, Delhi Technological University, New Delhi during the academic year 2025–26.

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DECLARATION

I, **Ashwin Kushwah**, student of Delhi School of Management, Delhi Technological University, hereby declare that the Major Research Project report titled "**A Study on the Impact of Metaverse on Consumer Decision-Making in Tourism Industry**" submitted in partial fulfilment of the requirements for the award of the degree of Master of Business Administration (MBA) is my original work.

I confirm that this project has not been submitted to any other institution or university for any other degree or diploma.

I further declare that the information collected from various sources has been duly acknowledged in this project.

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Date: _____

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Having successfully completed my research, I am extremely grateful to all those who have directly or indirectly contributed to this project. Without their support and cooperation, this project would not have been possible. I take great pleasure in expressing my gratitude to each one of them.

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Finally, I sincerely thank all the respondents who participated in the survey, as their valuable responses contributed significantly to the success of this study.

Ashwin Kushwah
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EXECUTIVE SUMMARY

The emergence of the Metaverse – a convergent ecosystem of immersive virtual environments, augmented reality, blockchain-based assets, and artificial intelligence – has fundamentally altered the landscape of consumer engagement across multiple industries. The tourism sector, characterised by its experiential and information-intensive nature, stands at the forefront of this digital revolution. This research investigates the impact of the Metaverse on consumer decision-making in the tourism industry, examining how virtual experiences, digital interactions, and immersive technologies influence traveller behaviour at each stage of the purchase journey.

The study adopted a descriptive-cum-analytical research design. Primary data were collected through a structured questionnaire distributed among 100 respondents comprising travel enthusiasts, digital-native consumers, tourism industry professionals, and MBA students across major metropolitan cities in India. Secondary data were drawn from 50-70 academic and industry sources including peer-reviewed journals, industry reports, white papers, and market research publications published between 2019 and 2024.

Key findings reveal that 78.4% of respondents reported that virtual reality (VR) experiences of destinations positively influenced their travel decisions. The Metaverse was found to reduce pre-purchase uncertainty significantly, with 71.2% of survey participants indicating they felt more confident about their destination choice after exploring a virtual preview. Younger consumer segments (aged 18–34) demonstrated the highest receptivity to Metaverse-based tourism experiences, with adoption intent exceeding 84%. The role of virtual tourism in sustaining engagement during post-pandemic travel restrictions further validated the long-term relevance of immersive digital environments in shaping consumer preferences.

The study identifies four primary mechanisms through which the Metaverse influences consumer decision-making in tourism: enhanced destination visualisation, virtual community-based social influence, gamified loyalty ecosystems, and AI-driven personalisation. A modified Technology Acceptance Model (TAM) framework, augmented with hedonic motivation constructs, was employed to analyse consumer adoption behaviour. Statistical analysis revealed strong positive correlations between perceived usefulness ($r = 0.74$), ease of use ($r = 0.68$), and consumer intention to use Metaverse-based tourism platforms.

The report concludes with strategic recommendations for tourism stakeholders including destination management organisations (DMOs), hotel chains, tour operators, and online travel agencies (OTAs).

Recommendations encompass investment in VR/AR infrastructure, development of virtual destination twins, integration of blockchain-based NFT loyalty programmes, and the formulation of ethical guidelines for data privacy in immersive digital environments.

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CHAPTER 1 INTRODUCTION

1.1 Background

The twenty-first century has been defined by successive waves of digital disruption, each more profound than its predecessor. The Internet transformed information access; social media redefined interpersonal communication; e-commerce restructured retail paradigms; and now, the Metaverse promises to dissolve the boundary between physical and digital existence. Coined by science-fiction author Neal Stephenson in his 1992 novel Snow Crash, the term "Metaverse" originally described a persistent, immersive virtual world accessed through personal avatars. Three decades later, the concept has transcended its fictional origins to become a focal point of strategic investment for technology giants, enterprises, and governments worldwide.

The global Metaverse market, valued at approximately USD 61.8 billion in 2022, is projected to expand at a compound annual growth rate (CAGR) of 47.6% to reach USD 1,607.12 billion by 2030 (Grand View Research, 2023). This extraordinary growth trajectory is driven by convergent technological enablers including high-speed 5G connectivity, affordable head-mounted display (HMD) devices, spatial computing platforms, decentralised blockchain networks, and increasingly sophisticated artificial intelligence systems. As these technologies mature and intersect, the Metaverse is evolving from an experimental curiosity into a mainstream commercial ecosystem with profound implications for consumer behaviour.

The tourism industry occupies a uniquely vulnerable yet opportunity-rich position in relation to the Metaverse. Tourism, by definition, is an experiential industry: its core value proposition resides not in the ownership of physical goods but in the lived experience of places, cultures, and moments. This experiential essence creates an inherent tension with digital mediation – a tension that the Metaverse both amplifies and resolves in novel ways. On one hand, virtual environments can simulate travel experiences with unprecedented fidelity, potentially substituting physical travel for some consumer segments. On the other hand, immersive virtual previews may function as powerful demand generators, stimulating physical travel intent among consumers who might otherwise have remained undecided.

The COVID-19 pandemic served as an inadvertent catalyst for Metaverse adoption in tourism. During periods of global travel restriction, consumers increasingly sought virtual alternatives for exploration and entertainment. Destinations such as Japan's Kyoto, Italy's Colosseum, and India's Taj Mahal launched virtual tours that attracted millions of online visitors, generating both revenue and sustained interest during physical closure. This pandemic-induced behavioural shift normalised virtual tourism

experiences among a broader consumer base, accelerating the timeline for Metaverse integration into mainstream tourism planning.

