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Immersive and Generative Technology: New Tools for Marketing, New Tools for Consumer Response

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ABSTRACT

Immersive technologies, including AR, VR, XR, and generative technologies such as Gen-AI, are reinventing marketing practice and consumer experience. In this article we provide an introductory review of how these technologies are (re)shaping consumer behavior in domains where the physical and digital converge, and consumers' response to them. Our review finds that while immersive technologies enhance engagement through personalization and multisensory feedback, they also raise concerns about accessibility, authenticity, and digital fatigue. Similarly, Gen-AI, which is transforming many facets of marketing, including customer service, product development, marketing communications, and consumer research, raises new questions related to attribution, co-creation, authenticity, and transparency. We outline our contributions to theory, propose managerial guidelines for integrating these technologies into marketing practice, and identify future research questions.

1 | Introduction

Less than 100 years ago the consumer existed in world that was almost entirely physical. Books, live theater, and imagination could temporarily transport the mind of the consumer to new mental environments but even these brief ventures into an alternative reality were bound by time and space. The advent of the telephone radio transformed the world of the consumer by bringing sound, voices, ideas, and music from remote places into a new exosphere. Motion pictures and television added visual images to this expanded world. These technologies provided the means for consumers to immerse themselves in new experiences and these new experiences could be shared with others. Pictures of a family gathered around a radio or television were common in the latter half of the twentieth century. Thus, the physical, social, and broadcast worlds of the consumer began to merge to create an immersive experience, a deeply absorbing, participatory, and engaging occasion.

The broadcast world into which consumers might enter was initially analog and one-way. Broadcast content could enter the consumer's environment and become the basis for consumer responses and even influence immediate social interactions with others in close proximity. However, the consumer had no ability for two-way interaction with a broadcaster and the broadcaster had no way to know whether the consumer responded at all or to follow up on any response that did occur. While the broadcaster was in complete control of the content of a broadcast and could reach large audiences, they had no opportunity to obtain feedback and presentation of content was highly restricted with respect to time and place. Telephones provided an opportunity for two-way communication, but generally between only two people at a time and content was restricted to voice communication. Such was the world of most consumers through much of the 20th century.

As the 20th century came to an end, new technologies changed the types of worlds in which consumers could immerse

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themselves. Analog technologies gave way to digital technologies. Two-way and multi-way communication became common. Broadcasters were no longer bound by time and space—content could be delivered at any time on multiple types of devices in many different locations. Consumers obtained the ability to create their own content and share this content with huge audiences. These changes served to emancipate consumers, freeing them from dependence on broadcaster-generated content and schedules. They also created an enormous amount of content in which consumers could immerse themselves, even as it produced a need for managing the over-whelming amount of content that became available in their world.

The merging of the physical, social, and digital worlds in the 21st century has created opportunities for consumers to create and experience an infinite variety of immersive environments. These environments have come to be called, "phygital" (Mele et al. 2023), a combination of the physical and digital. The consumer response to such environments can range from ignoring them, to being overwhelmed and/or annoyed, to high levels of engagement. When such environments are engaging, they are referred to as "immersive" (Tonietto and Barasch 2021). Immersive experiences may occur in numerous contexts: in retail, entertainment, and service, across experiences involving heightened sensory involvement, social interaction, online gaming, and storytelling, among others (Dwivedi et al. 2022; Zhou et al. 2024). These technologies create novel opportunities for companies to communicate with consumers through sensory-rich, interactive environments that blur traditional lines between online and offline encounters (Leveau and Camus 2023; Tonietto and Barasch 2021).

Concurrently, generative technologies, such as Generative Artificial Intelligence (Gen-AI), are being deployed by marketers in contexts ranging from customer service and content creation to new product development and hyper-personalized marketing communication at scale (Bouschery et al. 2023; Cillo and Rubera 2024; Hermann and Puntoni 2024).

Both immersive and generative technologies represent the frontier of how digital innovation favors deeper, more direct, and more customized interactions between firms and consumers. They expand the boundaries of how value is co-created by mediating experiences and communications in increasingly sophisticated ways (Mele et al. 2023). Yet, they differ markedly in their technological foundations, user interfaces, and strategic applications. Immersive technologies primarily amplify sensory engagement and spatial presence (Peng et al. 2025), relying on interfaces such as Virtual Reality (VR) headsets, Augmented Reality (AR) overlays, or interactive physical spaces. In contrast, generative technologies, such as Gen-AI, focus on the autonomous production of content and decision-making support, operating through text generators, image creators, and conversational agents that enable higher levels of personalization and content generation at scale (Huang and Rust 2022). Both technologies allow firms to create more direct and meaningful interactions with customers, but they differ in how they involve the customer in the process. Immersive technologies allow firms to craft vivid, multi-sensory experiences that immerse customers in the consumption process, stimulating their senses and emotions. However, customers remain relatively passive in shaping or co-creating the content of these experiences. By contrast, generative technologies invite a more active role from consumers, enabling them to participate in the creation of content and interactions.

In this paper, we provide an introductory review of how these technologies are (re)shaping consumer behavior across multiple domains within marketing, and consumers' response to them. We find that, while immersive experiences can enhance consumer engagement and facilitate new ways for consumers to express their identity (Farah et al. 2024; Peng et al. 2025), they also raise questions about authenticity, privacy, and the potential for manipulation (Chen et al. 2023; Micu et al. 2022). Similarly, our review finds that Gen-AI's capacity to create persuasive content at scale and at record speed offers many advantages for marketers while simultaneously challenging traditional notions of creativity, attribution, and even ownership of intellectual property in co-created contexts (Amabile 2020; Appel et al. 2023). We discuss these and other theoretical implications of these technologies in marketing.

Beyond scholarly discussion, our work presents insights and guidelines for marketing managers negotiating the challenges and opportunities of deploying these technologies in their firms. As businesses invest in these technologies, the effectiveness of immersive experiences and AI-powered marketing systems depends on recognizing the psychological and behavioral processes underlying consumer responses to these technologies. Our paper provides evidence-based suggestions for balancing customer experience and well-being with technology capacity to ensure that these technologies enhance rather than impede the core goals of marketing.

The remainder of this paper explore various dimensions of immersive experiences, including the character of the technologies that enable such experiences. The next section of the present paper explores immersive technologies and their role in creating immersive experiences. It then turns to a discussion of generative technologies that enable consumers to participate in the creation and use of immersive experiences in a variety of contexts. The paper concludes with a discussion of the theoretical contribution, implications for marketing practice, and opportunities for future research.

