

AI-driven augmented reality for immersive hospitality and tourism experiences

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Abstract

Integrating artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) has significantly transformed businesses worldwide. However, there is a lack of comprehensive studies in this field. This research aims to examine how AI-driven AR and VR technologies influence consumer decision-making process in the hospitality and tourism sectors, with a focus on their impact on customer engagement and purchase confidence and how they will change the industry, particularly, the use of devices like Apple's Vision Pro, a spatial computing headset that integrates augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) to create immersive, interactive digital experiences. The device lets traveler's experience immersive previews of destinations and accommodations, improving consumer confidence and engagement. This leads to purchasing behaviour and strengthens the bond between the consumer and the service provider; additionally, AI-driven customisations generate content that matches individual preferences, thereby increasing satisfaction.

By integrating multiple data sources (e.g., research literature and expert opinions), we found that early adopters of these technologies are likely to gain a significant competitive advantage. They can differentiate themselves in hospitality and tourism by offering interactive experiences that boost bookings and brand loyalty. Customers increasingly expect reliability, empathy, and personalized service at every stage of their experience. This research fills the gap by providing empirical evidence on how immersive AI-driven experiences influence consumer behaviour, decision-making, and brand perception. However, implications and challenges such as high implementation costs and the need for a user-friendly design persist. As AI, VR, and AR become more accessible, their role in hospitality and tourism is expected to grow, reshaping how travellers interact with services and make informed choices.

Keywords: Augmented reality, artificial intelligence, virtual reality, tourism, hospitality, consumer behaviour

Literature review

A rapidly expanding body of research in hospitality and tourism suggests that artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) are shifting from being peripheral add-ons to essential infrastructural capabilities that transform how experiences are designed, delivered, governed, and evaluated. Integrative reviews indicate that AI is reshaping three interconnected areas: adoption and acceptance, operations management, and AI-enabled marketing, while also fostering new research on human-AI interaction, organisational decision-making, workforce impacts, and managerial ethics (Kim et al., 2025). Meanwhile, service scholarship reinterprets AI not as a single artefact (for example, a robot or chatbot) but as a

service system capability characterised by sensing, learning, deciding, and acting across both front-stage and back-stage contexts (Bock et al., 2020). Collectively, these perspectives go beyond merely identifying “what tools exist” to exploring “what they do” within the travel experience: they personalise content, coordinate context-aware guidance, reduce uncertainty before purchase, and support value co-creation at destinations.

Bock et al. (2020) propose “service AI” as a configuration that adapts flexibly through perception, learning, decision-making, and action, thus challenging traditional service theories, such as service quality, relationship marketing, and failure/recovery, whose assumptions are based on human-to-human interactions. The authors support technology-focused frameworks (e.g., actor-network theory, adaptive structuration, socio-technical systems) to theorise non-human agency, use-based appropriation, and the co-evolution of organisational routines with AI capabilities. This is especially relevant for immersive systems where agency is distributed across sensors, models, and interfaces, and where “presence” can be achieved by embodied or spatial computing agents rather than staff (Bock et al., n.d.; Sousa et al., 2024).

At the consumer level, adoption is usually modelled using the Technology Acceptance Model (TAM), the Experience Economy, and SERVQUAL. Nguyen Huu (2025) combines these approaches, showing that perceived usefulness and ease of use (TAM) align with emotional engagement in the “4Es” (entertainment, education, escapism, aesthetics) and with perceived service quality (tangibles, reliability, responsiveness, assurance, empathy). This three-pronged approach is useful for AI-driven immersion because it links how AR/VR feel (presence, awe, curiosity) with what travellers can do (compare, decide, navigate) and how they assess service (accuracy, timeliness, empathy).

Evidence shows that AI-driven AR/VR influences multiple decision stages: inspiration and information search, option evaluation, booking, pre-arrival planning, and even post-stay memory formation. Virtual previews of accommodations and destinations enhance perceived diagnosticity and booking confidence compared to static media, thereby lowering perceived risk and decision time; on-site, AR overlays relevant text, audio, video, and 3D reconstructions that improve wayfinding, understanding, and interpretation (Katkuri et al., 2019; Nguyen, 2025).