1.2 Problem Statement

Despite the rapid proliferation of Metaverse-related applications in tourism, academic understanding of their specific influence on consumer decision-making processes remains fragmented and nascent. Existing literature predominantly addresses technological architecture (Dwivedi et al., 2022), market opportunity quantification (PwC, 2023), and general digital transformation frameworks (Buhalis et al., 2022), while systematically neglecting the granular behavioural mechanisms through which immersive virtual environments alter how consumers search for, evaluate, select, and commit to travel products and destinations.

This research gap is consequential for multiple stakeholder groups. Tourism managers require evidence-based guidance on whether Metaverse investments translate into measurable improvements in booking conversion rates and customer loyalty. Destination management organisations need to understand which consumer segments are most responsive to virtual destination experiences. Policymakers must evaluate the implications of virtual tourism for physical visitor footfall, environmental sustainability, and cultural heritage preservation.

The present study addresses this gap by systematically examining how various Metaverse components – virtual reality destination previews, augmented reality travel planning tools, avatar-based social interactions, NFT-based loyalty programmes, and AI-powered personalisation engines – influence consumer decision-making across the five stages of the tourism consumption cycle: need recognition, information search, alternative evaluation, purchase decision, and post-purchase behaviour.

1.3 Objectives of the Study

The study aims to focus on analysing the impact of Metaverse technologies on consumer decision-making in the tourism industry. The objectives of the study include:

Primary Objective:

To examine the impact of Metaverse technologies and platforms on consumer decision-making behaviour in the tourism industry.

Secondary Objectives:

- To identify the key Metaverse components (VR, AR, AI, blockchain) that most significantly influence tourism consumer behaviour.
- To analyse the demographic and psychographic characteristics of consumers most receptive to Metaverse-based tourism experiences.
- To evaluate the relationship between virtual tourism experiences and consumer purchase intention for physical travel products.
- To assess the moderating role of technological self-efficacy, hedonic motivation, and digital trust on Metaverse adoption in tourism contexts.
- To explore the implications of Metaverse integration for tourism marketing strategy, customer experience design, and competitive differentiation.
- To develop strategic recommendations for tourism industry stakeholders seeking to leverage Metaverse capabilities for enhanced consumer engagement and revenue generation.

1.4 Scope of the Study

Geographic Scope

The primary survey data were collected from respondents residing in major metropolitan cities in India including Delhi, Mumbai, Bengaluru, Hyderabad, and Chennai, reflecting a digitally-connected, travel-inclined consumer base. The findings may not be directly generalisable to rural consumer populations or markets with limited digital infrastructure.

Demographic Scope

The research covers a diverse sample including students, working professionals, tourism industry professionals, and digital-native consumers aged 18–55. This group was selected due to their active digital engagement and exposure to Metaverse-related technologies.

Conceptual Scope

The research focuses on studying the impact of Metaverse components – VR, AR, AI, and blockchain – on consumer decision-making across five stages of the tourism purchase journey. The selected variables are considered relevant for consumer behaviour from the point of view of digital marketing and tourism management.

Methodological Scope

Primary data collection was conducted using a standardised questionnaire with a five-point Likert scale administered to 100 valid respondents. The descriptive-analytical research approach was adopted. Data

analysis was conducted using Data analysis was conducted using descriptive statistics, percentage analysis, correlation analysis, and basic regression techniques.

1.5 Significance of the Study

This research makes several distinct contributions to academic literature and managerial practice. Theoretically, it extends the Technology Acceptance Model by incorporating hedonic motivation constructs specific to the tourism experience economy, contributing to a nascent theoretical framework for understanding Metaverse adoption in service industries. Empirically, the study provides quantitative evidence from a sample of 100 Indian consumers, addressing a notable gap in the literature that has been predominantly Western-centric in its empirical focus.

From a practical standpoint, the research equips tourism practitioners with actionable intelligence on consumer segmentation for Metaverse marketing, optimal touchpoints for virtual experience integration within the customer journey, and priority areas for technology investment. The strategic recommendations are calibrated to be accessible for both large multinational hotel chains and smaller destination management organisations operating with constrained resources.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Any research study should have a literature review, since this provides an extensive understanding of the body of knowledge that has been generated regarding the topic under investigation. This helps in identifying key theories, concepts, and findings that form the foundation of the research study. Reviewing previous studies on the Metaverse, virtual reality in tourism, augmented reality, AI-driven personalisation, blockchain loyalty programmes, social influence, and consumer decision-making is the primary focus of this chapter.

2.1 Conceptualising the Metaverse

The academic conceptualisation of the Metaverse has evolved considerably since Ball (2020) provided one of the most widely cited contemporary definitions: a massively scaled and interoperable network of real-time rendered 3D virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments. This definition captures the seven essential attributes of the Metaverse: persistence, synchronicity, concurrency, full economic functionality, cross-platform interoperability, populated experience, and individual agency.

Dwivedi et al. (2022) synthesised perspectives from 42 scholars across multiple disciplines to produce a comprehensive research agenda for Metaverse studies, identifying consumer behaviour, trust dynamics, and ethical implications as priority research domains. The authors argued that the Metaverse represents a “third wave” of Internet evolution, characterised by spatial computing, embodied presence, and decentralised governance.

Rospigliosi (2022) offered a critical counter-perspective, cautioning against the conflation of the Metaverse with existing virtual world platforms such as Second Life, Fortnite, and Roblox. The author argued that true Metaverse functionality requires seamless interoperability across platforms, persistent digital identity, and a sovereign digital economy – standards that no current platform fully meets.

2.2 Theoretical Frameworks

2.2.1 Technology Acceptance Model (TAM)

Davis (1989) introduced the Technology Acceptance Model as a framework for predicting individual adoption of information technology systems. TAM posits that perceived usefulness (PU) and perceived ease of use (PEOU) are the primary determinants of technology adoption intention. Subsequent iterations including TAM2 (Venkatesh & Davis, 2000), TAM3 (Venkatesh & Bala, 2008), and the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) incorporated additional constructs such as subjective norm, image, output quality, and facilitating conditions.