2 | Immersive Technologies: Enabling Consumer Immersion in Phygital Spaces

The world is currently witnessing the development of new immersive spaces for engagement (Tonietto and Barasch 2021) including various Metaverses, such as Roblox, Decentraland, Fortnite, and the Sandbox, among others (Alexander et al. 2025). Such immersive spaces are collective virtual shared space created by the convergence of AR and VR (Damaševičius 2023). While this conceptualization is widely shared, it remains unclear whether the Metaverse will evolve beyond its status as novel game-line experiences to deliver on its promises in a broader set of applications (van der Maas and Houtman 2023).

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There is no doubt that immersive technologies can enrich customer experiences (Giang Barrera and Shah 2023) yet questions persist regarding their accessibility, sustainability, ethical implications, and long-term psychological impact. It also remains to be determined whether the seamless merger of physical and digital worlds, as is often promised, will occur. Thus, it is useful to consider what characteristics of the Metaverse and consumer experiences might dissolve the distinctions between the physical and virtual realms (Zhou et al. 2024).

In recent years, the development of immersive environments within marketing has assumed a pivotal role. A growing body of literature (Barrera and Shah 2024; Kim and Park 2023; Chen and Zhang 2024; Peng et al. 2025) has explored how consumers reshape their social interactions and respond both cognitively and emotionally to highly engaging immersive, interactive experiences (Park and Kim 2022; Spais et al. 2025). Despite growing enthusiasm, there has been limited critical discussion about how these changes impact consumer autonomy, data privacy, mental health, and social inequality (Chen et al. 2023). It is clear that immersive technologies facilitate the development of phygital spaces (Mele et al. 2023). However, it is less clear that this integration is always positive and desirable—especially given concerns about techno-solutionism and the commercialization of personal identity (Micu et al. 2022; Chen et al. 2023).

The extant literature suggests that immersive technologies are structured along three dimensions of immersion: sensory, social and narrative (Green and Brock 2000; Mütterlein 2018; Tonietto and Barasch 2021). Sensory immersion refers to the degree to which the user is perceptually surrounded by digital stimuli (e.g., visual, auditory, haptic inputs); social immersion involves extension of the users' presence and interaction with others in the virtual space, often via avatars or collaborative interfaces (Park and Kim 2022); finally, narrative immersion represents the basis for continuity, or the "story line," which plays a fundamental role in sustaining user engagement over time (Green and Brock 2000; Tonietto and Barasch 2021). Narrative transportation theory (Green and Brock 2000) posits that individuals become mentally and emotionally absorbed in a narrative, concentrate deeply on the story, engage with it on an emotional level, and form vivid mental experiences.

These three dimensions contribute to varying degrees of psychological presence (Mütterlein 2018), flow (Tonietto and Barasch 2021), and emotional investment, shaping how consumers perceive value, identity, and agency in digital spaces (Leveau and Camus 2023; Lee and Kim 2025). The major representative immersive technologies that characterize immersive spaces, AR, VR, and a mix of these, known as Extended Reality (XR), can be defined, in part, by the degree to which such dimensions are present (Cheng et al. 2022; Dwivedi et al. 2022).

2.1 | AR, VR and EX in the Metaverse

The convergence of AR, VR, and Mixed Reality (MR), often referred to as XR is fundamentally modifying the ways in which human beings engage with and within digital systems and environments (Alexander et al. 2025; Farah and Ramadan 2024). These technologies not only augment user experiences, they also expand creativity, exploration, and task performance by enabling multisensory interactions and immersive engagement. As a result, extended realities help transition users between the physical and digital worlds, allowing for highly customized, context-aware consumer journeys (Giang Barrera and Shah 2023; Zhou et al. 2024). Within Metaverse environments, XR serves as the foundation for building shared, persistent virtual worlds where users themselves or users represented by avatars can interact, collaborate, and cocreate content in real time without geographical boundaries (Mishra et al. 2021; Koslow and Stewart 2022). These digitally mediated spaces, variously named *phygital spaces, immersive space, or engaging spaces*, enhance social presence, enabling new forms of community building and identity expression that are limited in more traditional media.

A necessary facilitator of this transformation is AR, which superimposes digital content, such as images, data overlays, and animated objects, into and onto the physical world, enhancing users' perceptions of their environment. AR operates through real-time interactivity and three-dimensional visualization, seamlessly blending the tangible and virtual, making it particularly effective in retailing and experiential marketing scenarios such as virtual try-ons, showroom simulations, and interactive product demonstrations (Geroimenko 2024). AR uses haptic feedback, voice interfaces, and gesture recognition (Benaben et al. 2025) to empower users to manipulate their surroundings, personalize offerings, and participate actively in the creation of branded experiences (Leveau and Camus 2023). For instance, in a Metaverse-based fashion store, consumers can design custom outfits using AR filters, engage socially with other avatars, and complete transactions through embedded commerce tools all within an engaging, personalized environment (Park and Kim 2022).

VR complements AR by transporting users into entirely simulated 3D environments crafted by computer-generated inputs. Pizzi et al. (2019) suggest that VR affords opportunities for complete immersion, allowing users to explore, interact, and communicate in spaces unconstrained by the laws of the physical world. Whether participating in virtual events, training simulations, or branded storytelling experiences, VR fosters deep psychological presence and emotional resonance, enhancing brand attachment and experiential value (Koslow and Stewart 2022).

Used together, AR and VR, under the umbrella of XR, provide the technological infrastructure of phygital ecosystems. These immersive capabilities align with the notion of meta spaces introduced by Hadi et al. (2023), who describe them as interconnected digital platforms that facilitate real-time, socially-rich experiences. Organizations are increasingly leveraging these technologies to enhance customer engagement, offering immersive touchpoints that not only entertain but also enable identity construction, emotional bonding, and collaborative consumption.

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2.2 | The Convergence of Immersive Technologies: Toward Holistic Experience Design

The real power of AR, VR, and MR technologies lies in their convergence in immersive environments that create unified experiences for users (Damaševičius 2023). This convergence facilitates seamless transitions between real and virtual realms, allowing users to interact with people, objects, and narratives across contexts (Giang Barrera and Shah 2023; Zhou et al. 2024) In marketing terms, this integration supports a continuum of immersion: from partial augmentation of real spaces (AR) to complete virtual escapism (VR), with mixed reality (MR) enabling fluid interplay between both (Benaben et al. 2025).

While such visions of the use of immersive technologies are compelling, they often rest on idealized assumptions about user engagement and technological perfection. In reality, the integration of immersive technologies involves practical and ethical challenges, and a cooperative user whose goals align with the purposes of the intended immersive experience. Issues of accessibility, cognitive overload, user disorientation, and incompatible user goals are often overlooked in polished narratives of the future of technological innovation. It is the case that the use of these technologies have great potential to offer the user a complete and unique real-time experience in one place (Alexander et al. 2025; Park and Kim 2022). The promise of such is not yet the reality and should be approached critically.