These affordances align directly with modern spatial computing headsets (e.g., Apple Vision Pro) that combine AR and VR with AI-powered perception and personalisation. In such settings, AI can tailor scenes and content to the traveller’s preferences and context, minimise uncertainty through vivid “try-before-you-buy” previews, and enhance perceived diagnostic compared to 2D media. The accumulated evidence thus supports a shift from persuasive, one-to-many messaging to co-created, data-driven, and sensor-rich experiences that alter how consumers evaluate options and commit to bookings (Jogarao, 2024; Kim et al., 2025; Nguyen, 2025)

On the supply side, the AR implementation literature has progressed from pilot prototypes to production-ready stacks. Katkuri et al. (2019) describe a pragmatic architecture (Unity engine, Vuforia image/marker tracking, Blender for 3D assets) capable of location- and image-based overlays across platforms, while also pointing out early market limitations, single-OS scope, limited language support, and dependence on continuous connectivity, which restricted reach and inclusivity. These design cautions remain relevant for headset-based experiences: cross-platform delivery, multilingual support, offline capability, and graceful degradation are not optional extras but vital for adoption.

All literature agrees on this; trust is a key requirement for accepting AI-mediated services. Bock et al. (2020) differentiate between cognitive trust (competence, reliability) and affective trust (care, empathy), arguing that AI can enhance the former (e.g., consistency, 24/7 responsiveness) but might weaken the latter if designs overlook social cues and relational benefits. They call for research to determine whether traditional factors influencing service quality and rapport apply to AI contexts, and how robots or agents can convincingly convey empathy (Bock et al., 2020).

Nguyen Huu (2025) introduces a usability dimension: respondents value personalised content and real-time AR navigation, yet report issues (setup, controls, stability) and limited availability during trips, implying that “experience wow” without “interaction ease” cannot sustain trust or habits.

An ethics and governance agenda is outlined. Bock et al. (2020) recommend clear design principles (e.g., Hunt–Vitell marketing ethics) and organisational controls to manage privacy, fairness, and accountability in AI-mediated interactions. For immersive deployments, this includes content provenance (ensuring reconstruction accuracy), transparency about AI-generated media, and safeguards against manipulative targeting in psychologically immersive, embodied environments. In essence, trust is purposefully built, not assumed. Industrial cases illustrate AI's operational reach in hospitality: AI chatbots handling routine enquiries and personalising interactions; predictive analytics improving dynamic pricing and demand forecasts; and energy-management systems adjusting HVAC/lighting based on occupancy for sustainability benefits (Jerez-Jerez et al., 2025). These capabilities, demonstrated in European and North American examples, are directly relevant in immersive settings: the same data pipelines used for pricing and personalisation can support scene composition, offer surfacing, and context-aware guidance inside AR/VR, aligning revenue optimisation with guest value at decision points (Kim et al., 2024). Strategically, early adopters of immersive AI can set themselves apart through experience quality (presence, relevance, flow) and process quality (reliability, responsiveness). VR also supports workforce development, scenario rehearsal, service etiquette, safety, and accelerating skill acquisition while lowering travel and coordination costs (Kim et al., 2024). However, these benefits depend on organisational readiness: data quality and interoperability; staff training; content pipelines for accurate, culturally sensitive narratives; and clear governance for privacy and safety (Bock et al., 2020).