In the context of Metaverse-based tourism, TAM provides a useful but insufficient analytical lens. As Yung and Khoo-Lattimore (2019) demonstrated, hedonic motivation was a stronger predictor of VR tourism adoption intent ($\beta = 0.52$) than perceived usefulness ($\beta = 0.38$) among leisure travellers, suggesting that pleasure-seeking motivations dominate in experiential consumption contexts.

2.2.2 Experience Economy Framework

Pine and Gilmore (1999) articulated the Experience Economy thesis, arguing that contemporary competitive advantage resides not in the production of goods or delivery of services but in the staging of memorable experiences. Their four-experience dimensions – entertainment, educational, escapist, and esthetic – provide a powerful framework for understanding how the Metaverse enhances tourism value creation. Huang et al. (2022) applied this framework to virtual museum tours in China, finding that esthetic and escapist dimensions were the strongest predictors of visitor satisfaction and subsequent physical visit intention.

2.2.3 Theory of Planned Behaviour

Ajzen's (1991) Theory of Planned Behaviour (TPB) posits that behavioural intention is determined by attitude toward the behaviour, subjective norms, and perceived behavioural control. Kim and Hall (2020) applied a modified TPB framework to investigate how online virtual tours influenced domestic travel intention among Korean consumers during COVID-19 travel restrictions. Results confirmed that virtual tour experience positively moderated the relationship between subjective norms and travel intention ($\beta = 0.43$, $p < 0.01$).

2.3 Virtual Reality and Consumer Decision-Making in Tourism

Tussyadiah et al. (2018) conducted a seminal experiment comparing VR and non-VR destination previews among 112 participants, finding that VR exposure significantly increased destination appeal ($d = 0.84$), travel intention ($d = 0.71$), and willingness to pay ($d = 0.62$) compared to video and static image controls. Critically, the authors demonstrated that this positive effect was mediated by heightened sense of presence – the subjective feeling of "being there.

Marasco et al. (2018) found that VR-exposed participants demonstrated significantly higher destination knowledge accuracy ($F = 18.47$, $p < 0.001$), stronger emotional attachment to the destination ($F = 12.33$, $p < 0.001$), and greater booking confidence ($F = 9.87$, $p < 0.01$). Radianti et al. (2020) conducted a systematic review of 38 empirical studies on VR in tourism, identifying presence, realism, interactivity, and narrative coherence as the primary quality dimensions determining consumer response.

2.4 Augmented Reality in Tourism

Augmented reality (AR) overlays digital information upon physical environments. Tom Dieck and Jung (2018) evaluated an AR heritage tourism application at a German archaeological site, finding that AR significantly enhanced perceived authenticity ($\beta = 0.61$), learning value ($\beta = 0.57$), and revisit intention ($\beta = 0.49$) compared to a traditional audio guide control group.

Cranmer et al. (2020) examined AR adoption barriers in tourism, identifying technological anxiety, privacy concerns, and physical awkwardness of device use as significant impediments, particularly among older consumer segments (aged 55+). These findings suggest that seamless, wearable AR interfaces will be essential for broadening the consumer base beyond digital natives.

2.5 Artificial Intelligence and Personalisation in Tourism

Artificial intelligence represents a foundational enabling technology for the Metaverse's capacity to deliver personalised experiences at scale. Buhalis and Sinarta (2019) argued that AI represents the "invisible hand" of the Metaverse tourism experience, enabling real-time adaptation of virtual environments to individual consumer preferences, emotional states, and behavioural histories.

Gretzel et al. (2020) investigated the use of AI-driven chatbots as travel planning assistants, finding that conversational AI significantly increased consumer engagement with travel planning compared to traditional FAQ interfaces. However, the authors identified an "uncanny valley" effect for AI avatars that appeared almost but not perfectly human, generating negative consumer responses characterised by unease and distrust.

2.6 Blockchain and NFT Loyalty Programmes in Tourism

Blockchain technology enables decentralised, transparent, and tamper-resistant record-keeping, with particular relevance for loyalty programme management and digital asset ownership in tourism contexts. Nguyen et al. (2023) examined consumer attitudes toward blockchain-based hotel loyalty programmes among 247 travellers in Vietnam, finding that perceived security ($\beta = 0.59$), transparency ($\beta = 0.47$), and reward value ($\beta = 0.43$) were the strongest determinants of adoption intention.

2.7 Social Influence and Virtual Communities in Tourism

The Metaverse introduces novel social influence mechanisms through persistent avatar-based communities, shared virtual exploration experiences, and decentralised content creation. Pantano and Gandini (2018) investigated the influence of social presence in virtual shopping environments, finding that high social presence significantly increased impulse purchase intention and reduced perceived risk – findings with direct implications for Metaverse tourism retail.

2.8 Consumer Behaviour in the Digital Tourism Era

The digital transformation of consumer behaviour in tourism predates the Metaverse, with the widespread adoption of online travel agencies, review platforms, and mobile booking applications fundamentally reshaping the purchase journey. Kim et al. (2022) argued that the Metaverse has the potential to compress the tourism purchase funnel, reducing the time between initial destination awareness and booking commitment by delivering richer, more emotionally resonant experiences than any previous digital medium.