The concept, in idealized form, aligns with theoretical frameworks of meta spaces (Hadi et al. 2023) seen as dynamic, interconnected digital environments that facilitate collaboration and emotional copresence—but, questions remain about whether such cognitive and emotional presence can ever provide a genuine substitute for physical co-location, or whether it leads instead to a superficial and incomplete sense of connectivity. It is certain that the convergence of interactive and immersive technologies into extended reality can provide new consumer experiences in an array of diverse contexts ranging from gaming to entertainment, to retail, to education, among others (Damaševičius 2023). How these experiences fit within the full array of human experiences and whether provide a substitute for live interactive experiences with other human beings remains to be determine. Indeed, as these technologies become more deeply into everyday life, there is a need to examine the consequences of constant connectivity and perpetual interaction. Unintended and maladaptive consequences need the same attention as the benefits of these technologies (Martin and Stewart 2024). The potential of immersive technologies is large and inspires optimism about the future (Vernuccio et al. 2025), yet this optimism should be tempered by awareness of the potential risks involved. Consumers can leverage immersive technologies to interact with other users and enrich their customer experiences in novel ways (Leveau and Camus 2023), but there is also potential for abuse and misuse.

Interaction and communication have been the primary focus of research on Metaverse extended realities (Benaben et al. 2025; Mütterlein 2018). In a space without physical or temporal boundaries individuals can interact and engage with others using virtual tools in unique environments in ways that are persistent and that extend beyond the immediate use of the digital or physical space (Park and Kim 2022; Cheng et al. 2022). The implications of such sustained engagement are still largely underexplored. Exploration of these implications will require a focus on the interaction of user characteristics, environmental factors, and technological facilitators rather than attention to the simple main effects of any one of these dimensions (Punj and Stewart 1983). Following this reasoning, the Metaverse itself may be viewed as the intersection and interaction of worlds (Damaševičius 2023), the natural, physical environment and an entirely artificial, virtual world enabled by VR.

This concept of the Metaverse as a convergence space is no longer a theoretical dream; it is reality. It is a reality of recent origin, however, and numerous issues remain for research to address. Among these research questions is the need for analysis of which sensory and interface features—such as haptics, spatial audio, and AI-driven interactions—best sustain presence and psychological engagement. It is also important to understand how customization and embodiment influence user's self-concept, consumer-brand relationships, and social behavior in digital spaces (Vernuccio et al. 2025). Long-term impacts of prolonged immersion—such as digital fatigue, dissociation, and hyper-personalization effects—also require attention.

Apart from immersive technologies, generative technologies—specifically the use of Gen-AI—is transforming many facets of marketing, including customer service, product development, marketing communications, and consumer research. This area of work is the focus of the next section of this paper. Table 1 presents a summary of the extant literature on immersive and generatiove technologies, including application domains, thematic foci, sample papers, main results and identified research gaps.

3 | Generative Technologies

Gen-AI refers to a branch of artificial intelligence capable of producing seemingly novel and original content, including text, images, videos, and music (Susarla et al. 2023). Unlike traditional AI, which primarily focused on data analysis and executing predefined tasks, Gen-AI introduces a new paradigm of interactive content generation. The emergence of tools like GPT-3 by OpenAI has significantly accelerated the widespread adoption of generative technologies among the general public (Huang and Rust 2024). These advancements raise important questions about how consumer-facing Gen-AI influences perceptions, interpretations, and responses to marketing stimuli (Cillo and Rubera 2024). Notably, Gen-AI challenges conventional notions of creativity and authenticity—long regarded as fundamental to consumer trust and engagement (Valsesia et al. 2016). By generating content that appears both innovative and compelling, Gen-AI disrupts the traditional assumption that creativity is an exclusively human trait. Such technologies have many potential applications, including serving as the source(s) of interaction in the Metaverse.

Such creative uses of technologies raise questions about the conceptual definition of creativity itself and the extent to which the capability of machines to replicate humans' idea generation

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TABLE 1 | Summary of literature on immersive and generative technologies.

Technology type	Application domain	Thematic focus	Sample papers	Main results	Identified gaps
Immersive Technologies	Metaverse & Phygital Spaces	Social Interaction & Community Building	Alexander et al. (2025); Damaševičius (2023); Mishra et al. (2021); Koslow and Stewart (2022); Leveau and Camus (2023)	• Foster social presence and identity exploration • Enable real-time collaboration beyond physical constraints	• Long-term psychological and societal effects are unclear
	Metaverse & Phygital Spaces	Ethical & Societal Concerns	Barrera and Shah (2024); Chen et al. (2023); Micu et al. (2022)	• Highlight risks related to autonomy, data privacy, mental health, and inequality	• Lack of analysis on techno-solutionism, identity commodification, and equity
	Dimensions of Immersion	Sensory, Social & Narrative Immersion	Green and Brock (2000); Mütterlein (2018); Tonietto and Barasch (2021); Park and Kim (2022); Leveau and Camus (2023); Lee and Kim (2025)	• Sensory, social, and narrative elements enhance psychological presence and engagement	• Limited understanding of how sensory, social, and narrative elements interact
	Technological Foundations	AR, VR & Extended Reality (XR)	Cheng et al. (2022); Dwivedi et al. (2022); Pizzi et al. (2019); Farah and Ramadan (2024); Zhou et al. (2024); Benaben et al. (2025)	• Support multisensory interaction • Boost creativity, task performance, and phygital engagement	• Insufficient focus on disorientation, cognitive load, and inclusivity
	Technological Foundations	Retail & Experiential Marketing Applications	Geroimenko (2024); Park and Kim (2022); Benaben et al. (2025); Leveau and Camus (2023)	• Improve customer experience through virtual try-ons and interactive environments	• Unclear impact of AR on loyalty and long-term satisfaction
	Holistic Experience Design	Convergence of Immersive Technologies	Damaševičius (2023); Giang Barrera and Shah (2023); Zhou et al. (2024); Hadi et al. (2023)	• Enable seamless real-to-virtual transitions	• Overlook practical barriers like accessibility and user goal alignment
	Holistic Experience Design	Psychological & Social Impacts	Martin and Stewart (2024); Vernuccio et al. (2025)	• Deliver impactful experiences, but may cause fatigue, dissociation, and over-personalization	• Long-term effects on well-being are underexplored
	Interaction & Communication	User Engagement & Presence	Benaben et al. (2025); Mütterlein (2018); Park and Kim (2022); Cheng et al. (2022); Punj and Stewart (1983)	• Extend user interaction and presence across physical boundaries	• How personal traits and environments shape XR engagement is not well understood