A complementary literature links AI, AR/VR, the Internet of Things (IoT), and blockchain to sustainability and destination governance. Rane, Choudhary, and Rane (2023) synthesise how IoT enables real-time sensing of energy, water, air quality, and crowding; how AI interprets these signals to coordinate responses; how blockchain can enhance transparency and incentive alignment (e.g., eco-certification, smart contracts); and how AR/VR can deepen cultural and ecological understanding in situ or offer virtual access to sensitive sites. The researchers have created a closed loop: sensor data → AI insight → recorded, accountable actions → immersive communication that transforms policy into felt understanding. This loop can educate visitors, temporarily or spatially shift flows, and decrease environmental pressure—benefits that, if communicated transparently, can also strengthen brand legitimacy and trust (Rane et al., 2023). The difference between compelling demos and durable utilities depends on execution. The AR/VR literature clearly states practical design requirements: cross-platform delivery, multilingual content, offline or low-connectivity modes, accessibility features, and reliable tracking under outdoor lighting and occlusion (Katkuri et al., 2019). Nguyen Huu (2025) converts these into

consumer-visible gaps: travellers report curiosity and interest, yet low literacy about how and where to access immersive content, and frustration when interactions are finicky or fragile. For spatial computing, this means clear onboarding, adaptable UI (voice, gesture, controller), and a quick transition from “moment of wonder” to “moment of decision”, e.g., embedded price/availability, save/share, and navigation inside the scene.

Vlasceanu, Valentin, and Țigu synthesise academic and industry sources to argue that AI and VR are now pivotal for elevating service quality and customer experience in the cruise industry and global hospitality. They conclude that AI, via chatbots and virtual assistants, enables hyper-personalised interactions, always-on support, and data-driven decision-making that streamlines operations and lifts guest satisfaction. At the same time, VR delivers immersive virtual tours and distinctive on-property experiences and strengthens staff training and professional development, improving service consistency. In combination, these technologies yield greater convenience, personalisation, efficiency, and competitive advantage, materially enriching the cruise guest journey. The authors recommend that firms invest in AI systems for tailored interactions and analytics, integrate VR for previews, training, and guest experiences, and commit to continuous innovation to remain competitive in a fast-evolving tech landscape 7/3/2026 10:42:00 pm

Across sources, there is consensus that the field needs to shift from focusing on attitude and satisfaction endpoints to prioritising decision-quality and behavioural outcomes. Recommended measures include perceived diagnosticity, confidence, time-to-decision, conversion, upgrade/upsell acceptance, and post-stay loyalty; these should be examined through controlled experiments comparing immersive versus 2D baselines across different journey stages (Kim et al., 2024; Nguyen Huu, 2025). Trust should be operationalised as both cognitive and affective, and linked to specific design levers: agent persona, disclosure, control affordances, and hand-offs to humans. Organisationally, researchers advocate for longitudinal studies to explore effects on the workforce, climate, and profit chains as AI adoption deepens, including unintended consequences and value co-destruction (Bock et al., 2020).

On the other side, a recent study on immersive AI in luxury hospitality, such as XR-assisted, AI-mediated services, shows that it tends to decrease customers’ willingness to use the service and lower their perceived luxury value compared to traditional, human-led services. This negative effect depends on consumers’ need for differentiation: when the desire to signal uniqueness is stronger, immersive AI becomes less appealing and further damages luxury perceptions. Overall, the findings highlight a paradox—technologies that can enhance mainstream experiences might also weaken exclusivity cues in luxury settings unless differentiation needs are carefully managed (Gonçalves et al., 2024).

Despite that, the literature consistently supports three main claims. First, AI-driven AR/VR fundamentally alters travel decision-making by improving diagnosticity and reducing uncertainty, rather than simply adding spectacle; the mechanism involves a sensor-rich, personalised co-creation of information and meaning at the point of need (Kim et al., 2024; Nguyen Huu, 2025; Katkuri et al., 2019). Second, sustained adoption relies on ethics-by-design (privacy, fairness, transparency), user-friendly interfaces, and organisational readiness that combines accurate content with reliable operations; trust is both cognitive and emotional, and both aspects require deliberate design (Bock et al., 2020; Kim et al., 2024). Third, integrating AI, AR/VR, IoT, and, where suitable, blockchain, enables smart-destination loops that achieve sustainability goals alongside commercial objectives, expanding investment prospects and