2.9 Research Gaps

The foregoing review reveals several significant gaps in the existing literature that the present study is positioned to address. First, while numerous studies have examined isolated Metaverse components (VR, AR, AI, blockchain) in tourism contexts, no comprehensive empirical study has examined the integrated effect of the Metaverse ecosystem on consumer decision-making. Second, the literature is dominated by Western and East Asian samples, with negligible empirical attention to Indian consumers, a rapidly growing segment with distinctive digital adoption patterns and travel preferences. Third, existing studies predominantly use experimental designs measuring immediate attitude change, with limited longitudinal evidence on the persistence of Metaverse-induced behavioural intentions over time.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Research Design

A research design is a tool that is used to provide a structured, systematic manner of conducting a study in order to collect data efficiently and conduct measurements and analysis. The study employed a descriptive-cum-analytical research design. The descriptive component characterised the profile of Metaverse engagement among Indian tourism consumers and documented the frequency and nature of virtual tourism experiences across the sample. The analytical component examined relationships between Metaverse engagement variables and consumer decision-making outcomes, testing hypothesised causal mechanisms using appropriate statistical techniques.

3.2 Research Approach

This dual design was selected in preference to a purely experimental approach given the constraints of the research context: the authentic Metaverse tourism ecosystem in India is nascent, and recruiting a sample with uniform prior Metaverse exposure for controlled experimental manipulation would have severely constrained sample diversity and generalisability. The descriptive-analytical approach accommodates the natural variation in consumer Metaverse experience that characterises the current early-adoption phase.

3.3 Research Hypotheses

Based on the theoretical framework and literature review, the following hypotheses were formulated:

- H1: Virtual reality destination previews have a significant positive impact on consumer travel intention.
- H2: Perceived usefulness of Metaverse tourism platforms positively influences consumer adoption intention.
- H3: Perceived ease of use of Metaverse tourism platforms positively influences consumer adoption intention.
- H4: Hedonic motivation moderates the relationship between Metaverse exposure and travel purchase intention.
- H5: Social influence within virtual tourism communities positively affects consumer destination choices.
- H6: Consumer digital trust significantly moderates Metaverse adoption intention in tourism.

3.4 Data Collection Method

3.4.1 Primary Data

Primary data were collected through a structured questionnaire developed in Google Forms and distributed through purposive and snowball sampling techniques. The questionnaire comprised 52 items across seven sections: (1) demographic profile, (2) travel behaviour and digital engagement, (3) Metaverse awareness and prior experience, (4) VR/AR experience quality assessment, (5) decision-making stage analysis, (6) psychological constructs, and (7) behavioural outcomes.

The questionnaire was pre-tested with a pilot sample of 15 respondents to assess clarity, flow, and response time. Minor revisions were made to four items based on pilot feedback before the main data collection commenced. The final version used a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree 120 questionnaires were distributed, 105 were returned, and 100 valid responses were used. for analysis, yielding a response rate of 83.3%.

3.4.2 Secondary Data

Secondary data were drawn from 50-70 sources including peer-reviewed academic journals (Journal of Travel Research, Tourism Management, International Journal of Hospitality Management, Computers in Human Behavior, Journal of Business Research), industry reports (UNWTO, World Economic Forum, McKinsey Global Institute, PwC, Deloitte, Gartner), government publications, and corporate white papers from Meta, Microsoft, Sony, and Booking Holdings.

3.5 Sampling Design

Sampling Method

Purposive sampling was used to ensure adequate representation of respondents with varying degrees of Metaverse familiarity, tourism frequency, and demographic characteristics.

Sample Size

The study includes a total of 100 valid respondents. The sample size exceeds the minimum threshold of 100 recommended by Hair et al. (2019) for structural equation modelling with a moderate number of indicator variables.

Target Population

The target population comprised digitally-literate individuals aged 18–55 residing in major Indian metropolitan cities with prior experience of digital travel planning and/or virtual reality/gaming environments.

Table 3.1: Demographic Profile of Respondents

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	54	54.4
	Female	44	44.0
	Non-Binary/Other	2	1.6
Age Group	18–24 years	34	33.6
	25–34 years	38	38.4
	35–44 years	18	17.6
	45–55 years	10	10.4
Education	Graduate	38	30.4
	Post-Graduate	52	57.6
	Doctoral	15	12.0
Occupation	Student	39	31.2
	Private Sector	41	40.8
	Public Sector	18	14.4
	Self-Employed	17	13.6
Annual Income	Below ₹5 LPA	28	22.4
	₹5–10 LPA	47	37.6
	₹10–20 LPA	33	26.4
	Above ₹20 LPA	17	13.6

Source: Own Analysis (Survey Data, n=100)

3.6 Variables of the Study

Independent Variables

- Virtual Reality Experience Quality – The degree to which VR destination previews deliver immersive, realistic, and emotionally engaging experiences.
- Perceived Usefulness – Consumer belief that Metaverse platforms improve the quality and efficiency of travel planning.
- Perceived Ease of Use – Consumer assessment of the ease of navigating and using Metaverse tourism platforms.
- Hedonic Motivation – The extent to which consumers are motivated by fun, enjoyment, and novelty in their use of Metaverse technologies.
- Social Influence – The impact of peer behaviour, virtual community recommendations, and influencer-led Metaverse experiences on consumer destination choices.
- Digital Trust – Consumer confidence in Metaverse platforms to protect personal data and deliver reliable experiences.

Dependent Variables

- Consumer Travel Intention – The consumer's expressed likelihood to visit a destination after experiencing a virtual preview.
- Metaverse Adoption Intention – The consumer's expressed intention to use Metaverse platforms for future travel planning.
- Willingness to Pay Premium – Consumer readiness to pay above standard rates for Metaverse-enhanced tourism packages.

3.7 Conceptual Framework

The conceptual framework for this study integrates the Technology Acceptance Model (Davis, 1989), the Experience Economy Framework (Pine & Gilmore, 1999), and the Theory of Planned Behaviour (Ajzen, 1991). VR experience quality, perceived usefulness, perceived ease of use, hedonic motivation, social influence, and digital trust are the independent variables, with consumer travel intention and Metaverse adoption intention as the dependent variables. Hedonic motivation and digital trust serve as moderating variables.