(Continues)

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TABLE 1 | (Continued)

Technology type	Application domain	Thematic focus	Sample papers	Main results	Identified gaps
	Interaction & Communication	Customization, Embodiment & Self-Concept	Vernuccio et al. (2025)	• Influence user identity and consumer-brand dynamics	• More empirical data needed on long-term effects of digital customization
Generative Technologies	Customer Assistance	Perceived Humanness & Empathy	Huang and Rust (2024); Markovitch et al. (2024); Pathak et al. (2025)	• Perceived as more acceptable when showing empathy and human-like traits	• Few empirical links between design and perceived humanness
	Customer Assistance	Attribution & Service Outcomes	Yu et al. (2024); Srivastava and Gosain (2020)	• Perceptions differ from those involving human agents, impacting satisfaction	• Limited research on consumer attribution in AI interactions
	Customer Assistance	Co-Creation & AI-generated Scripts	Alabed et al. (2024); Sands et al. (2021); Park (2024)	• Supports collaborative scripting but challenges traditional service norms	• Unclear how Gen-AI affects user control and value perceptions
	Product Development/ Design	AI-Augmented Creativity	Bouschery et al. (2023); Eapen et al. (2023); Sedkaoui and Benaichouba (2024)	• Complements human innovation rather than replacing it	• Underexplored influence on creative and development outcomes
	Product Development/ Design	Transparency & Product Authenticity	Hermann and Puntoni (2024); Pantano et al. (2024); Jago et al. (2022); Zhang et al. (2022)	• Shapes perceptions of authenticity and purchase intent	• Contradictory findings; detection mechanisms not fully addressed
	Marketing Communication	Content Credibility & Deepfakes	Campbell et al. (2022); Mustak et al. (2023); Zamudio et al. (2024)	• Raises credibility concerns despite mimicking realism	• Poorly understood consumer recognition and response
	Marketing Communication	Transparency & Consumer Reactions	Magnus (2023); Wortel et al. (2024); Dietvorst and Bartels (2022); Jago et al. (2022)	• Can enhance authenticity, but may provoke skepticism	• Need to define when transparency helps or hinders consumer trust
	Marketing Communication	Goal Alignment & Engagement	Narayanan (2024); Baek et al. (2024)	• Increases engagement and usefulness	• Lack of guidance on managing trade-offs
	Consumer Research	Synthetic Data & Replication	Peres et al. (2023); Yoo et al. (2025); Guyt et al. (2024); Yeykelis et al. (2024)	• Aids replication and scale	• Uncertainty about acceptance of synthetic datasets
	Consumer Research	Methodological & Ethical Considerations	Sarstedt et al. (2024); Stahl and Eke (2024); Susarla et al. (2023)	• Raises methodological and ethical considerations	• No shared standards for responsible use of Gen-AI in research

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processes extends to the evocation of the same cognitive and emotional reactions triggered by creations of human beings (Amabile 2020). Indeed, there is a philosophical question about whether machines are capable of originality beyond the creation of infinite numerous of combinations of elements that have already need identified. Such practical and philosophical questions are not just the focus of academic speculation. An increasing number of organizations have applied Gen-AI tools in the service of product/brand development and design, advertising, and consumer interaction (Mariani and Dwivedi 2024). Such use has not always produced positive outcomes and has been known to provoke negative reactions, which have already been the focus of theories of "algorithmic aversion" (Dietvorst et al. 2015).

Such aversion, or negative response to AI, stems from individuals' perceptions that AI lacks the capacity to be empathetic and effectively respond to the uniqueness of each customer (Longoni et al. 2019) or to authentically represent the company (Audrezet et al. 2020). Consequently, the use of Gen-AI, and the way it is used, may influence consumers' expectations regarding the origins and sincerity of the brands involved, with the potential to reinforce or undermine perceptions of corporate authenticity—a critical driver of brand identity (Leung et al. 2022). Thus, it is important to understand the way(s) in which Gen-AI is being employed in marketing practice, with particular focus on (1) the role of Gen-AI in customer support and how it affects the relationship with the customer, (2) its transformative impact on product development and the evolving conceptualization of creativity, and (3) its integration into marketing communication, with a focus on the tension between engagement and perceived authenticity. These topics are addressed below.

3.1 | Generative-AI and Customer Assistance

Recent literature has widely documented that customers are increasingly relying on machines to receive the assistance they need in numerous market contexts (Huang and Rust 2021), ranging from digital assistant to conversational agents (Lim et al. 2022). AI-empowered conversational agents have multiplied the opportunities to provide more personalized customer experiences by interacting with humans in their natural language (Mariani et al. 2023) and solving a wide range of problems thanks to their ability to mimic human cognitive functions (Mariani and Dwivedi 2024). The increasing similarity between conversational agents and human beings has been observed in several recent studies (see for instance Crolic et al. 2022; Pizzi et al. 2023; van Pinxteren et al. 2023; Sun et al. 2024).

These findings seem to corroborate the idea that it is not just the technical efficiency of chatbots that positively affects consumers' perceptions, but also the perceived humanness of these bots (Pathak et al. 2025). In line with this perspective, recent studies addressed the role of empathy as one of the frontiers for conversational agents to increase their level of anthropomorphism (Huang and Rust 2024) and, ultimately, consumers' acceptance of them (Markovitch et al. 2024). Yet, consumers seem not to fully appreciate the capabilities of conversational agents (Ferraro et al. 2024). For example, Yu et al. (2024) found that negative responses to service problems are minimized when consumers are confronted with an identified AI-empowered conversational agent rather than with a human because they hold lower expectations about the flexibility of the machine.

Extant literature offers a shared view that Gen-AI has enormous potential to boost the effectiveness of conversational agents (Alabed et al. 2024). Nevertheless, Gen-AI poses several challenges related to its potential to disrupt traditional customer co-creation models in customer support activities (Sands et al. 2021). These activities have traditionally been undertaken by frontline service employees (Van der Heijden et al. 2013) whose behavior is uniform and controlled by means of precise scripts (Nguyen et al. 2014). In contrast, little is known about the ability of Gen-AI models to generate new scripts to establish a connection with and respond to the needs of the customer. Such AI generated scripts have not slowed the use of Gen-AI to empower customers in actively co-creating the output(s) of their interaction(s) with the technology (Park 2024). Thus, the stage is set for research that focuses on whether the autonomous and interactive nature of Gen-AI diminishes or augments the value of the human contribution in the domain of customer assistance.

