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Virtual Reality in Marketing: Current Applications, Consumer Experience, and Future Directions

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ABSTRACT

Virtual reality (VR) has emerged as a strategic marketing technology that transforms consumer–brand interactions through immersive and interactive experiences. Despite rapid growth in VR marketing research, the literature remains conceptually fragmented, with diverse theoretical perspectives and inconsistent findings across industries. This review synthesizes more than 100 Scopus-indexed studies published primarily between 2019 and 2026 to consolidate current knowledge and identify future directions. This review makes two primary theoretical contributions. First, it proposes a five-phase evolutionary model of VR marketing, illustrating the progression from technology demonstration to intelligent immersive marketing. Second, it develops a VR Consumer Experience Framework that integrates several theories to explain how immersive experiences influence consumer engagement, purchase intention, and brand advocacy. The review further synthesizes evidence across major marketing applications and emerging technologies, including artificial intelligence, digital twins, multisensory interfaces, and the metaverse. It identifies technological, ethical, and regulatory challenges while outlining priorities for future research and managerial practice. Overall, the paper positions VR marketing as an intelligent immersive ecosystem that extends beyond a communication medium to become a strategic platform for creating adaptive, personalized, and consumer-centered marketing experiences.

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INTRODUCTION

Marketing has progressively evolved toward richer and more immersive consumer experiences, culminating in virtual reality (VR). Unlike earlier media that primarily present products or environments, VR places consumers inside them, transforming them from passive observers into active participants. This perceptual shift has stimulated a rapidly expanding body of research examining how immersive technologies reshape attention, emotion, decision-making, and consumer–brand relationships (Ambika et al., 2025; Suh & Prophet, 2018).

The maturation of consumer-grade head-mounted displays (HMDs), the convergence of VR with artificial intelligence (AI), and the metaverse discourse propelled by global platform actors have together turned what was once a niche experimental medium into a mainstream marketing instrument. Wedel et al. (2020) argued early in this cycle that VR and AR would constitute a generative frontier for consumer research, demanding methodological renewal and theoretical extension across the discipline. Subsequent scholarship has confirmed and amplified that prognosis: bibliometric analyses document an exponential rise in VR marketing publications since 2019, with retail, tourism, advertising, and brand experience emerging as dominant research clusters (Angra et al., 2025; Taşci et al., 2024; Zaki et al., 2023).

Yet the field's expansion has not been matched by conceptual consolidation. Studies disagree about the boundary conditions under which VR outperforms two-dimensional media; about the proper theoretical primitives (presence, telepresence, immersion, flow, transportation) and their causal ordering; and about the long-term behavioral consequences of immersive exposure. Cowan and Ketron's (2019b) immersion/fantasy typology challenged the implicit assumption that “more immersion is always better,” whereas Mishra et al.'s (2024) meta-analysis of VR retailing concluded that purchase intention is reliably elevated but that non-purchase

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intentions are more sensitive to design and contextual moderators. Meanwhile, the metaverse debate has injected an additional layer of conceptual contestation by reframing VR not as a media channel but as a persistent socio-economic space (Kaur et al., 2024; Leong et al., 2026; Spais et al., 2025).

These tensions are not merely academic. Marketers, retailers, and policymakers face concrete decisions about investment, design, governance, and measurement under genuine uncertainty. Empirical research is unevenly distributed across industries, demographic groups, and cultures; longitudinal data are scarce; and the ethical guardrails surrounding biometric data collection, manipulation, and surveillance in immersive environments remain underdeveloped (Hine et al., 2024; Kim, 2022).

Despite the rapid growth of VR marketing research, the field remains conceptually fragmented. Existing studies draw on diverse theoretical perspectives (including Presence Theory, Flow Theory, Transportation Theory, the Technology Acceptance Model (TAM), the Stimulus-Organism-Response (S-O-R) framework, and Experiential Marketing Theory) yet these approaches are often applied in isolation, resulting in inconsistent findings across industries and contexts (Cowan & Ketron, 2019b; Mishra et al., 2024; Wedel et al., 2020). The convergence of VR with artificial intelligence (AI), the metaverse, digital twins, and multisensory technologies further highlights the need for an integrated understanding of immersive consumer experience (Lu et al., 2025; Spais et al., 2025).

To address these gaps, this review synthesizes the evolution, applications, and theoretical foundations of VR marketing while critically comparing existing evidence. The review makes two primary theoretical contributions. First, it proposes a five-phase evolutionary model of VR marketing, tracing the progression from technology demonstration to intelligent immersive marketing. Second, it develops an Integrated VR Consumer Experience Framework that explains how immersion, presence, transportation, flow, and brand experience jointly shape consumer behavior. Building on these frameworks, the review synthesizes current applications, emerging technologies, managerial implications, and future research directions.

The remainder of the paper is organized as follows. Section 2 presents the proposed evolutionary model, Section 3 reviews current applications, Section 4 develops the Integrated VR Consumer Experience Framework, Section 5 discusses emerging trends, Section 6 examines key challenges, Section 7 outlines future research directions, Section 8 presents managerial implications, and Section 9 concludes the review.