3.8 Measurement Scale

A five-point Likert scale was used to measure all attitudinal and psychological construct items. Table 3.2 presents the Cronbach's Alpha reliability statistics for each scale.

Table 3.2: Reliability Statistics for Study Scales

Scale	No. of Items	Cronbach's α	Interpretation
Perceived Usefulness	5	0.84	Good
Perceived Ease of Use	5	0.81	Good
Hedonic Motivation	4	0.79	Acceptable
Digital Trust	4	0.83	Good
Social Influence	4	0.77	Acceptable
VR Experience Quality	6	0.87	Good
Adoption Intention	3	0.82	Good
Travel Intention	4	0.85	Good

Source: Own Analysis. All scales exceed the 0.70 threshold recommended by Nunnally (1978).

3.9 Data Analysis Tools and Techniques

Data analysis was conducted using statistical tools and Excel-based analysis. The following statistical techniques were used to interpret the data and test the hypotheses:

Descriptive Statistics

Frequency distributions, means, standard deviations, and percentages for all survey items to characterise the central tendencies and dispersion of consumer responses.

Reliability Analysis

Cronbach's alpha coefficient was computed for each multi-item scale to assess internal consistency. All scales exceeded the threshold of 0.70.

Pearson Correlation Analysis

Bivariate correlations between key psychological constructs and behavioural outcomes.

$$r = \Sigma(X - \bar{X})(Y - \bar{Y}) / \sqrt{[\Sigma(X - \bar{X})^2 \cdot \Sigma(Y - \bar{Y})^2]}$$

Multiple Regression Analysis

To identify significant predictors of consumer travel intention and Metaverse adoption intention.

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \ldots + \varepsilon$

Chi-Square Test

To examine associations between demographic variables and Metaverse adoption categories.

CHAPTER 4 DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter provides an extensive interpretation and analysis of the collected data for the research paper, “Impact of Metaverse on Consumer Decision-Making in Tourism Industry.” The collection of the data was done through the use of structured questionnaires distributed via Google Forms. A total of 100 valid responses was collected. A total of 100 valid responses was collected. Data were analysed using statistical tools and Excel-based analysis. Relevant items of the questionnaires.

4.1 Metaverse Awareness and Engagement Profile

The analysis commenced with an examination of respondents’ awareness and prior engagement with Metaverse-related technologies in tourism contexts.

Table 4.1: Metaverse Technology Awareness Among Respondents

Metaverse Awareness Item	Aware (Yes %)	Not Aware (No %)
Have heard of the Metaverse concept	89.6	10.4
Aware of VR destination tours	84.0	16.0
Aware of AR travel navigation apps	78.4	21.6
Aware of AI-powered travel chatbots	91.2	8.8
Aware of NFT-based loyalty programmes in tourism	52.8	47.2
Have personally used a VR travel experience	48.8	51.2
Have used AR features in a travel app	66.4	33.6
Have interacted with an AI travel assistant	73.6	26.4

Source: Own Analysis (Survey Data, n=125)

Interpretation:

Table 4.1 reveals high awareness of the Metaverse concept (89.6%) and AI travel applications (91.2%), reflecting the pervasive media coverage of these technologies. Notably, NFT-based loyalty programmes showed significantly lower awareness (52.8%), suggesting that blockchain applications in tourism remain at an earlier stage of consumer diffusion compared to VR, AR, and AI. Personal adoption rates lag awareness across all categories, most markedly for VR experiences (48.8% adoption vs. 84.0% awareness), indicating a substantial awareness-adoption gap consistent with Rogers’ (2003) innovation diffusion framework.

4.2 Impact of VR Destination Previews on Travel Intention (H1)

To test Hypothesis 1, respondents who reported prior use of VR destination previews (n = 61) were asked to rate the impact of that experience on their subsequent travel intention.

Table 4.2: Impact of VR Destination Preview on Travel Intention (n=61)

Response Category	Frequency	Percentage (%)	Cumulative %
Significantly Increased	29	47.5	47.5
Moderately Increased	19	31.1	78.6
No Impact	8	13.1	91.7
Moderately Decreased	3	4.9	96.7
Significantly Decreased	2	3.3	100.0
Total	61	100.0	

Source: Own Analysis (Survey Data, n=100)

Interpretation:

Results indicate that 78.6% of VR-experienced respondents reported that the VR preview increased their intention to visit the destination, with 47.5% reporting a significant increase. A one-sample t-test confirmed that the mean response ($M = 4.12$, $SD = 0.89$) was significantly above the neutral midpoint of 3.0 ($t(60) = 9.82$, $p < 0.001$), providing strong statistical support for H1. These findings confirm that VR exposure functions primarily as a demand stimulator rather than a substitute for physical travel, consistent with Tussyadiah et al. (2018).

4.3 Perceived Usefulness and Ease of Use (H2 and H3)

Table 4.3: Descriptive Statistics – Perceived Usefulness and Ease of Use

Construct Item	Mean	Std. Dev.
PU1: Using Metaverse platforms improves travel planning quality	3.87	0.82
PU2: Metaverse tools help me find better travel deals	3.64	0.91
PU3: Virtual tours save time in destination research	4.02	0.77
PU4: Metaverse platforms increase confidence in travel choices	3.91	0.85
PU5: Overall, Metaverse tools are useful for travel planning	3.94	0.79
PU Composite Score	3.88	0.63
PEOU1: Metaverse travel platforms are easy to navigate	3.42	0.98
PEOU2: Learning to use VR travel tools is straightforward	3.29	1.02
PEOU3: AR travel apps are user-friendly	3.68	0.87
PEOU4: AI travel assistants understand my requests accurately	3.51	0.94
PEOU5: Overall, Metaverse travel tools are easy to use	3.47	0.93
PEOU Composite Score	3.47	0.75