Prior literature has widely demonstrated that the perceived agency and involvement of the customer significantly affects the outcomes and perceived value of the co-creation process (Prahalad and Ramaswamy 2004; Feng et al. 2024). Such research raises the questions about perceived agency and involvement influence perceptions of attribution related to outcomes of AI-assisted customer support? Attribution Theory (Weiner 1985) would appear to be a useful theoretical perspective for conceptualizing how one might argue that the interaction with an AI-empowered conversational agent versus human employees might influence both the locus of control and controllability perceptions. The implications might be profound: what if the chatbot makes a mistake in supporting the customer? Who should be blamed? Prior studies have demonstrated that service failure attributions affect customer satisfaction (Srivastava and Gosain 2020); thus, addressing the peculiarities of Gen-AI might provide novel insights into the way the co-creation of value unfolds throughout the interaction of humans with conversational agents.

3.2 | Generative AI and Product Development/ Design

The ability and speed of content generation characterizing Gen-AI offers important opportunities to organizations across multiple stages of the product development and idea generation processes (Bouschery et al. 2023). While these opportunities may pave the way for radical changes in the way firms innovate and launch new products, as noted earlier, such AI-generated output raises important conceptual questions about the meaning of creativity (Amabile 2020) and the protection of intellectual property (Appel et al. 2023).

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Among the most salient questions about creativity in an AI context are where creativity actually resides: it is in the human mental ability to craft a product idea or does creativity reside in the idea itself? Some authors have suggested that Gen-AI has the potential to augment, rather than substitute for, human creativity, in part, because AI must be trained, at some level, on human-thought (e.g. Eapen et al. 2023). Thus, the essence of the creative act is traced back to the original source(s) of the underlying idea and in the accuracy of the prompt engineering (Sedkaoui and Benaichouba 2024).

Gen-AI challenges traditional understandings of invention, authorship, ownership, and creative expression by blurring the lines between human and machine contributions, complicating established frameworks of media production and intellectual property (Epstein et al. 2023). Thus, an especially relevant stream of research would investigate the extent to which crediting and transparently disclosing the contribution of Gen-AI in the creative process affects consumers' perceptions about the product. Clearly, in order for Gen-AI to trigger more positive consumer evaluations of a new product, consumers must be fully aware of the creative idea generation process (Hermann and Puntoni 2024), just as it is important for consumers to understand whether they are purchasing a designer brand or knock-off. This, in turn, raises the question of whether consumers able to detect by themselves whether a product is AI-generated or not. If so, what cues do consumers use to detect a contribution by AI and how will they react once they discover a product is AI-generated. For example, a recent study found that many consumers did not realize that a luxury bag serving as research stimulus was actually AI-generated and reacted with astonishment (Pantano et al. 2024). Even if consumers can determine whether something is generated by AI, and most certainly if they cannot, there is the need to consider required labeling of AI content to assure consumers are fully informed.

Beyond the legal issues tightly related to this debate, from a consumer perspective, initial evidence supports the notion that transparently labeling the output as AI-generated might positively affect consumers' perceptions of product authenticity (Jago et al. 2022). In a similar vein, Zhang et al. (2022) found that a product designed with Gen-AI increase consumers' curiosity and willingness to pay, especially for utilitarian products. At the same time, other studies revealed a relatively small effect of such transparent labeling of AI-generated contents on consumers' willingness to pay for the product (König et al. 2022), as consumers are skeptical toward the intrinsic originality of AI-generated content as Gen-AI is trained on huge amounts of previous data (Appel et al. 2023), thus affecting consumers' value expectations (Sohn et al. 2020) especially for more tangible products (Tigre Moura et al. 2023). Of course, studies to date may also be limited by the relative lack of experience of consumers with AI-generated products and content. Consumer inexperience may create curiosity, but it may also generate skepticism, and these responses may themselves differ from product to product. These apparently contradictory findings pave the way for future studies that investigate the relationship between AI- versus human-generated content, perceptions of creativity and authenticity and consumers' purchasing behaviors.

3.3 | Generative AI and Communication

Among the most active areas of application of Gen-AI tools in marketing is the generation of text, audio and visual content built from training base on the large amounts of unstructured verbal or pictorial data that consumers generate in online interactions (Grewal et al. 2024). By using AI, marketers have the ability to generate and communicate large amounts of general and personalized digital content very quickly (Kshetri et al. 2024). Such content has potential advantages and disadvantages. On the one hand, such content may stimulate and reinforce consumers' engagement (Hollebeek and Macky 2019). On the other hand, consumers may perceive such content as unwelcome and lacking in authenticity (Brüns and Meißner (2024). Indeed, the proliferation of deepfakes after the introduction of AI-generated content raised numerous concerns about the credibility of content spread on the media (Campbell et al. 2022). Deepfakes have been defined as "*digitally manipulated synthetic media content [...] in which people are shown to do or say something that never existed or happened in the real world*" (Mustak et al. 2023, p.1).

The inability of consumers to distinguish between real and fake content, whether generated by human beings or AI agents makes such any such content suspect (see, for instance, Zamudio et al. 2024). AI technology enables the creation of content that appears quite realistic (Grewal et al. 2024), which makes it an especially useful tool for deceptive and manipulative practices (Vaccari and Chadwick 2020). Nevertheless, Gen-AI has the capability to outperform human counterparts on numerous dimensions of content generation, such as quality, realism, aesthetics, and the ability to stimulate positive behavioral intentions and click-through rates by consumers (Hartmann et al. 2025). Thus, AI has the potential to be more responsive and more compelling than human actors, regardless of content or intent. This fact underscores the fact that generative technologies are a double-edged sword for companies and may be associated with unintended consequences for both the marketers and consumers (Park 2024).

Extant literature has suggested that a part of the solution to the credibility problem associated with AI-generated content is transparency (e.g. Magnus 2023). When firms consistently and explicitly disclose the extent to which Gen-AI is being used to create content consumers are provide a signal of authenticity, as well as the source of the contents. One practical approach to such transparency is the use AI tags (Wortel et al. 2024). Such disclosures might serve as signal of authenticity and quality, a conclusion that is consistent with the empirical findings reported by Rapezzi et al. (2024) in the domain of blockchain traceability. Such disclosure is not without its risks, however. Learning that content is generated by AI rather than by humans might trigger higher resistance and skepticism among some consumers who believe, with some justification, that algorithms adopt different logic compared to humans (Dietvorst and Bartels 2022) and are less authentic (Jago et al. 2022).