EVOLUTION OF VIRTUAL REALITY IN MARKETING

The VR marketing literature reveals not a smooth diffusion curve but a punctuated sequence of paradigmatic shifts. Yadav et al.'s (2023) 4C-based review of two decades and Lu et al.'s (2025) information-systems synthesis converge on a similar narrative: VR has been continuously reabsorbed into the marketing discipline as new technological affordances and theoretical lenses become available. Building on previous reviews and bibliometric analyses, we propose a five-phase evolutionary model that, in our reading, better captures the logic of the field's development than the strict chronological accounts that dominate prior reviews.

Technology Demonstration (pre-2010)

In this initial phase, VR was deployed primarily as a spectacle. Marketing objectives centred on demonstrating brand sophistication, signalling innovation, and generating earned media. Berg and Vance's (2017) industry survey of VR in product design and manufacturing exemplifies the era's emphasis on prototyping and engineering visualization over consumer engagement. Effectiveness metrics were largely descriptive (novelty, attention, recall) and theoretical engagement was thin. Importantly, Queiroz et al.'s (2018) technological-versus-psychological immersion framework, although published later, retrospectively codified the conceptual vocabulary that organizes this phase.

Experiential Marketing (≈2010–2017)

The maturation of HMDs (Oculus Rift, HTC Vive) and the spread of 360° video shifted the locus from demonstration to experience. Marketing objectives turned toward emotional engagement, brand storytelling, and the cultivation of vivid memory traces. Van Kerrebroeck et al.'s (2017) experimental work on the vividness effect in transformational marketing communications is paradigmatic of this turn, demonstrating that VR significantly enhanced brand attitude relative to flat-screen presentations. Tourism, particularly destination

marketing, emerged as the leading laboratory because the gap between digital preview and physical consumption was largest there (Ying et al., 2022). Hyun and O’Keefe’s (2012) telepresence-based virtual destination image model provided the theoretical scaffolding for this empirical wave.

Omnichannel Marketing (≈2017–2021)

As VR diffused from flagship events into integrated retail and service strategies, Silva et al.’s (2024) systematic review on VR in omnichannel marketing crystallized a new objective: not merely creating experiences but threading them across digital and physical touchpoints. Apparel retailers experimented with virtual fitting rooms (Manjunath et al., 2026), real estate firms with virtual property tours (Azmi et al., 2022), and education programs with virtual product demonstrations (Nguyen et al., 2021). Calvo et al.’s (2023) analysis of AI’s role in omnichannel customer experience signalled the early fusion of immersive and intelligent technologies that would dominate the next phase.

Metaverse and AI Marketing (≈2021–2024)

The COVID-19 pandemic and Meta Platforms’ 2021 rebranding catalyzed a discursive shift from VR-as-channel to metaverse-as-environment. Marketing objectives expanded to encompass community building, virtual goods commerce, persistent identity, and avatar-mediated brand relationships (Arya et al., 2024; Kaur et al., 2024). Arya et al.’s (2024) study of XR-induced gamification and consumer-based brand equity in the metaverse, together with Spais et al.’s (2025) agenda-setting article in the Journal of Consumer Behaviour, demonstrates how brand experience is increasingly co-created in shared virtual spaces rather than delivered to passive recipients. Simultaneously, AI personalization began to penetrate VR pipelines, enabling tailored experiences calibrated to user data (Lakshmi et al., 2025; Yilmaz & Baser, 2025)

Intelligent Immersive Marketing (2024–present)

Recent developments integrate VR, AI, multisensory hardware, biometric sensing, and digital-twin infrastructures into what we term intelligent immersive marketing. Geda et al.’s (2026) AI-enabled multimodal framework for preference prediction in VR shopping, McColl-Kennedy et al.’s (2025) articulation of digital twins as a game changer for customer experience, and Hornik and Rachamim’s (2025) consumer-digital-twin framework jointly mark the field’s reorientation. The phase is distinguished by predictive personalization, adaptive content generation, multisensory congruence engineering, and an emerging ethics-by-design literature (Hine et al., 2024; Prillard et al., 2024).



Figure 1. Five-Phase Evolutionary Model of VR Marketing

A central analytical claim of this review is that successive phases do not simply replace their predecessors; they layer over them, generating an increasingly complex technological and conceptual stack. Marketers today often operate across multiple phases simultaneously, deploying Phase 2 experiential storytelling for awareness while building Phase 5 digital-twin personalization for retention. Figure 1 illustrates this cumulative evolution

through the proposed five-phase evolutionary model of VR marketing, emphasizing that each phase extends rather than replaces the capabilities of earlier stages.

CURRENT APPLICATIONS OF VR MARKETING

The application of VR in marketing now spans a wide range of industries, although research attention remains uneven. Tourism and retail dominate the literature, while sectors such as healthcare, manufacturing, education, sports, and food and beverage remain comparatively underexplored despite their growing commercial relevance (Çil et al., 2025; Dan, 2025). Rather than categorizing applications solely by industry, the literature suggests that VR creates value by reducing purchase uncertainty, enriching consumer experience, supporting co-creation, facilitating training, and strengthening community engagement.

