

The Role of Immersive Technology Dimensions in Enhancing Sensory Marketing: A Literature Review

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Abstract

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This review synthesizes recent empirical and review studies on the role of immersive technology dimensions—particularly augmented reality (AR), virtual reality (VR), and mixed reality (MR)—in shaping consumer behavior and enhancing sensory marketing outcomes. Drawing on prior studies employing structural equation modeling (SEM) and large-scale systematic reviews, the analysis integrates key theoretical constructs including presence, interaction, immersion, trust, and satisfaction within a unified conceptual framework. Evidence indicates that immersive technologies do not directly influence purchase intention; rather, their effects operate through sequential psychological mechanisms. Specifically, AR-driven environments enhance users' sense of presence, which significantly strengthens consumer trust, ultimately leading to higher purchase intention. Complementary findings from VR-based experiential contexts highlight that interaction and presence are critical antecedents of immersion, which in turn drives user satisfaction. Across the literature, dimensions such as immersion, interactivity, and presence consistently emerge as fundamental drivers of sensory engagement, enabling richer multi-sensory experiences that bridge the gap between digital and physical consumption environments. Evidence from previous studies across multiple sectors suggests that immersive technologies expand consumer reality and reshape decision-making processes through improved experiential quality and emotional connection. This review attempts to integrate previous findings and provide a clearer understanding of how immersive technology dimensions support sensory marketing outcomes through mediating factors such as trust, satisfaction, and engagement. It also identifies important research gaps, particularly the limited exploration of non-visual sensory stimuli and the need for more integrative models in emerging markets. The findings provide both theoretical and practical insights for developing immersive marketing strategies that enhance user experience and strengthen sustainable consumer relationships within the evolving digital environment.

Keywords: Immersive Technology, Sensory Marketing, Augmented Reality, Virtual Reality, Consumer Behavior

Introduction

In recent years, the rapid advancement of immersive technologies has positioned them as a central driver of transformation in consumer behavior and marketing practices. Technologies such as augmented reality (AR), virtual reality (VR), mixed reality (MR), and three-dimensional (3D) environments are no longer confined to entertainment applications; instead, they are increasingly integrated into everyday consumer experiences across sectors including retail, tourism, and cultural exhibitions (Solanki, 2025). This technological shift has been further accelerated by global digitalization trends and the need to bridge the gap between physical and virtual environments, particularly in contexts where traditional sensory interaction with products is limited. As a result, immersive technologies are emerging as powerful tools capable of reshaping how consumers perceive, evaluate, and interact with products and services (Ambika, et al., 2025).

From a marketing perspective, one of the key challenges in digital environments is the absence of direct sensory engagement that typically characterizes physical shopping experiences. Consumers in online contexts rely heavily on mediated information, which limits their ability to assess product attributes such as quality, texture, and functionality (Lee, et al., 2026). Immersive technologies address this limitation by enabling interactive and vivid simulations that replicate real-world experiences, thereby enhancing sensory perception and reducing uncertainty in decision-making. In particular, AR applications in mobile commerce allow users to visualize products within their real environments, creating a hybrid experience that combines the convenience of online shopping with the tangibility of offline interaction (Liu, et al., 2025). Central to understanding the effectiveness of immersive technologies is the concept of **presence**, defined as the psychological state in which users perceive themselves as being present within a mediated environment. Telepresence, often closely related to the concept of presence, represents a critical psychological mechanism through which immersive technologies influence consumer perceptions and behavioral responses. Prior research demonstrates that presence enhances users' cognitive and sensory engagement, fostering stronger emotional connections with products and increasing confidence in purchase decisions. In this context, immersive experiences characterized by high levels of interactivity, vividness, and realism contribute to the development of trust and perceived value, which are essential drivers of consumer behavior (Ramalaksmi, et al., 2025).