Reconciliation of the conflict that appears inherent in these differing consumer responses may lie in recognition of the goals that various actors bring to the creation and use of AI-generated content. Content that is consistent with and facilitates the

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achievement of consumers' goals is likely to be perceive as more useful that unwanted content that is irrelevant to consumers' goals (Narayanan 2024; Baek et al. 2024). A form of brand ambidexterity (see Beverland et al. 2015 for a definition) appears to be emerging, requiring firms to stay relevant and authentic. It is clear that further research is required to increase understanding of the impact of transparency on consumer reactions.

3.4 | Generative AI and Consumer Research

Gen-AI is not only altering marketing practice; it is also raising new research questions and providing new methodological tools related to AI-human interactions and consumer behavior more generally (Peres et al. 2023). Gen-AI has the potential to assist scholars at every stage of consumer research ranging from idea generation and pilot-testing (Yoo et al. 2025) to data collection and analysis (Guyt et al. 2024). Recent work has demonstrated the ability of Gen-AI to replicate the results of previous studies (e.g. Yeykelis et al. 2024), which may help address the vexing issue of replication in marketing research (Lynch et al. 2015; Hensel 2021). Large language models also provide the opportunity to generate large samples of synthetic data (i.e. artificial data generated from training datasets). The degree to which such data can serve as a substitute or complement to traditional data collection is currently a source of scholarly debate (Sarstedt et al. 2024). Similarly, the adoption of synthetic data and silicon samples in market research has fueled discourse about the ethical implications stemming from the adoption of Gen-AI in marketing research (Stahl and Eke 2024) with scholars advocating for more responsible research practices (e.g. Susarla et al. 2023).

These scholarly discussions are echoed in practice, as witnessed by the increasing number of reports published by consultancy firms (e.g., McKinsey and Company 2025), research institutes (e.g., Liu 2025) and media outlets (e.g., Sankaran 2023). Such developments are poised to broaden both the scope and scale of research, while simultaneously raising important questions related to validity, methodological integrity, ethical standards, and the processes through which knowledge is generated. Although this stream of research is still in its infancy, it has important implications for both academic and applied marketing research and deserves greater attention.

In Figure 1 we present a unifying conceptual framework of our review of immersive and generative technologies, their domains, the consumer outcomes they influence, along with mediator and moderator variables identified in extant literature.

4 | Discussion

Immersive technologies, including AR, VR, XR, and Metaverse platforms, along with generative technologies like Gen-AI, are reinventing consumer experiences and marketing. Immersive technologies blend physical and digital ('phygital') contexts and afford multisensory engagement, social presence and interaction, and narrative experiences (Mele et al. 2023; Zhou et al. 2024; Tonietto and Barasch 2021). When successfully

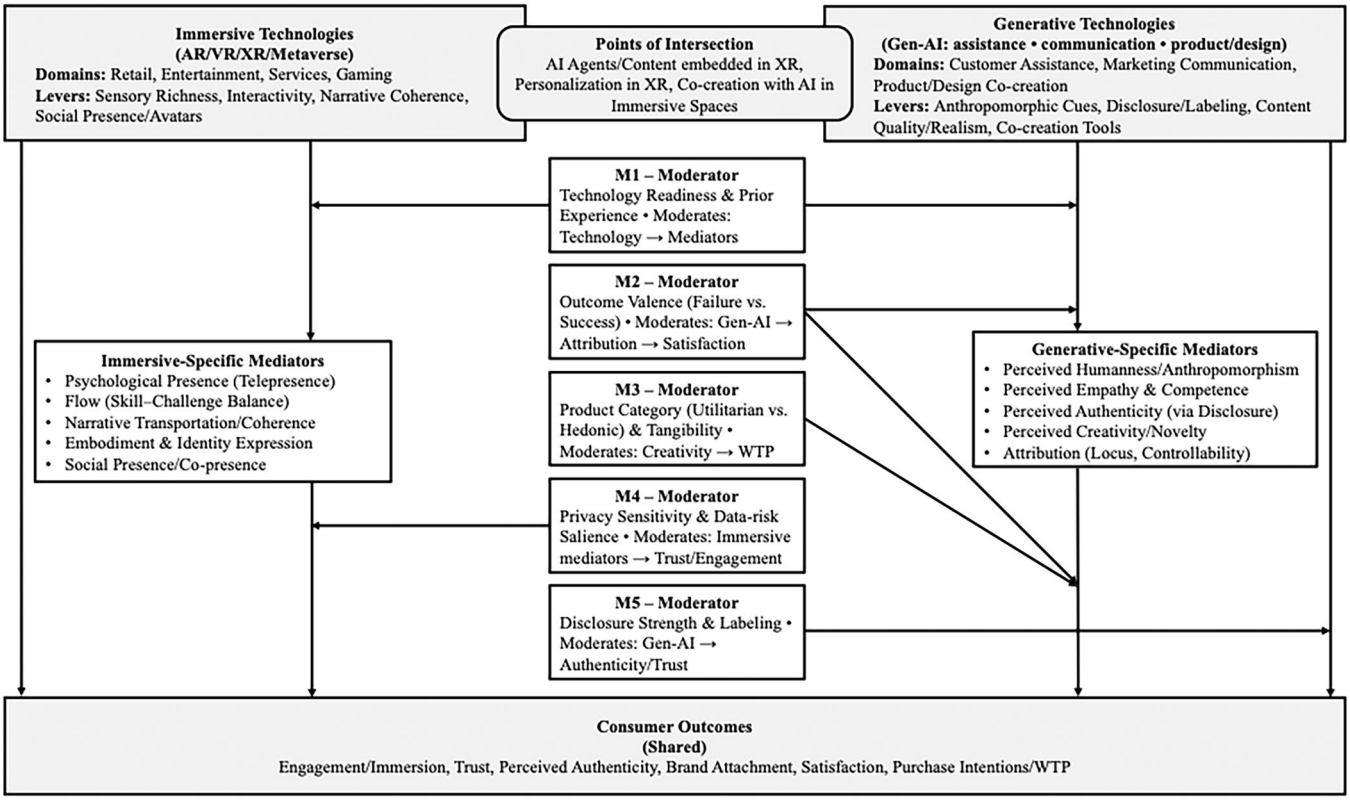

FIGURE 1 | A conceptual framework of immersive and generative technologies.

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enacted, these technologies can heighten consumer engagement, allow consumers to more fully experience virtual places, express their identities through avatars, foster affective connections (Alexander et al. 2025; Koslow and Stewart 2022), and even cocreate value across contexts such as gaming and virtual events to interactive storytelling (Tonietto and Barasch 2021; Leveau and Camus 2023).