Retail and tourism constitute the most mature application domains. In retail, VR is primarily used through virtual stores and fitting rooms that enhance purchase intention by increasing telepresence, enjoyment, and perceived value, although these effects vary according to shopping orientation, product involvement, and consumer characteristics (Erensoy et al., 2024; Mishra et al., 2024; Zhang et al., 2024). Similarly, tourism research consistently demonstrates that telepresence and multisensory immersion strengthen destination image, visit intention, and customer satisfaction while extending tourism experiences into metaverse environments and virtual heritage applications (Ying et al., 2022; Melo et al., 2022; Sánchez-Amboage et al., 2024).

Beyond these leading sectors, VR increasingly supports experiential marketing across a variety of industries. In real estate, immersive property tours reduce uncertainty and enhance purchase intention through emotional engagement (Azmi et al., 2022; Hussin & Bakar, 2023). Healthcare organizations employ VR for patient education and experiential branding, while manufacturing firms use virtual prototyping and product demonstrations to facilitate B2B marketing and customer co-creation (Berg & Vance, 2017; Erdem, 2025; Iqbal et al., 2024). Educational institutions similarly utilize VR for programme promotion and institutional positioning through immersive campus experiences (Alfalayeh et al., 2025).

Luxury, sports, entertainment, and food and beverage marketing illustrate how VR supports highly experiential forms of consumer engagement. Luxury brands employ immersive environments to reinforce exclusivity and stimulate hedonic consumption (Altarteer & Charissis, 2019; Liu et al., 2025), while sports and entertainment organizations enhance fan participation through immersive events and interactive experiences (Pashaie et al., 2025; Sarkar & Ghosh, 2023; Guan, 2022). In contrast, food and beverage marketing raises significant ethical concerns, particularly regarding immersive advertising targeting children and vulnerable consumers, highlighting the need for stronger regulatory oversight (Boyland et al., 2022; Cassidy et al., 2024).

Overall, three patterns emerge across industries. First, VR is most effective when products or services are experiential, high involvement, geographically distant, or associated with substantial purchase risk. Second, theoretical perspectives differ across sectors, with retail predominantly adopting the Stimulus-Organism-Response framework, tourism emphasizing telepresence, and luxury marketing drawing on technology acceptance and hedonic-value theories. Third, the evidence base remains uneven: while tourism and retail account for most empirical research, industries with important social and ethical implications continue to receive comparatively limited scholarly attention.

Table 1. Applications of VR Across Industries

Industry	VR Applications	Marketing Benefits	Representative Studies
Retail	Virtual stores; fitting rooms; gamified shopping	Higher purchase intent; enhanced pleasure; reduced perceived risk	Erensoy et al. (2024); Mishra et al. (2024); Zhang et al. (2024)
Tourism	Destination previews; metaverse travel; heritage tours	Telepresence-driven visit intent; sustainability via virtual substitution	Ying et al. (2022); Melo et al. (2022); Sánchez-Amboage et al. (2024)
Hospitality	Virtual hotel walk-throughs; immersive booking	Pre-purchase confidence; differentiation	Yu et al. (2024); Hoang et al. (2023)
Real estate	Property tours; emotion-intelligent VR	Emotional engagement; reduced uncertainty	Azmi et al. (2022); Hussin and Bakar (2023)

Healthcare	Patient education; experiential branding	Anxiety reduction; trust formation	Iqbal et al. (2024); Renu (2021)
Manufacturing	Virtual prototyping; B2B demonstrations	Sales-cycle compression; co-creation	Berg and Vance (2017); Erdem (2025)
Education	Programme previews; immersive recruiting	Institutional positioning	Alfalayeh et al. (2025)
Luxury	Virtual flagships; metaverse couture	Hedonic value; exclusivity extension	Altarteer and Charissis (2019); Liu et al. (2025)
Sports	Immersive fan experiences; athlete co-presence	Engagement; new revenue channels	Pashaie et al. (2025); Rynarzewska (2018)
Food and beverage	Multisensory food advertising	Strong emotional pull; ethical risk	Cassidy et al. (2024); Boyland et al. (2022)
Entertainment and arts	VR exhibits; three-dimensional design	Cultural prestige; engagement	Guan (2022); Schöne et al. (2023)

A critical synthesis across these industries yields three patterns. First, functional fit between VR's affordances and category characteristics is determinative: VR thrives where products are experiential, geographically distant, perceptually rich, or risk-laden. Second, theoretical fragmentation persists across sectors, with retail leaning heavily on SOR, tourism on telepresence, luxury on TAM and hedonic-value frameworks, and manufacturing on diffusion-of-innovation logic. Third, an evidence asymmetry characterizes the field: tourism and retail dominate citation counts, while sectors with higher social risk (e.g., food and beverage marketing to children) are paradoxically under-investigated relative to their ethical stakes.