bolstering brand credibility (Calisto & Sarkar, 2024; Eskelinen, 2025; Rane et al., 2023). For early adopters, including those experimenting with spatial computing headsets, the opportunity lies in treating immersive AI not as a marketing gimmick but as a managed, measurable service design capability integrated throughout the customer travel journey (Setiawan, 2024). Building on this evidence, recent guidance for managers and researchers consolidates how augmented reality creates value along the customer journey, maps hardware and software options, and emphasises rigorous measurement of diagnosticity and conversion alongside user-centred design and content pipelines, noting that many firms still underuse the distinctive properties of augmented reality such as spatial anchoring and embodied interaction (T. Dieck et al., 2024). Complementary work on the multifaceted impact of artificial intelligence in hospitality identifies adoption drivers and barriers through structured modelling and recommends balanced strategies that combine investment in staff capability with transparent data practices and culture change to preserve trust while scaling automation (Chen & Ahmed, 2025; Zahidi et al., 2024; Zhao et al., 2025). Within marketing specifically, a grounded theory synthesis identifies ten recurring trends grouped under four themes that collectively explain how artificial intelligence re-engineers internal processes, enables mass personalisation, reshapes stakeholder relationships through return on investment and ethics, restructures networks and distribution, and transforms customer processes via predictive care and augmented service design, setting a clear research agenda for hotels and destinations (Bulchand-Gidumal et al., 2024). A sector-wide review of virtual reality and augmented reality applications further highlights their transformative role in training, safety, and guest experience, but also points out challenges related to acceptance, costs, and implementation. It calls for partnerships and staged pilots to reach scale in fourth-generation cities (Salama, 2024). Within the academic body of work, bibliometric mapping shows a rapid increase in artificial intelligence research in tourism and hospitality, with a notable rise in generative systems, and reveals emerging themes in trust, ethics, and human-in-the-loop design that are directly relevant to immersive decision support (Chen & Ahmed, 2025; To & Yu, 2025). Meanwhile, a framework-based review of the metaverse synthesises perspectives on adoption, technology, and context, emphasising governance, interoperability, and privacy as essential for sustainable value creation and preventing value co-destruction in immersive service ecosystems (Chi et al., 2020; Debnath & Srivastava, 2025). Additional reviews focused on augmented reality in tourism report consistent progress in interpretation, navigation, and engagement, with opportunities in cultural heritage, gamification, and accessibility when content quality and device diversity are well managed, reinforcing the case for diagnostic, context-aware previews before making commitments (Li & Lee, 2024). At the destination marketing level, studies of tourism villages position artificial intelligence-enabled augmented reality as an integrated marketing communication tool that lifts awareness and visit intention while surfacing tensions around privacy, digital divides, and content governance, recommending iterative co-creation with communities to ensure authenticity and inclusion (Rumambi, Lintong, & Susilo, 2024). Applied architectural work shows how generative models and augmented reality can provide on-site, gamified storytelling for cultural heritage without collecting extra personal data beyond policy requirements, demonstrating privacy-by-design approaches for experiential layers (Martusciello et al., 2025; Prandi et al., 2023). Finally, the importance of these areas is supported by evidence that augmented reality marketing is still underused in practice and needs clearer plans that link content, measurement, and organisational readiness. Meanwhile, sector studies agree on the need

to combine immersive experience design with workforce skills, ethical safeguards, and ongoing evaluation of behavioural impacts and return on investment (Bulchand-Gidumal et al., 2024; Kumar et al., 2025; Lim et al., 2024; Manchanda, 2024; Salama, 2024; T. Dieck et al., 2024; Tekin, 2025; Zahidi et al., 2024).

Methodology

This study employed a mixed-method qualitative approach that combined automated conceptual analysis with expert interviews to develop an integrated understanding of how artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) technologies influence consumer decision-making and strategic practices in hospitality and tourism. The methodological process occurred in three sequential stages: (1) conceptual mapping of existing literature using Leximancer, (2) thematic analysis of semi-structured expert interviews, and (3) triangulation of both results to identify converging, diverging, and emerging patterns.