In parallel, studies in VR environments—particularly within experiential contexts such as virtual exhibitions highlight the importance of three fundamental dimensions: **presence, interactivity, and immersion**. These dimensions operate synergistically to shape user experiences, where interactivity enhances the sense of presence, which subsequently facilitates immersion, and immersion ultimately leads to outcomes such as satisfaction and engagement. Such findings underscore the multidimensional nature of immersive technologies and their capacity to stimulate sensory responses that extend beyond traditional digital interfaces (Familoni & Onyebuchi, 2024).

Despite the growing body of literature, existing research remains fragmented. Many studies focus on a single technology (e.g., AR or VR) or a specific industry, limiting the development of a comprehensive understanding of how immersive technology dimensions collectively influence consumer behavior and sensory marketing outcomes. Moreover, prior research often examines isolated variables such as presence or interactivity—without fully capturing the complex interactions among technological features, psychological states, and behavioral responses (Protopsaltis, 2024).

Accordingly, this review adopts a holistic perspective by integrating insights across multiple immersive technologies and application contexts. It aims to systematically examine how key dimensions immersion, presence, interactivity, and vividness/realism contribute to enhancing sensory marketing and shaping consumer behavior. By synthesizing findings from diverse empirical and conceptual studies, this research seeks to develop an inclusive framework that explains the mechanisms through which immersive technologies influence sensory perception, trust, satisfaction, and purchase intention. In doing so, it provides both theoretical contributions to the marketing literature and practical implications for designing effective immersive experiences within the evolving digital marketplace (Sandoval-Henríquez et al., 2025).

1. Concept of Immersive Technology

The rapid evolution of technological innovations, particularly in areas such as the Internet of Things, virtual reality, and augmented reality, has led to substantial transformations in the operational mechanisms of modern organizations. Many sectors, especially marketing and tourism, have increasingly adopted these technologies as innovative tools to enhance promotional activities, strengthen digital infrastructures, and deliver more advanced and interactive products and services. This shift has significantly redefined marketing practices by prioritizing consumers' sensory and experiential engagement rather than relying solely on traditional product presentation (Adib & Ashfakul, 2024)

Within this context, contemporary retail environments—particularly in fashion and e-commerce—have begun to integrate immersive technologies into the design of creative advertising campaigns and interactive, user-centered marketing experiences. Such adoption not only enhances their digital presence but also contributes to building long-term relationships with customers, while simultaneously reducing the gap between consumers and businesses. These developments have also been accelerated by the global changes brought about by the COVID-19 pandemic, which prompted a reconsideration of production models, marketing strategies, and methods of content delivery and customer engagement (Adib & Ashfakul, 2024).

The growing application of immersive technologies has encouraged marketing researchers to reassess both the opportunities and challenges associated with their use. Recent studies have particularly emphasized the role of consumers in adopting these technologies as effective tools for value creation throughout the customer journey. Immersive technologies enhance consumers' ability to interact with products and solve problems in innovative ways by integrating digital knowledge with smart tools, including mobile devices, artificial intelligence, and interactive virtual environments (Saihjpal et al., 2025).

Conceptually, immersive technology can be understood as a continuum that begins with virtual reality, which offers fully simulated digital environments generated by computer systems, and extends to augmented reality, which integrates digital elements into the real-world context, ultimately leading to hybrid experiences that allow simultaneous interaction with both physical and virtual worlds. This continuum has gained widespread application in information and communication technologies, particularly in education and training environments, where it facilitates the creation of realistic scenarios that reshape how users perceive and process information (Protopsaltis, 2024). Another important aspect is that immersive technologies play a critical role in transforming users from passive observers into active participants by blurring the boundaries between physical and virtual environments. Through the provision of rich sensory stimuli, these technologies enhance the perception of realism and foster deeper emotional engagement. Recent studies indicate that immersive technology can be defined as a set of systems and tools that enable users to experience a high level of integration within interactive digital environments, allowing for more profound interaction with content and other participants (Fusaro & Era, 2025).