CONSUMER EXPERIENCE IN VR MARKETING

The conceptual core of the VR marketing literature is the consumer experience, but the very notion of “experience” is contested. We organize this section around the principal constructs (presence, telepresence, immersion, flow, emotional engagement, brand experience) and the principal theoretical lenses—Presence Theory, Flow Theory, Transportation Theory, TAM, SOR, and Experiential Marketing Theory.

Presence and telepresence form the conceptual bedrock. Chen et al.'s (2023) thirty-year systematic review of “presence” in interactive marketing identifies considerable conceptual drift, with at least four distinct operationalizations dominating the empirical literature: spatial presence, social presence, self-presence, and the perceived-realism component of telepresence. Yu et al. (2024) attempt to reconcile these by treating presence as a multidimensional latent construct rather than a unitary variable. The implication for marketing scholarship is significant: empirical contradictions across studies are partly artefacts of construct heterogeneity rather than genuine theoretical disagreement.

Immersion, often used interchangeably with presence in lay discourse, is more usefully distinguished as the technological envelope (field of view, latency, sensory bandwidth) that produces the psychological sensation of presence. Cowan and Ketron's (2019b) immersion/fantasy typology and their dual model of product involvement (Cowan & Ketron, 2019a) constitute the most rigorous attempt to discipline this distinction, demonstrating that high immersion is not uniformly beneficial: low-involvement consumers with fantasy-incompatible products may experience high-immersion VR as cognitively burdensome rather than enjoyable. Wu et al.'s (2025) comparison of AR and VR effectiveness in promoting consumer products converges on a similar conclusion, the medium must fit the message.

Flow brings the temporal dimension into the model. Fang and Lin (2026) develop a flow-mediated model in which immersion produces absorption, which in turn drives experience-economy outcomes such as memory, recommendation, and repeat intent. Guo et al. (2025) explicitly position flow as the lens through which immersion and presence translate into engagement in ubiquitous-intelligent VR contexts. The convergence of flow, presence, and engagement constructs suggests an opportunity for an integrative theoretical synthesis.

Transportation Theory extends the experience model from situational engagement to narrative absorption. Wang and Calder's (2009) original media-engagement framework has been extensively reapplied: Chen and Yao (2022) demonstrate that narrative messages amplify VR's persuasive force through telepresence and transportation; Hsieh et al.'s (2026) study of incongruent narrative transportation in VR advertising shows that even narrative-content mismatch can drive engagement under specific conditions; and Hoang et al. (2023)

document how transportation in VR tourism translates into sustainable travel intentions. De Regt et al.'s (2021) distinction between story-telling and story-doing elegantly captures the unique narrative ontology of VR, in which the consumer is not merely audience but actor.

TAM, UTAUT, and adoption frameworks continue to dominate the VR-acceptance literature despite well-known critiques of their parsimony. Xian's (2020) empirical investigation of consumer VR acceptance, Wang's (2024) Value-based Adoption Model (VAM)-based study of tourist VR adoption, and Javanmardi et al.'s (2025) grey-systems-theory analysis of VR acceptance drivers in tourism planning together demonstrate that perceived usefulness and ease of use remain central but require augmentation with hedonic and social variables. Altarteer and Charissis's (2019) luxury-store TAM study and Lamping et al.'s (2025) VR/AR corporate brand communication TAM analysis exemplify these extensions. Kordova et al.'s (2026) finding that VR adoption follows an awareness-to-skepticism trajectory (rather than the monotonic acceptance curve TAM assumes) is theoretically important. Cummings et al. (2023) further enrich this literature by identifying psychological predictors of consumer-level VR adoption and usage.

The Stimulus-Organism-Response (SOR) paradigm is arguably the most pervasive framework in contemporary VR retail research. Erensoy et al.'s (2024) systematic review, Elsholz et al.'s (2023) SOR-based shopping review, Suh and Prophet's (2018) broader immersive-technology SOR analysis, and Azmi et al.'s (2022) real estate application together cement SOR's centrality. Yet SOR's flexibility is also its limitation: virtually any VR feature can be coded as a stimulus, any psychological state as an organism, and any behavioural outcome as a response, making the framework easy to apply but difficult to falsify.

Experiential Marketing Theory rounds out the theoretical landscape by reorienting attention from cognition to experience modules—sense, feel, think, act, relate. Cowan et al.'s (2023) “reality of virtuality” article connects VR explicitly to experiential marketing constructs, while Yadav et al. (2023) and Manjunath et al. (2026) apply the experiential frame to brand and apparel-shopping contexts. Ambika et al.'s (2025) two-decade systematic review documents how experiential constructs (focused immersion, immersive experience, imagination of future consumption) have come to dominate the field's vocabulary. Kim and Yap (2025) further explore the psychological mechanisms through which immersive technologies influence consumer well-being, drawing flow and presence into a broader experiential model.