Phase One: Literature Corpus Development and Leximancer Analysis

The first phase involved constructing a comprehensive literature corpus informed by themes identified in the review of AI-driven immersive technologies in hospitality and tourism. Peer-reviewed journal articles, conference papers, and systematic reviews were selected using key search terms, including AI, artificial intelligence, augmented reality, virtual reality, immersive tourism, consumer decision-making, diagnosticity, and satisfaction. Studies published between 2015 and 2025 were included to capture both foundational and contemporary perspectives on AI-enhanced immersive environments. Leximancer, an established automated content analysis tool, was employed to generate conceptual maps that visualise semantic relationships across the literature. The software identifies recurring concepts, clusters these into broader themes, and maps the strength of their interconnections. This allowed the research team to detect dominant conceptual patterns, for example, relationships between reality, intention, satisfaction, risk, innovation, and digital well-being, as well as emergent constructs linked to sustainability, ethical governance, and metaverse-influenced travel behaviour. The resulting concept map served as a baseline representation of how the academic field currently conceptualises immersive AI applications in tourism and hospitality.

Phase Two: Expert Interviews and Thematic Mapping

To complement the literature-derived conceptual structure, the second phase involved semi-structured interviews with experts working across hospitality, tourism technology, immersive media production, and digital marketing. Participants were selected based on their professional experience with implementing or evaluating AI-enabled AR/VR systems, spatial computing applications, or immersive customer engagement tools.

Interview questions explored experts' perceptions of:

- the practical drivers and barriers of AR/VR adoption;
- managerial and operational implications of immersive AI;
- customer expectations around personalisation, digital well-being, and authenticity;
- sustainability, inclusivity, and ethical considerations surrounding immersive environments;
- anticipated future developments in AI-driven travel experiences.

Interview transcripts were analysed using Leximancer to produce a second conceptual map, highlighting key practitioner-led concepts such as trust, presence, diagnostic value, experience quality, practicality, price value, system quality, and ethical engagement. This automated approach ensured consistency with the literature mapping method and enabled a systematic comparison of academic and practitioner viewpoints.

Phase Three: Integration and Comparative Pattern Analysis

The final phase involved triangulating the two conceptual maps, one derived from the literature and one from expert interviews. This integration aimed to identify areas of convergence (shared themes across research and practice), divergence (aspects emphasised in one dataset but not the other), and emergence (new, hybrid constructs appearing at their intersection). The comparative analysis revealed several key insights. The literature focused on theoretical concepts such as perceived innovativeness, perceived risk, satisfaction, and intention to stay, alongside broader issues around sustainability, digital well-being, and ethical governance. Conversely, the expert interviews emphasised operational realities, including usability constraints, the accuracy of immersive content, implementation costs, system stability, and organisational readiness. Notably, both datasets agreed that trust, diagnosticity, and personalisation are essential in shaping traveller decision-making. Through this integration, the study developed a consolidated conceptual framework showing how immersive AI technologies affect tourism experiences across cognitive, emotional, operational, and ethical dimensions.