In parallel, Gen-AI is transforming marketing research and practice by enabling on-demand creation of content—text, images, designs, and even product prototypes—at speed and scale (Dwivedi et al. 2022; Cillo and Rubera 2024). These tools are changing everything from customer service (e.g., AI chatbots) to product innovation and hyper-personalized advertising, boosting marketers' capabilities to respond to consumers (Huang and Rust 2024; Mariani and Dwivedi 2024).

These technologies also introduce new tensions around authenticity, agency, and transparency in customer relationships. Consumers may question the sincerity or authenticity of AI-crafted interactions and brand content, leading to skepticism or algorithmic aversion if not managed carefully (Audrezet et al. 2020; Brüns and Meißner 2024). Similarly, while immersive platforms can deepen engagement, overly contrived virtual experiences can alienate users or prompt privacy concerns. The challenge for marketers is to leverage these innovations in a way that enhances consumers' perception of value while preserving authenticity and ethical integrity (Longoni et al. 2019; Baek et al. 2024).

4.1 | Theoretical Contributions

This review of immersive and generative technologies in marketing advances theory in four ways. First, it extends our understanding of consumer behavior under conditions of computer-mediated, highly engaging immersive experiences. By integrating concepts of *presence* and *flow* from psychology with marketing outcomes, we argue that highly immersive experiences (e.g., in VR or metaverse settings) alter attention patterns, time perception, and emotional processing in ways that may differ from traditional consumption contexts (Tonietto and Barasch 2021; Leveau and Camus 2023). Consumers in phygital spaces experience a blurring of online and offline boundaries, requiring scholars to update models of consumer engagement and decision-making to account for hybrid motivations and behaviors (Hadi et al. 2023).

We suggest that immersive, phygital spaces can transform not only *what* consumers experience, but also *how* they experience it, suggesting that theories of customer experience and involvement must incorporate the unique impact of sensory richness and interactivity on consumer psychology (Mele et al. 2023; Alexander et al. 2025). We add to the literature on flow theory by identifying conditions within immersive contexts—such as personalized avatars, multisensory feedback mechanisms, spatial audio, interactivity—that foster psychological presence and sustained engagement (Green and Brock 2000). These environments enable unique forms of identity expression and embodiment that traditional marketing theories do not yet address (Vernuccio et al. 2025).

Second, our work broadens knowledge of consumer co-creation and agency in the age of AI. Gen-AI tools enable consumers to assume creative roles traditionally reserved for firms (Hermann and Puntoni 2024), thereby expanding the notion of coproduction of value (Prahalad and Ramaswamy 2004; Bouschery et al. 2023). By highlighting how consumers can collaborate with AI to generate content—such as custom product designs, personalized ads, or even virtual store layouts—we posit that value creation is increasingly a *triadic* process involving consumers, brands, and AI. This expansion of consumer agency challenges and enriches co-creation theory; consumers are not just co-creators with firms, but also co-creators with artificial intelligence, blurring the line between user and producer in the innovation process (Cillo and Rubera 2024; Mariani and Dwivedi 2024). Theoretical implications include reexamining control, ownership, and intellectual property in co-creation (Amabile 2020; Epstein et al. 2023), and a need to integrate consumer–AI collaboration into models of new product development.

Third, this review contributes to theories of anthropomorphism and consumer-AI interaction by examining underlying psychological mechanisms. It shows how attributing human qualities to AI (e.g., chatbots given names or avatars) can enhance consumer engagement and relationship building yet also raises consumer expectations for the interaction to mimic human empathy and understanding (Crolic et al. 2022; Markovitch et al. 2024). When AI systems display empathetic characteristics or conversational patterns, consumers form different expectations regarding service quality and adaptability than when interacting with explicitly nonhuman interfaces (Pathak et al. 2025). Attribution Theory (Weiner 1985) has been applied in this context, providing insight into how consumers assign credit or blame in service encounters involving AI, affecting perceptions of fairness and responsibility (Dietvorst et al. 2015).

Finally, this review broadens our understanding of authenticity and algorithmic aversion in marketing. The emerging evidence on consumer trust and skepticism toward AI-mediated content suggests that perceived authenticity depends on the balance of human versus algorithmic input and the transparency surrounding it (Audrezet et al. 2020; Brüns and Meißner 2024). Consumers often exhibit algorithm aversion, a preference for human-created output despite potential advantages of algorithmic alternatives (Dietvorst et al. 2015; Longoni et al. 2019). This review clarifies key moderating factors that influence this effect, including content domain (utilitarian *vs.* hedonic), disclosure practices (transparent vs. implicit AI use), and individual differences in technology readiness (Wortel et al. 2024; Zhang et al. 2022). Together, these contributions advance our understanding of consumer behavior in technologically mediated environments such as immersive and generative contexts.

4.2 | Managerial Implications

Our review offers marketing managers several actionable insights on the use of immersive and generative technologies. We recommend the following set of five guidelines.

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i. *Transparency about AI usage*: Managers will benefit from clearly communicating when and how Gen-AI is used in customer interactions or content creation. Disclosing AI-generated content (e.g., labeling AI-written copy or synthetic media) can preempt consumer skepticism and build trust by being transparent in brand communications (Jago et al. 2022; Magnus 2023; Wortel et al. 2024). Research suggests that transparency on the use and involvement of AI leads to consumers viewing the technological innovation positively (Zhang et al. 2022). For instance, customer service applications benefit when AI assistants acknowledge their nonhuman nature while maintaining conversational patterns that balance efficiency with perceived warmth (Crolic et al. 2022). Such approaches allow brands to build consumer relationships without sacrificing trust and perceived authenticity.

ii. *Quality and ethical standards*: Brands must ensure these technologies deliver reliable, high-quality experiences. Quality issues in immersive technologies, such as latency, visual inconsistencies, or navigation difficulties, can undermine consumer experience and brand perception (Giang Barrera and Shah 2023). Similarly, inappropriate or inaccurate outputs from generative systems can compromise brand credibility and consumer confidence (Ferraro et al. 2024). This implies thorough testing of AR/VR apps for usability, continuous monitoring of AI outputs for accuracy and relevance, and swift response to user feedback. Also important are ethical practices to safeguard user privacy, securing personal data gathered in immersive environments, and actively mitigating biases or misinformation in AI-generated content (Campbell et al. 2022). This focus on high quality and ethical integrity allow firms to not only comply with regulations but also strengthen consumer trust in technologically enhanced brand experiences.