Table 2. Consumer Experience Outcomes Across Major VR Marketing Studies

Outcome Variable	Direction of VR Effect	Key Moderators	Representative Sources
Purchase intention	Positive (robust)	Product involvement; hedonic vs. utilitarian	Mishra et al. (2024); Erensoy et al. (2024)
Brand attitude	Positive	Narrative congruence; vividness	Van Kerrebroeck et al. (2017); Hsieh et al. (2026)
Customer satisfaction	Positive	Sensory congruence; product complexity	Melo et al. (2022); Chan et al. (2023)
Visit/travel intention	Strongly positive	Telepresence; social presence	Ying et al. (2022); Hoang et al. (2023)
Brand recall	Mixed (vividness effect vs. cognitive load)	Immersion depth; congruence	Brengman et al. (2022); Mohr (2026)
Customer advocacy	Positive (preliminary)	Story-doing vs. story-telling	De Regt et al. (2021); Leong et al. (2026)
Privacy concern	Negative moderator	Perceived data control	Lim et al. (2025); Tionanda et al. (2024)

EMERGING TRENDS

The most consequential developments in VR marketing today are not occurring within VR-in-isolation but at its intersection with adjacent technologies. Five clusters demand particular attention.



AI-powered personalization is reshaping VR from a pre-scripted experience into an adaptive one. Calvo et al. (2023) established AI's importance in omnichannel customer experience; Geda et al. (2026) operationalize it in a multimodal cross-modal-attention framework for VR shopping preference prediction; and Alsaffarini and Awwad (2026) demonstrate that AI personalization meaningfully impacts purchase decisions in sustainable marketing contexts. Yilmaz and Baser (2025) frame AI–VR convergence as constitutive of marketing's future, while Lakshmi et al. (2025) document customer-experience uplift from AI integration. The broader AI-marketing literature, including systematic reviews of AI-driven customer analytics (Uddin, 2026) and analyses of AI hyper-personalization (Tiwari, 2024), confirms a sectoral trend that immersive marketing both inherits and amplifies.

Metaverse marketing has progressed beyond hype-cycle volatility into a stable research programme. Rosário et al. (2023) map challenges and opportunities; Raman and Paul (2025) deploy machine-learning topic modelling to identify integration patterns between metaverse and online retail; Yadav et al. (2025) theorize brand-experience construction in agile-marketing-aligned metaverse contexts; and Pratas et al. (2025) unpack consumer behaviour across VR and AR in metaverse retailing. Adriano-Romero and Illa-Sihuíncha's (2025) metaverse-retailing customer-satisfaction case study, Wadehra and Anand's (2026) metaverse e-commerce trends piece, and Leong et al.'s (2026) brand-evangelism analysis collectively define the contours of the metaverse marketing sub-field. Rane et al.'s (2023) metaverse marketing strategies analysis adds practical depth on platforms, tools, and consumer-behaviour measurement. Spajić et al. (2022) and Spais et al. (2025) provide additional grounding for personalized brand experience in metaverse contexts.

Digital twins are emerging as a foundational infrastructure for next-generation immersive marketing. McColl-Kennedy et al. (2025) position digital twins as transformative for customer experience; Hornik and Rachamim (2025) articulate the consumer-digital-twin concept as a research platform; Fukawa and Rindfleisch (2023) link digital twins to innovation; Quach et al. (2026) extend the framework to phygital customer journeys; and Szmelter-Jarosz and Nozari (2025) combine behavioural digital twins with deep language models for marketing optimization. Muschkiet et al. (2022) lay foundational ground by mapping the trajectory of human digital twins for customer experience. Together these works suggest that immersive marketing's future may rely less on simulating environments than on simulating consumers themselves.

Spatial commerce and the broader XR ecosystem mark a shift from desktop and mobile interfaces toward room-scale interaction. Chen et al.'s (2023) experiment on spatial attention in XR shopping identifies three essential effects of XR on consumer spatial behaviour, while Cunha and Krupsky's (2025) analysis of AR and VR in e-commerce documents the rise of virtual try-ons, spatial placement, and ambient brand experiences. Liang et al.'s (2023) exploration of XR experience design in commercial streets foreshadows the urban metaverse use cases that are now proliferating. Gregurec (2025) bibliometrically maps the parallel mixed-reality marketing literature.

Multisensory VR, haptic technology, and olfactory marketing constitute the field's sensory frontier. Melo et al.'s (2022a) systematic review confirms that adding senses generally benefits the VR experience; Flavián et al.'s (2021) seminal study of scent-content congruence remains the canonical empirical anchor; Brengman et al. (2022) extend this to sound-scent congruence in multisensory VR advertising; Monaro et al. (2026) provide a recent systematic review of VR and AR in sensory marketing; Velasco et al. (2021) integrate haptics and olfaction with computational design; Yang et al. (2025) demonstrate that auditory emotional arousal, visual variation, and their congruence shape consumer engagement; and Tao et al. (2026) show that colour, voice type, and pitch in virtual shopping assistants jointly influence young consumers' purchase intention. Mohr's (2026) treatment of sensory interaction load introduces an important boundary condition: more is not always better, and design must manage cognitive bandwidth carefully. Abd El Sadek Omar et al. (2026) reinforce this synthesis with a focus on integrating brand identity with multisensory narratives. Baltezarević (2023) and Kaushik and Gokhale (2021) broaden the digital sensory marketing perspective.