Findings

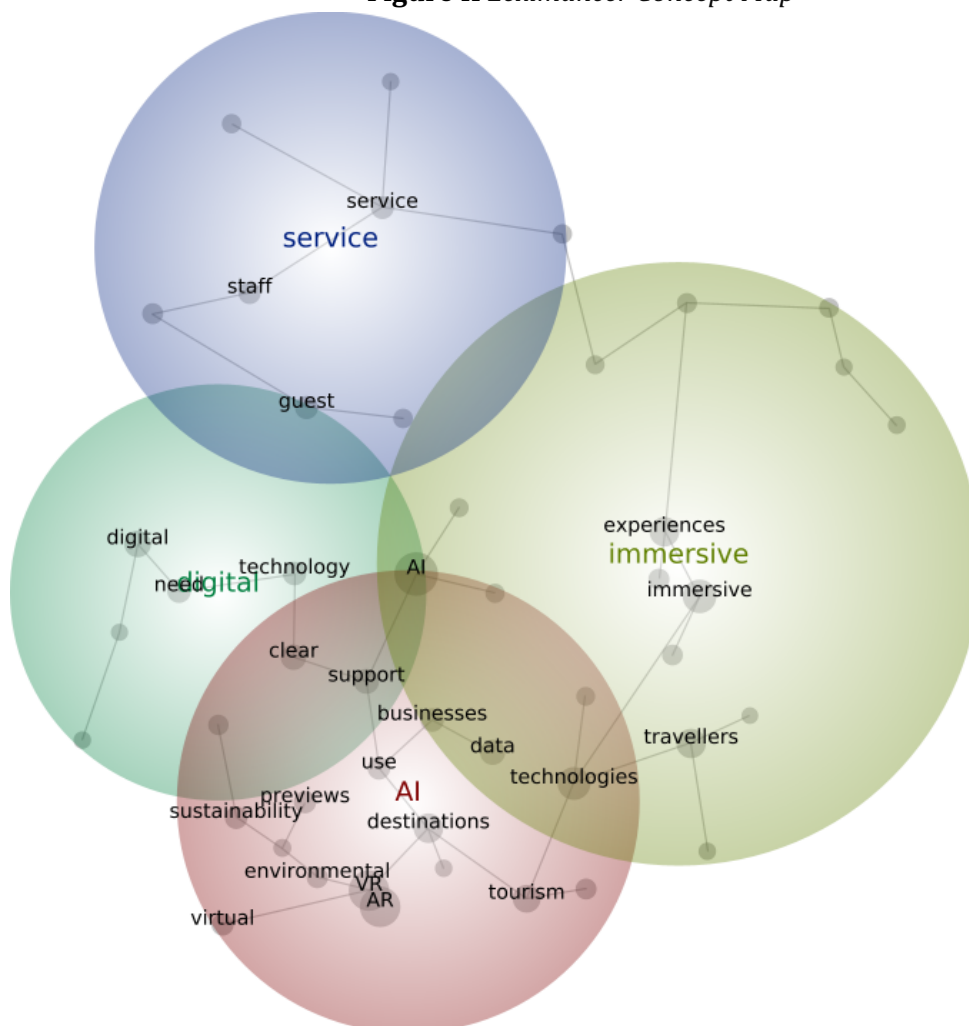
Phase one

The Leximancer analysis of the literature identified tourism as one of the most dominant and densely connected themes in the corpus (Hits = 3370), confirming its central role in structuring academic discourse on AI-driven augmented reality (AR) and virtual reality (VR) in hospitality and travel. As shown in Figure 1, the tourism theme is strongly interconnected with concepts such as hospitality, AR, VR, immersive and virtual experiences, technology, metaverse, marketing, adoption, engagement, sustainability, destination, services, and development, indicating that the literature conceptualises immersive technologies as multidimensional systems rather than isolated tools. The close clustering of experience-, immersion-, and engagement-related concepts demonstrates that AR and VR are primarily framed as mechanisms for enhancing experiential value by allowing tourists to visualise destinations, interact with contextual information, and emotionally connect with places before and during travel. This experiential orientation is closely linked to behavioural constructs such as adoption, intention, and use, suggesting that immersive technologies function as risk-reduction and confidence-building instruments that influence tourist decision-making and repeat visitation. At the managerial level, the prominence of marketing, integration, and application-related concepts highlights the strategic importance of embedding AR and VR within integrated marketing communication strategies, with destination marketers, hoteliers, and booking platforms positioned as key intermediaries responsible for translating technological innovation into perceived consumer value. Sustainability emerges as a significant and increasingly prominent dimension within the tourism theme, with the literature emphasising that immersive technologies can support sustainable tourism development by offering virtual alternatives to physical travel, managing visitor flows, and reducing

Phase two

The Leximancer analysis of the expert interview data identified AI as the most prominent theme in Phase 2 (Hits = 70), closely connected with concepts such as AR, VR, technologies, destinations, tourism, data, sustainability, support, virtual previews, and environmental impact, indicating that practitioners predominantly frame immersive technologies through a strategic and operational lens rather than a purely experiential one as shown in Figure II. Experts consistently emphasised AI's role as an enabling infrastructure that supports predictive demand management, visitor flow optimisation, and real-time monitoring of environmental impacts, positioning smart technologies as critical tools for addressing overtourism and sustainability challenges in high-pressure destinations. AR and VR were repeatedly discussed as complementary mechanisms that offer virtual previews and alternative experiences, helping to reduce unnecessary travel, redistribute visitor demand, and encourage more responsible tourist behaviour through immersive educational content.