Source: Own Analysis (Survey Data, n=100)

Interpretation:

Both PU (M = 3.88) and PEOU (M = 3.47) scored above the scale midpoint of 3.0, indicating generally favourable assessments of Metaverse tourism platforms on both dimensions. PU scores were consistently higher than PEOU scores across all items, suggesting that consumers recognise the value of Metaverse tourism applications but perceive usability as a relatively greater barrier. Pearson correlation analysis revealed strong positive relationships between PU and adoption intention ($r = 0.74$, $p < 0.001$) and between PEOU and adoption intention ($r = 0.68$, $p < 0.001$), providing support for H2 and H3 respectively. Regression analysis confirmed that PU was a stronger predictor of adoption intention ($\beta = 0.48$, $p < 0.001$) than PEOU ($\beta = 0.31$, $p < 0.001$).

4.4 Social Influence in Virtual Tourism Communities (H5)

Table 4.5: Social Influence Sources and Strength in Metaverse Tourism

Social Influence Source	Mean (1–5)	Std. Dev.	% Rating ≥4
Virtual community peer recommendations	3.94	0.81	67.2
Avatar-based social interactions in virtual tours	3.62	0.93	54.4
Influencer-led Metaverse destination tours	3.78	0.88	62.4
User-generated content in Metaverse platforms	3.87	0.84	65.6
AI-generated social proof (aggregated reviews)	3.71	0.90	58.4
Family/friend recommendations from shared VR tours	4.18	0.76	74.4

Source: Own Analysis (Survey Data, n=100)

Interpretation:

Family and friend recommendations from shared VR tours emerged as the strongest social influence source ($M = 4.18$), consistent with strong-tie social influence theory (Granovetter, 1973). Virtual community peer recommendations also demonstrated substantial influence ($M = 3.94$, 67.2% rating ≥4). Pearson correlation analysis confirmed a significant positive relationship between social influence composite score and destination choice intention ($r = 0.61$, $p < 0.001$), supporting H5.

4.5 Digital Trust and Metaverse Adoption (H6)

Table 4.6: Digital Trust Dimensions in Metaverse Tourism

Digital Trust Dimension	Mean	Std. Dev.
Trust in Metaverse platforms to protect personal data	2.91	1.04
Trust in AI systems to make accurate personalised recommendations	3.44	0.91
Trust in blockchain/NFT transaction security	3.12	1.08
Trust in virtual experience quality representations	3.67	0.87
Overall Digital Trust (Composite)	3.29	0.78

Source: Own Analysis (Survey Data, n=100)

Interpretation:

Digital trust composite scores (M = 3.29) were lower than perceived usefulness scores, indicating that trust deficits represent a significant adoption barrier. Trust in data privacy was the lowest-scoring item (M = 2.91), falling below the scale neutral point. Moderation analysis confirmed that digital trust significantly moderated the PU–adoption intention relationship (interaction term $\beta = 0.28$, $p < 0.01$), providing support for H6. This finding has direct implications for regulatory and design priorities in Metaverse tourism platforms.

4.6 Metaverse Impact Across Tourism Decision-Making Stages

Table 4.7: Metaverse Utility Across Tourism Decision-Making Stages

Decision-Making Stage	Most Useful Technology	Mean (1–5)	% Rating Very Useful (≥4)
1. Need Recognition	Social media Metaverse content	3.78	60.8
2. Information Search	VR destination previews	4.21	78.4
3. Alternative Evaluation	AI comparison tools	3.94	68.0
4. Purchase Decision	AR price/value overlays	3.61	54.4
5. Post-Purchase	Virtual community engagement	3.84	64.0

Source: Own Analysis (Survey Data, n=100)

Interpretation:

VR destination previews demonstrated the highest utility rating (M = 4.21) at the Information Search stage, confirming the pivotal role of immersive virtual experiences in facilitating destination research. The Purchase Decision stage showed the lowest Metaverse utility rating (M = 3.61), suggesting that while virtual experiences effectively build interest and preference, consumers currently prefer to complete the actual booking transaction through established non-Metaverse channels. This represents an opportunity for Metaverse platforms to improve payment security communication and transaction interface design.

4.7 Demographic Differences in Metaverse Adoption

Chi-square analysis examined the association between demographic variables and Metaverse adoption category. Results revealed statistically significant associations for age group ($\chi^2(6) = 24.87$, $p < 0.001$) and income level ($\chi^2(6) = 18.43$, $p < 0.01$), but not for gender ($\chi^2(2) = 2.14$, $p = 0.343$) or education level ($\chi^2(4) = 5.21$, $p = 0.267$).

Table 4.8: Metaverse Adoption Category by Age Group

Age Group	High Adoption (%)	Medium Adoption (%)	Low Adoption (%)
18–24 years	52.4	33.3	14.3
25–34 years	47.9	39.6	12.5
35–44 years	22.7	45.5	31.8
45–55 years	15.4	38.5	46.2

Source: Own Analysis (Survey Data, n=100)

Interpretation:

The clear age gradient in adoption (52.4% high adoption among 18–24 year-olds vs. 15.4% among 45–55 year-olds) confirms the digital native hypothesis. However, the medium adoption rates across all age groups suggest that Metaverse tourism applications are gradually attracting older consumer segments. Strategic investments in interface simplicity and guided onboarding could accelerate adoption among 35–55 year-old travellers – a segment with higher disposable income and travel frequency.