Virtual influencers constitute another emergent vector of immersive marketing. Liu et al.'s (2026) organic-food study, Rehman et al.'s (2026) analysis of AI-based virtual influencer attributes, and Zhou et al.'s (2026) systematic review of virtual influencer attributes and purchase intention jointly document that virtual influencers achieve engagement rates substantially higher than human counterparts while raising distinctive credibility and parasocial-interaction challenges. Sun et al.'s (2024) exploration of virtual ideality versus virtual authenticity in interactive marketing identifies the conceptual fault line that future research must navigate, while Liu et al.

(2025) demonstrate that human streamers retain emotional and trust advantages even in virtual commerce contexts.

Table 3. Emerging Technologies in Immersive Marketing

Technology	Marketing Role	Maturity	Key Studies
AI personalization	Adaptive content; preference prediction	Rapidly maturing	Geda et al. (2026); Alsaffarini and Awwad (2026)
Metaverse	Persistent commerce environment	Volatile but stabilizing	Raman and Paul (2025); Yadav et al. (2025)
Digital twins	Customer and product simulation	Emerging	McColl-Kennedy et al. (2025); Hornik and Rachamim (2025)
Spatial commerce	Room-scale immersive shopping	Early adoption	Chen et al. (2023); Cunha and Krupsky (2025)
Multisensory VR	Haptic, olfactory, vibrotactile inputs	Mid-maturity	Brengman et al. (2022); Velasco et al. (2021)
Virtual influencers	Avatar-mediated endorsement	Rapidly maturing	Rehman et al. (2026); Zhou et al. (2026)
Generative content	Dynamic narrative; UGC integration	Early	Dimitrova and Rasheva-Yordanova (2026)
XR ecosystem (AR+VR+MR)	Cross-platform brand experience	Mid-maturity	Silva et al. (2024); Gregurec (2025)

A critical synthesis suggests two cross-cutting movements. First, convergence: VR is increasingly inseparable from AI, digital twins, biometric sensing, and the broader XR ecosystem. Second, personalization at scale: the technological substrate now permits adaptive, individualized immersive experiences that were previously the preserve of expensive bespoke productions. Together these movements suggest that the unit of analysis in future VR marketing research must shift from the campaign to the adaptive immersive system.

CHALLENGES AND LIMITATIONS

Despite its potential, VR marketing confronts substantial technological, business, consumer, ethical, and regulatory obstacles that the literature has only recently begun to interrogate systematically.

Technological challenges include hardware bulk, latency, motion sickness, and limited content libraries. Cummings et al.'s (2023) psychometric work on consumer-VR adoption highlights how individual differences in spatial reasoning, immersive tendency, and technology anxiety shape continued use. Huang et al. (2025) demonstrate that the COVID-19 pandemic both expanded interest in VR and exposed the digital divide in VR hardware access. Fares et al. (2024) synthesize these adoption-side barriers in an integrated framework. Mohr's (2026) findings on sensory interaction load identify a peculiarly immersive technological challenge: well-meaning multisensory enrichment can become an experience-destroying overload.

Business challenges include high production costs, scalability constraints, and the absence of standardized effectiveness metrics. Gupta et al.'s (2024) comprehensive framework for unlocking VR's marketing potential and Cowan et al.'s (2023) work on harnessing virtuality both emphasize that return-on-investment calculation remains an open problem. The bibliometric and review work of Zaki et al. (2023), Taşci et al. (2024), and Phoong et al. (2024) consistently identifies measurement gaps as the discipline's principal methodological problem.

Consumer challenges include heterogeneous digital literacy, motion sickness, social isolation concerns, and psychological well-being effects. Kim and Yap's (2025) article on the psychological mechanisms behind immersive technologies' impact on consumer well-being is a significant addition to this literature, as is Akisanmi et al.'s

(2025) broader synthesis of AR/VR effects on behaviour and engagement. Lee et al.'s (2025) moderation analysis of product types and consumption orientations suggests that even when consumers are nominally engaged, their orientation modulates effects substantially.

Privacy and ethical challenges are arguably the most consequential. Kablo et al.'s (2025) contextual-integrity analysis of VR data sharing reveals significant gaps between consumer expectation and platform practice. Hine et al.'s (2024) policy-oriented analysis of safety and privacy in immersive XR proposes a multi-layered governance framework; Kim (2022) examines the General Data Protection Regulation (GDPR)'s applicability to VR data; Menéndez González and Bozkir (2024) focus on eye-tracking devices' compatibility with GDPR; Prillard et al. (2024) propose ethical-design principles for metaverse data privacy; Tionanda et al. (2024) explore the ethical landscape; Asif et al. (2025) map the broader ethical terrain of immersive advertising; Mavroeidi et al. (2019) identify privacy-by-design challenges in gamified systems; Rastogi and Irfan (2025) explore cultural and ethical considerations in metaverse marketing; Khamayseh et al. (2026) focus on consumer trust through ethical AR/VR experiences; and Hosfelt's (2019) foundational work on making ethical decisions for the immersive web has shaped subsequent governance discussions. Masteri Farahani and Payandeh (2025) and Lim et al. (2025) further demonstrate how privacy considerations now structure consumer responses to VR marketing. Karimov et al. (2025) and Jawalkar (2024) extend this conversation into the legal and psychological dimensions of immersive data collection.