iii. *Integrating AI and human touchpoints*: Rather than viewing AI as a replacement for human employees, firms should develop collaborative human-AI service models where technology handles routine, transactional aspects of customer interactions while human employees focus on complex problem-solving, emotional support, and relationship building (Pathak et al. 2025; Van der Heijden et al. 2013). Similarly, while Gen-AI can create content at scale, human oversight is crucial for maintaining brand consistency, contextual appropriateness, and emotional resonance (Markovitch et al. 2024). By blending technology with human empathy, companies can optimize service delivery and minimize any frustration that might arise.

iv. *Consumer co-creation with generative tools*: Marketers should leverage Gen-AI platforms to invite customers into the creative process to boost engagement and foster a sense of ownership. Providing intuitive interfaces for user-generated content, such as customization tools for designing virtual products or co-creating content, can enhance perceived value and strengthen brand loyalty (Bouschery et al. 2023). For instance, fashion retailers could implement AI-powered design tools enabling visualization and customization, and entertainment brands could develop platforms for audience content creation within branded environments. These co-created experiences can enhance perceived value through personalization while fostering stronger emotional connections as consumers invest their time, creativity, effort, and energy in the process (Park 2024; Feng et al. 2024). Managers will benefit from establishing clear policies on ownership, usage rights, and intellectual property (Appel et al. 2023), ensuring shared understanding of how co-created ideas, designs, or content can be used.

v. *Immersive experiences with brand alignment*: The deployment of AR, VR, and Metaverse activations should be intentional and aligned with the brand's visual identity and core brand values (Beverland et al. 2015; Alexander et al. 2025). Immersive brand experiences work best when they seamlessly complement other channels and enhance convenience, engagement, or entertainment value (Tonietto and Barasch 2021). We encourage marketers to experiment with these formats (e.g., hosting events in virtual worlds or using AR for interactive storytelling) and regularly evaluate consumer feedback to refine and improve the offerings (Grewal et al. 2024). Importantly, firms should avoid over-automating every consumer touchpoint; experiences that feel too machine-crafted or devoid of human warmth can appear inauthentic, undermining the brand's emotional connection with customers (Brüns and Meißner 2024). Hence, immersive and generative technology contexts should balance automation and authenticity, while maintaining consistent brand identity across consumer touchpoints.

4.3 | Future Research Directions

We identify several directions for future inquiry at the intersection of consumer psychology and immersive and generative technologies. We outline five broad areas with future research potential, along with relevant research questions.

i. *Extending attribution theory to AI-mediated interactions*: Future research should examine how consumers assign credit or blame in contexts involving Gen-AI. For instance, if an AI chatbot provides poor service or if a recommendation engine suggests an unsatisfying product, how do consumers attribute responsibility between the technology itself and the brand? Experimental research can explore how anthropomorphic cues (e.g., giving an AI agent a human name or voice) influence attribution and downstream outcomes like satisfaction, loyalty, or forgiveness (Dietvorst et al. 2015; Crolic et al. 2022). Similarly, when recommendations disappoint or generated designs fail expectations, do consumers blame the technology, the brand, or their own decision to rely on technology? (Dietvorst et al. 2015). Understanding these dynamics will add to theories of attribution in service failure and recovery.

ii. *Understanding digital trust and authenticity in tech-rich environments*: Although trust is a prerequisite for online

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engagement (Hollebeek and Macky 2019), its formation and maintenance in immersive or AI-mediated interactions remain underexplored. Researchers can investigate what design features, disclosure practices, or third-party validations can help build consumer confidence in algorithm-driven recommendations and virtual experiences (König et al. 2022). In such contexts, research can investigate consumers' ability to detect AI-generated content and the effect of such detection on perceived authenticity and brand credibility (Pantano et al. 2024). Future research could identify how transparency about AI involvement (or lack thereof) shapes consumer trust across different contexts and how to prevent deception or uncertainty as synthetic media like deepfakes become more common (Jago et al. 2022; Vaccari and Chadwick 2020). This will enhance our understanding of the cues and safeguards that make marketing seem trustworthy.

iii. *Exploring consumer perception of AI-driven creativity*: As generative AI produces products, artwork, and marketing messages, researchers should explore how consumers evaluate the novelty, quality, originality, and authenticity of such AI-generated output (Amabile 2020; Tigre Moura et al. 2023). Future research questions include whether disclosing AI involvement diminishes perceived value or, conversely, if interactive co-creation with AI can enhance consumers' sense of ownership, pride, or enjoyment in the outcome. For example, does a consumer value a fashion design created *with* an AI design assistant more than one designed solely by the brand? And how do attributions of creativity (machine vs. human) influence persuasiveness or willingness to pay? Addressing these questions will advance theories of creativity, persuasion, and consumer involvement, and provide practical insights on how to present AI-assisted creations in ways that maximize consumer adoption.

iv. *Investigating psychological and identity effects of prolonged immersion*: The psychological consequences of sustained or intense immersive consumption present another topical area for future research. On the one hand, highly immersive experiences can lead to positive outcomes like heightened engagement, empathy (e.g., perspective-taking via VR), or novel forms of self-expression. On the other hand, they can also lead to negative consequences such as escapism, altered self-perceptions, or digital fatigue caused by prolonged time in virtual environments. Future research could examine how immersive marketing experiences impact consumer well-being and identity formation over time (Leveau and Camus 2023). Additionally, studies might explore how consumers use immersive platforms for self-concept construction and identity signaling related to the brand (Farah et al. 2024). These research insights can inform both theory and practice on enriching consumer experiences while maintaining consumer well-being.

v. *Examining contextual factors/moderators at the intersection of immersive and generative technologies*: Finally, studying how immersive and generative technologies intersect to jointly shape consumer experiences is a promising avenue for future research. For example, as AI is used to create elements within virtual worlds—such as populating a metaverse retail store with AI-generated characters, content, or product recommendations—what is the combined impact on consumer engagement and decision-making (Farah et al. 2024)? Further, research can assess how contextual factors moderate consumer responses to these technologies. For instance, do product category (e.g., utilitarian vs. experiential goods), cultural norms, regulatory environment, and brand equity alter the effectiveness of immersive or generative technologies in marketing (Baek et al. 2024)? In a similar vein, are consumers more forgiving of AI-generated content in entertainment contexts than in health or finance? Does a heritage luxury brand face different consumer expectations in the Metaverse compared to a smaller brand or a tech startup? By addressing these questions, research can provide insights that help marketers tailor technology-driven marketing strategies to different industries and segments.

In sum, immersive and generative technologies present an exciting frontier for marketing and consumer research. We encourage the development of robust theories and guiding principles in leveraging AR, VR, Metaverse platforms, and Gen-AI in ways that create novel customer value and engender customer trust. The papers that follow in this special issue represent an important contribution to this important emerging area of research and practice in marketing.

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Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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