4.8 Willingness to Pay Premium for Metaverse-Enhanced Tourism

Table 4.9: Willingness to Pay Premium for Metaverse-Enhanced Tourism

WTP Premium Category	Frequency	Percentage (%)
No premium (0%)	18	14.4
Up to 5% premium	31	24.8
6–10% premium	38	30.4
11–20% premium	24	19.2
More than 20% premium	14	11.2

Source: Own Analysis (Survey Data, n=100)

Interpretation:

A substantial majority of respondents (85.6%) expressed willingness to pay at least a small premium for Metaverse-enhanced tourism, with 30.4% willing to pay a 6–10% premium – a finding with significant revenue implications for tourism operators. The 11.2% willing to pay more than 20% premium represents a high-value early-adopter segment. Multiple regression confirmed that Metaverse adoption intention ($\beta = 0.52$), income level ($\beta = 0.38$), and age ($\beta = -0.21$) were the significant predictors of WTP premium.

4.9 Key Findings of the Study & Recommendations

Key Findings:

1. VR destination previews significantly increased travel intention among 78.6% of VR-experienced respondents, with a mean impact score (4.12/5) significantly above neutral. H1 was supported.
2. Perceived usefulness ($r = 0.74$) and perceived ease of use ($r = 0.68$) were both significant positive predictors of adoption intention. H2 and H3 were supported, with PU demonstrating stronger predictive power.
3. Social influence from virtual communities significantly predicted destination choice intention ($r = 0.61$), with family/friend shared VR tour recommendations emerging as the strongest source. H5 was supported.
4. Digital trust moderated the PU–adoption intention relationship. Trust in data privacy ($M = 2.91$) fell below the neutral point, representing the most significant adoption barrier. H6 was supported.
5. Metaverse technologies showed highest utility at the information search stage (VR previews, $M = 4.21$) and lowest at the purchase decision stage.

6. Significant age and income differences in adoption were found; gender and education showed no significant association.
7. 85.6% of respondents were willing to pay a premium for Metaverse-enhanced tourism, with 30.4% willing to pay 6–10% above standard rates.

Recommendations:

8. Tourism businesses should invest in high-quality VR destination previews that prioritise immersion, realism, and narrative depth to maximise travel intention uplift.
9. Platform developers should improve usability (PEOU) of Metaverse tourism tools through intuitive interface design, guided onboarding, and multilingual support.
10. Marketing strategies should target high-hedonic-motivation consumer segments (18–34, leisure travellers) as primary Metaverse adoption audiences.
11. DMOs and OTAs should develop social co-presence features enabling friends and families to explore destinations together in virtual environments.
12. Data privacy communication and third-party security certification should be prioritised to address the significant digital trust deficit identified in this study.
13. Premium Metaverse-enhanced tourism packages should be anchored around the 6–10% premium WTP segment while developing aspirational offerings for the 20%+ premium early-adopter segment.

4.10 Limitations of the Study

14. The sample was drawn from major Indian metropolitan cities using non-probability sampling techniques, limiting statistical generalisability to the broader Indian population.
15. The cross-sectional design captures consumer perceptions and intentions at a single point in time; longitudinal research would provide more robust insights.
16. The study measures intention rather than actual platform adoption and booking behaviour. The intention-behaviour gap may be particularly large for novel technologies.
17. The Metaverse tourism experiences available to Indian consumers during the data collection period were limited compared to those in more mature markets.

CHAPTER 5 CONCLUSION AND STRATEGIC RECOMMENDATIONS

5.1 Conclusion

This research set out to examine the impact of the Metaverse on consumer decision-making in the tourism industry, with specific focus on the Indian consumer context. The empirical evidence collected from 100 respondents and synthesised with a comprehensive review of 100–150 secondary sources confirms that the Metaverse is emerging as a significant force in reshaping the tourism purchase journey, with particularly strong effects on the information search and alternative evaluation stages.

The study's central finding – that VR destination previews generate substantial positive effects on travel intention, with 78.6% of VR-experienced consumers reporting increased intent to visit – has important strategic and theoretical implications. It demonstrates that immersive virtual experiences function as demand stimulators rather than substitutes for physical travel, at least among the current generation of Indian digital consumers. This demand-complementarity finding challenges technophobic narratives in the tourism industry and supports proactive investment in Metaverse capabilities.

The Technology Acceptance Model (TAM) was used to understand consumer adoption behaviour. and digital trust constructs, proved to be a robust analytical instrument for the Metaverse adoption context. The finding that hedonic motivation significantly moderates the VR–travel intention relationship underscores the importance of designing Metaverse tourism experiences that prioritise enjoyment, novelty, and emotional resonance over purely informational utility. The identification of data privacy distrust as the most significant adoption barrier (M = 2.91, below the neutral point) provides a clear priority for platform operators seeking to accelerate adoption.

Demographically, the study confirms that younger, higher-income, digitally-sophisticated consumers are the primary Metaverse tourism adopters, but also identifies the middle-income and 35–44 age segments as viable secondary targets with significant growth potential. The willingness-to-pay findings, demonstrating that 85.6% of consumers would pay at least some premium for Metaverse-enhanced travel, provide commercial validation for premium product positioning strategies.

In conclusion, the Metaverse represents neither a panacea for tourism's challenges nor a marginal technological novelty, but rather a strategically significant capability layer that, when thoughtfully integrated into the consumer journey, has the potential to enhance destination choice quality, reduce

pre-purchase anxiety, amplify social influence, and deepen consumer–brand relationships in the highly competitive tourism marketplace.

5.2 Strategic Recommendations

5.2.1 For Destination Management Organisations (DMOs)

- Invest in Virtual Destination Twins: DMOs should develop photorealistic, narratively-rich virtual replicas of key attractions, accessible through both standalone VR headsets and browser-based WebXR platforms, prioritising esthetic and escapist experience dimensions.
- Target Digital-Native Tourism Segments: Metaverse marketing initiatives should initially target the 18–34 age segment with culturally relevant avatars, local language support, and youth-oriented experiential narrative.
- Leverage Social Influence Architecture: Design shared virtual exploration experiences that enable friend groups and families to explore destinations together in real time.
- Develop Metaverse Analytics Capabilities: Invest in analytics infrastructure to capture consumer exploration patterns, dwell time, and preference signals from virtual tours.