Accessibility is a related but distinct concern. Creed et al.'s (2024) review of accessibility barriers in AR/VR identifies pervasive design failures that exclude users with sensory, motor, and cognitive disabilities; Kumar et al. (2025) extend this to emerging-economy mobile-based contexts; and Botelho (2021) frames digital accessibility as both barrier and opportunity. The digital-divide literature, including Raihan et al.'s (2025) systematic review of digital inequity dimensions and Charness and Boot's (2022) analysis of the age-related divide, underscores that VR marketing risks reinforcing rather than alleviating existing inequalities. Braun et al. (2025) further highlight barriers and facilitators for persons with intellectual disabilities.

Cybersecurity and standardization complete the challenge taxonomy. Sharma et al.'s (2026) work on safeguarding XR and metaverse marketing, Pearlman et al.'s (2021) analysis of metaverse governance, and Jawalkar's (2024) ethical-horizons analysis of immersive technologies all identify pressing security concerns. Standardization (of metrics, of data formats, of safety protocols) remains conspicuously underdeveloped.

Regulatory issues intersect with all of the above. The GDPR remains the most-cited regulatory anchor in VR marketing research (Kim, 2022; Menéndez González & Bozkir, 2024), but Hine et al. (2024) demonstrate that immersive technologies expose gaps in existing law around biometric inference, behavioural manipulation, and cross-jurisdictional data flows.

Table 4. Emerging Technologies in Immersive Marketing

Domain	Benefits	Challenges	Anchor References
Consumer	Vivid experience; emotional engagement; reduced risk	Motion sickness; cognitive overload; well-being concerns	Van Kerrebroeck et al. (2017); Mohr (2026); Kim and Yap (2025)
Business	Differentiation; engagement; story-doing	High cost; uncertain ROI; metric ambiguity	Gupta et al. (2024); Cowan et al. (2023)
Privacy	Personalization potential	Biometric inference; consent gaps	Kablo et al. (2025); Kim (2022); Hine et al. (2024)
Ethics	Empathic storytelling	Manipulation; child-targeted persuasion	Asif et al. (2025); Cassidy et al. (2024)
Accessibility	Inclusive design opportunities	Barriers for disabled users; digital divide	Creed et al. (2024); Huang et al. (2025)
Cybersecurity	New revenue channels	Identity theft; avatar fraud	Sharma et al. (2026); Pearlman et al. (2021)
Regulation	Innovation acceleration	Fragmented frameworks; GDPR gaps	Menéndez González and Bozkir (2024)



A critical reading suggests that the field's optimism has outpaced its risk consciousness. Most empirical VR marketing studies treat privacy as a moderating variable rather than a constitutive design problem, and even fewer consider accessibility seriously. This asymmetry must be corrected if VR marketing is to mature into a socially legitimate practice

FUTURE RESEARCH DIRECTIONS

Despite the rapid growth of VR marketing research, several important gaps remain that limit theoretical development and practical application. The most pressing challenge is conceptual fragmentation. The widespread adoption of the Stimulus-Organism-Response (SOR) framework has generated a large body of empirical evidence, but comparisons across studies remain difficult because researchers operationalize stimuli, organismic states, and behavioural responses in different ways (Erensoy et al., 2024). Greater theoretical integration is therefore needed. Existing models, such as Cowan and Ketron's (2019b) dual involvement framework and Yu et al.'s (2024) multidimensional presence model, provide promising foundations for consolidating key constructs. At the same time, future theory should extend beyond traditional VR experience variables to incorporate metaverse-specific phenomena, including persistent identity, avatar embodiment, and virtual ownership (Lu et al., 2025).

Methodologically, the literature continues to rely heavily on cross-sectional survey designs and self-reported behavioural intentions. Although these approaches have established important baseline relationships, they provide limited insight into the dynamic and physiological mechanisms underlying immersive experiences. Future research should employ more rigorous mixed-method and longitudinal designs that integrate behavioural tracking with neurophysiological measures such as eye-tracking, electroencephalography (EEG), and electrodermal activity (Kamal et al., 2024; Khatri et al., 2022). Resources such as the standardized luVRe stimulus library (Schöne et al., 2023) and the methodological agenda proposed by Lee and Kwon (2024) offer valuable guidance for improving the robustness and comparability of future studies.