Figure II Leximancer Concept Map



Alongside sustainability, the immersive theme (Hits = 44) highlights a strong practitioner focus on end-to-end experience design, with experts noting that emerging devices such as the Apple Vision Pro are reshaping traveller expectations toward continuous, personalised, and emotionally engaging journeys across pre-trip, on-site, and post-trip stages. Importantly,

interviewees rejected the notion that AI dehumanises hospitality, instead describing it as a backstage support system that enables staff to be more present, attentive, and impactful in guest-facing interactions. The digital theme (Hits = 37) further indicates that experts view successful implementation as contingent on robust digital infrastructure, clear strategic objectives, and alignment with the guest journey; poor usability, outdated visuals, and fragmented systems are identified as major risks to trust and adoption. Cultural resistance and skills gaps were also highlighted as significant barriers, suggesting that many implementation failures stem not from technological limitations but from inadequate training, governance, and change management. Finally, the service theme (Hits = 23) underscores a strong preference for hybrid service models in which AI manages routine, data-intensive tasks, such as recommendations, reminders, and operational prompts. At the same time, human staff focus on empathy-driven, high-value interactions. Across all themes, experts consistently raised concerns around cost, technical capability, and uncertainty about return on investment, particularly for smaller operators, reinforcing the view that immersive AI technologies deliver the greatest value when embedded within coherent digital, service, and sustainability strategies rather than deployed as standalone innovations.

Phase three

The integrated Leximancer analysis of Phases 1 and 2 positions tourism as the dominant overarching theme (Hits = 3488), confirming it as the primary conceptual anchor through which artificial intelligence, augmented reality (AR), and virtual reality (VR) are interpreted across both academic literature and expert perspectives. As illustrated in Figure 3, tourism is densely interconnected with concepts such as AR, VR, immersive experiences, metaverse, technology, marketing, adoption, engagement, sustainability, destination, services, behaviour, and satisfaction, demonstrating a strong convergence between theoretical and practice-based insights. The synthesis reveals that immersive technologies are consistently framed as experience-centred mechanisms that shape tourist behaviour by enhancing diagnosticity, reducing uncertainty, and strengthening emotional engagement across the pre-, during-, and post-travel journey. Particular emphasis is placed on how metaverse platforms influence Gen Z motivations and foster loyalty within virtual environments, signalling a generational shift in how tourism value is created and sustained through immersive digital spaces (Li & Lee, 2024). These virtual environments are increasingly recognised as meaningful contexts in which attachment, identity, and brand relationships are formed rather than merely as promotional or exploratory tools. In parallel, the combined findings highlight the growing importance of digital twin technologies and sensory marketing in delivering authentic, immersive, and context-rich representations of destinations that significantly influence real-world travel intentions, reinforcing the link between virtual experience and physical visitation. Artificial intelligence emerges as a critical enabling infrastructure that underpins these processes by supporting demand prediction, visitor flow management, personalisation, and sustainability monitoring, thereby connecting experiential value with operational efficiency and long-term destination resilience. At the same time, the integrated analysis underscores a shared concern across both phases regarding digital well-being, inclusivity, and ethical engagement, particularly in relation to metaverse tourism. The recurring emphasis on digital detox reinforces the view that immersive technologies should complement rather than replace physical travel, aligning innovation with

technologies operate most effectively when understood as part of a broader socio-technical ecosystem rather than as standalone innovations.