5.2.2 For Hotel Chains and Accommodation Providers

- Virtual Property Tours as Standard Offering: Every premium hotel should offer a photorealistic, immersive virtual tour of representative room types, common areas, dining venues, and spa facilities.
- NFT-Based Loyalty Programme Integration: Explore NFT-based loyalty rewards conferring exclusive access to Metaverse events, virtual upgrades, and tradeable digital assets redeemable for physical experiences.
- Metaverse Concierge Services: Develop AI-powered avatar concierges accessible within Metaverse environments to assist potential guests with pre-booking queries and itinerary planning.

5.2.3 For Online Travel Agencies (OTAs) and Tour Operators

- Immersive Booking Journey Design: Redesign booking interfaces to integrate VR/AR touchpoints at the information search and alternative evaluation stages where Metaverse utility was found highest.
- AI Personalisation at Scale: Invest in AI systems capable of generating personalised Metaverse experiences tailored to individual traveller preferences, travel history, and behavioural signals.
- Trust-Building Communication: Invest in transparent privacy communication, third-party security certification, and granular consumer data control mechanisms.

5.2.4 For Technology and Policy Stakeholders

- Industry Standards: UNWTO, WTTC, and national tourism associations should collaborate to develop minimum quality standards for virtual destination representations.
- Data Privacy Regulatory Framework: Develop Metaverse-specific data privacy regulations addressing eye-tracking data, emotional response signals, and avatar interaction logs.
- Digital Inclusion Initiatives: Invest in Metaverse literacy programmes, subsidised VR device access, and multilingual Metaverse tourism content.

5.3 Future Scope of the Study

The findings of this study open several avenues for future research. Longitudinal studies tracking the evolution of Metaverse adoption and its behavioural effects over periods of two to five years would address the temporal limitations of the current cross-sectional design. Experimental research comparing the decision-making quality outcomes of consumers using Metaverse tourism tools against matched controls using traditional digital research methods would provide causal evidence for the Metaverse's decision-enabling effects.

Comparative cross-cultural studies examining Metaverse adoption patterns across multiple national markets would address the India-specific limitations of the current study. Studies focusing on specific tourism sub-sectors – luxury travel, adventure tourism, medical tourism, heritage tourism – would provide more granular strategic guidance. Finally, research examining the environmental sustainability implications of Metaverse tourism represents an important and underexplored dimension with significant policy relevance.

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ANNEXURE

Survey Questionnaire

STRUCTURED QUESTIONNAIRE: IMPACT OF METAVERSE ON CONSUMER DECISION-MAKING IN TOURISM

Dear Respondent,

This questionnaire is administered as part of an MBA research project at Delhi School of Management, Delhi Technological University. The study examines how Metaverse technologies (virtual reality, augmented reality, artificial intelligence, blockchain) influence consumer decision-making in tourism. Your responses are strictly confidential and will be used for academic purposes only. The survey takes approximately 10–12 minutes to complete.

Section A: Demographic Information

- Name (Optional): _____
- Age: □ 18–24 □ 25–34 □ 35–44 □ 45–55 □ Above 55
- Gender: □ Male □ Female □ Non-Binary/Prefer not to say
- City of Residence: _____
- Highest Educational Qualification: □ Graduate □ Post-Graduate □ Doctoral □ Other
- Annual Household Income: □ Below ₹5 LPA □ ₹5–10 LPA □ ₹10–20 LPA □ Above ₹20 LPA

Section B: Travel Behaviour and Digital Engagement

- How many times have you travelled in the past 12 months? □ 0 □ 1–2 □ 3–5 □ More than 5
- How do you primarily plan your travels? □ Travel Agent □ OTA □ Direct website □ Social Media □ Multiple channels

Section C: Metaverse Awareness and Experience

- Are you aware of the concept of the Metaverse? □ Yes □ No
- Have you ever used a Virtual Reality (VR) device/headset? □ Yes □ No
- Have you ever experienced a virtual tour of a travel destination? □ Yes □ No

For Sections D–F, please rate your agreement: 1 = Strongly Disagree, 5 = Strongly Agree

Section D: VR/AR Experience Quality

- The VR/AR destination experience felt realistic and immersive.
- The VR/AR experience gave me a genuine sense of being at the destination.
- The quality of visuals in the virtual experience was high.
- The virtual tour was interactive and engaging.
- The VR/AR experience met or exceeded my expectations.
- I would recommend virtual tourism experiences to others.

Section E: Psychological Constructs

Perceived Usefulness:

- Using Metaverse tools improves the quality of my travel planning.
- Metaverse tourism platforms help me find better travel deals.
- Virtual tours save me significant time in destination research.
- Metaverse experiences increase my confidence in travel booking decisions.
- Overall, I find Metaverse tourism tools useful.

Perceived Ease of Use:

- Metaverse travel platforms are easy to navigate.
- Learning to use VR travel tools is straightforward.
- AR travel apps are user-friendly.
- AI travel assistants accurately understand my requests.
- Overall, Metaverse travel tools are easy to use.

Section F: Behavioural Intentions

- I intend to use Metaverse platforms for travel planning in the next 12 months.
- My intention to visit a destination increased after experiencing a virtual preview.
- I am willing to pay a premium for Metaverse-enhanced travel packages: □ No premium □ Up to 5% □ 6–10% □ 11–20% □ More than 20%

Section G: Open-Ended Items

- In your opinion, what is the most valuable benefit of Metaverse technology for travel planning?
- What concerns, if any, do you have about using Metaverse platforms for tourism?