The empirical evidence is also unevenly distributed across industries and populations. Tourism and retail dominate the literature, whereas sectors such as healthcare, manufacturing, B2B marketing, sports, education, food and beverage, and nonprofit organizations remain comparatively underexplored. Existing studies demonstrate the potential of VR in these contexts (Cassidy et al., 2024; Mohammadi et al., 2025; Wijaya et al., 2026), but broader empirical validation is needed. Similarly, most studies rely on samples drawn from East Asia, North America, and Europe, leaving significant uncertainty regarding the generalizability of findings across cultural contexts. Comparative cross-cultural research should therefore become a priority, particularly in emerging markets where adoption patterns and consumer responses may differ substantially (Alfalayeh et al., 2025; Apoorva et al., 2025; Rastogi & Irfan, 2025).

Emerging technologies present another important avenue for future research. Current scholarship has only begun to examine the integration of haptic interfaces, olfactory systems, brain-computer interfaces, generative AI, and digital-twin infrastructures into immersive marketing environments (Hornik & Rachamim, 2025; McColl-Kennedy et al., 2025). These developments are expected to transform VR from a static experience into an adaptive and intelligent marketing ecosystem capable of real-time personalization, AI-mediated service, and multisensory orchestration (Geda et al., 2026; Uddin, 2026). At the same time, they introduce new methodological, ethical, and governance challenges that warrant systematic investigation.

Finally, relatively little is known about the long-term behavioural consequences of immersive marketing. Existing studies focus primarily on immediate outcomes such as purchase intention and engagement, while issues including habituation, technology dependence, consumer well-being, and the substitution or complementarity between virtual and physical experiences remain insufficiently understood (Kim & Yap, 2025). Hoang et al.'s (2023) findings on VR-induced sustainable travel intentions suggest that immersive experiences may reshape real-world consumption patterns, highlighting the need for longitudinal research that examines how consumer behaviour evolves as intelligent immersive technologies become more pervasive.

IMPLICATIONS

The findings suggest that VR should no longer be viewed as a standalone communication channel but as an intelligent, immersive ecosystem integrated into the customer journey. Organizations that align VR with broader



marketing strategies, AI-driven personalization, and ethical governance are more likely to achieve sustained competitive advantage than those adopting VR as a novelty. A key implication is the importance of strategic fit and integration. VR delivers the greatest value in hedonic, experiential, and high-involvement product categories, particularly when embedded within omnichannel customer journeys rather than deployed as isolated campaigns (Cowan & Ketron, 2019b; Mishra et al., 2024; Silva et al., 2024). Brands should also shift from passive storytelling toward participatory "story-doing," enabling consumers to actively engage with immersive brand experiences (De Regt et al., 2021). Across industries, VR offers opportunities to enhance customer engagement through virtual product demonstrations, fitting rooms, destination previews, immersive recruitment, and virtual brand experiences (Erensoy et al., 2024; Hoang et al., 2023; Liu et al., 2025). Organizations should prioritize scalable and cost-effective implementations, while complementing rather than replacing existing digital and physical channels. Finally, successful implementation depends on responsible governance. As VR increasingly converges with AI, biometric sensing, and digital twins, organizations must prioritize privacy, accessibility, transparency, and ethical design. Embedding these principles into immersive experiences will be essential for building consumer trust and supporting the long-term adoption of intelligent immersive marketing (Cassidy et al., 2024; Creed et al., 2024; Hine et al., 2024; Uddin, 2026).

CONCLUSION

This review has synthesized more than one hundred Scopus-indexed studies to chart the current state and future trajectory of VR in marketing. Three principal contributions emerge. Theoretically, we have proposed a five-phase evolutionary model that re-narrates VR marketing's history as a story of cumulative paradigmatic layering rather than linear progression, and a layered VR Consumer Experience Framework that integrates Presence, Flow, Transportation, TAM, SOR, and Experiential Marketing perspectives into a single bidirectional pipeline. These frameworks attempt to discipline the field's conceptual proliferation without flattening its rich theoretical inheritance.

Empirically, we have synthesized the evidence on VR marketing's effectiveness across twelve industries and shown that effects are strongest for hedonic, high-involvement, experiential categories; that purchase intention is the most reliably documented outcome; and that narrative transportation, multisensory congruence, and AI personalization are the most consequential design levers. We have also documented significant contradictions in the literature (particularly the vividness/cognitive-depth tension and the immersion/well-being trade-off) that should not be resolved by selective citation but by methodological renewal. Practically, we derive managerial implications for organizations seeking to integrate VR into marketing while addressing privacy, accessibility, and governance challenges.

Looking forward, the convergence of VR with AI, digital twins, multisensory hardware, and the broader XR ecosystem points toward intelligent immersive marketing: adaptive, individualized, sensorially rich, persistently social, and ethically charged. The research community has barely begun to come to grips with what this convergence means for theory, method, practice, and policy. We hope that the conceptual frameworks, integrative synthesis, and research agenda offered here will help structure the next phase of inquiry. As Wedel et al. (2020) argued at the outset of the current wave, VR and AR offer marketing scholarship not just a new object of study but a transformative opportunity to revisit its core concepts. That opportunity remains open; the discipline's task is to seize it with critical and creative rigor.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.



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