A key contribution of the integrated analysis lies in clarifying how experiential value and operational efficiency intersect. While the literature tends to foreground constructs such as satisfaction, intention, and perceived innovativeness, expert perspectives highlight usability, system reliability, cost, and organisational readiness as decisive factors shaping real-world adoption. The convergence around trust, diagnosticity, and personalisation suggests that these constructs function as bridging mechanisms between theoretical promise and practical feasibility. Immersive technologies appear most influential when they deliver credible, context-rich representations of destinations while remaining intuitive, reliable, and aligned with the guest journey.

The analysis also reveals a notable shift in tourism value creation driven by metaverse platforms, particularly among Gen Z (Li & Lee, 2024). The findings indicate that virtual environments increasingly function as spaces in which motivation, attachment, and loyalty are formed, extending tourism engagement beyond physical travel episodes. Digital twins and sensory marketing emerge as particularly influential in translating virtual immersion into real-world travel intent, reinforcing the hybridisation of digital and physical tourism experiences. At the same time, the recurring emphasis on digital well-being, ethical engagement, and inclusivity highlights an emerging tension between technological immersion and human-centred tourism values. Both scholars and practitioners converge on the view that immersive technologies should complement rather than replace physical travel, positioning digital experiences as enhancers of sustainability, learning, and engagement rather than substitutes for embodied experience.

From a strategic perspective, the findings suggest that the long-term value of immersive AI lies not in novelty but in integration. AI-driven AR and VR contribute most effectively when embedded within coherent digital strategies that align marketing communication, service design, sustainability goals, and workforce capability. This reinforces calls for rethinking traditional service and marketing theories to account for technology-mediated encounters, hybrid service models, and data-driven value co-creation in tourism.

Limitations

Despite its contributions, the study is subject to several limitations that should be acknowledged. First, the analysis relies on secondary literature and expert interview data, which may reflect prevailing narratives and professional perspectives rather than direct observations of tourist behaviour. Although Leximancer enables systematic and replicable conceptual analysis, it focuses on semantic relationships and does not capture the full contextual nuance that may emerge through ethnographic or longitudinal approaches.

Second, although the expert interviews are diverse in professional backgrounds, they constitute a small sample and may not fully capture regional, cultural, or organisational differences across the global tourism sector. Smaller operators and destinations with limited digital infrastructure may face constraints that are underrepresented in expert-driven discussions. Third, the study focuses primarily on the strategic and experiential dimensions of immersive technologies, leaving economic performance metrics and quantitative behavioural outcomes for future investigation. Finally, as immersive technologies and metaverse platforms continue to evolve rapidly, some findings may be time-sensitive. Advances in hardware accessibility, regulatory frameworks, and

consumer digital literacy may reshape adoption dynamics and ethical considerations in ways that extend beyond the temporal scope of the analysed data.

Conclusion

The integrated analysis demonstrates that AI-driven AR and VR are reshaping hospitality and tourism through their combined influence on experience design, service delivery, marketing strategy, and sustainable destination management. Across literature and expert perspectives, immersive technologies are consistently positioned as mechanisms that enhance diagnosticity, reduce uncertainty, and foster deeper emotional engagement, thereby influencing tourist motivation, behaviour, and loyalty. Artificial intelligence emerges as the foundational infrastructure that enables these outcomes by supporting personalisation, predictive analytics, operational efficiency, and sustainability monitoring.

Notably, the findings highlight a shift towards hybrid physical-digital tourism ecosystems, where virtual environments, digital twins, and metaverse platforms increasingly shape how destinations are perceived and experienced, particularly among Gen Z. At the same time, the growing emphasis on digital well-being, inclusivity, and ethical engagement underscores the need for responsible design and governance to ensure that immersive technologies enhance rather than undermine the human dimensions of tourism.

Overall, the study underscores that the transformative potential of immersive AI lies not in technological sophistication alone but in strategic integration. When aligned with clear sustainability objectives, coherent service models, and human-centred values, AI-driven AR and VR offer powerful tools for creating meaningful, resilient, and future-oriented tourism experiences.

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