Furthermore, recent literature highlights that immersive technologies rely on digital environments and simulation techniques to replicate physical reality often referred to as digitally enhanced environments which has led to fundamental changes in retail management,

customer interaction, and the delivery of marketing experiences. As a result, immersive technology is increasingly viewed as an integrative process that combines virtual simulation with real-world contexts to support consumers in engaging with advanced immersive experiences, ultimately enhancing their perception and evaluation of products and services offered by organizations that adopt these technologies (Mohsen, 2024).

2. Importance of Immersive Technology

Technology has long been a fundamental driver behind successive industrial revolutions, playing a crucial role in fostering global economic growth and creating new opportunities to enhance societal well-being. Within this broader context, immersive technology has emerged as a rapidly expanding field of interest in business and marketing disciplines, due to its capacity to fundamentally transform the nature of interactions between organizations and consumers. This transformative potential has led to a noticeable increase in both academic and practical attention toward its adoption in recent years (Didier, 2024).

In contemporary marketing environments, the integration of immersive technology into retail settings has become a strategic choice that offers extensive opportunities to enhance customer experience. Embedding these technologies within sales environments contributes to improving employee capabilities and enables the delivery of products and services through more interactive and innovative approaches. Empirical evidence suggests that higher levels of immersion are associated with more effective marketing outcomes compared to less immersive technologies, as they positively influence consumer perceptions and behavioral responses (Quinones, et al., 2023).

In this context, immersive technology serves as a powerful platform for co-creating value with customers by enabling direct interaction with products and marketing content. It reshapes patterns of design and experiential consumption by transforming consumers from passive recipients into active participants in the creation of their experiences. Additionally, these technologies facilitate a more efficient customer journey by accelerating access to relevant information and delivering updated content in a timely manner that aligns with individual needs and preferences (Tom Dieck & Han, 2022).

The inherent characteristics of immersive technology, particularly its interactivity and flexibility, contribute to the personalization of customer experiences. By supporting co-creation and enhancing perceived value, these technologies strengthen the emotional connection between consumers and brands. Moreover, ongoing technological advancements have blurred the traditional boundaries between physical and virtual environments, offering users integrated immersive experiences that allow them to explore and evaluate products prior to making purchase decisions (Suh & Prophet, 2018).

From a marketing perspective, immersive technology enables stakeholders to enhance customer satisfaction by providing greater freedom in customizing experiences and selecting their components—capabilities that were previously difficult to achieve in practice. Another important aspect is that these technologies improve usability, facilitate effective communication, and support real-time engagement, thereby increasing the level of interaction between consumers, designers, and marketers alike (Tom Dieck & Han, 2022).

Another important aspect is that immersive environments allow users to navigate virtual spaces freely, interact with digital entities, and access product-related information seamlessly. As a result, the significance of immersive technology lies in its ability to reshape consumers' perceptions of the marketing environment, extending beyond isolated virtual experiences to influence how they interpret and engage with the real world (Fusaro & Era, 2025).

In summary, immersive technology represents a strategic and impactful tool for achieving marketing objectives. It contributes to enhancing customer satisfaction, increasing sales performance, and building long-term relationships by delivering rich, interactive experiences that align with evolving consumer expectations within advanced digital environments (Flavián, 2024).

3. Dimensions of Immersive Technology

Contemporary literature indicates that immersive technology is structured around a set of core dimensions that collectively provide a comprehensive framework for understanding interactive digital experiences. Scholars have proposed classifications that primarily revolve around **Virtual Reality (VR)**, **Augmented Reality (AR)**, and **Mixed Reality (MR)**, representing a continuum of technologies that differ in their levels of immersion and the degree of interaction between physical and digital environments (Suh & Prophet, 2018).

1. Virtual Reality (VR)

Virtual Reality represents one of the most advanced forms of immersive technology in terms of depth of engagement. It enables users to be fully immersed in a computer-generated environment that is entirely separate from the physical world. Typically designed to replicate real or imagined settings, VR environments allow users to interact with digital elements without direct visual access to their surrounding physical environment. VR is commonly defined as a three-dimensional, computer-generated space that supports user interaction through specialized interfaces and devices, enabling the simulation of experiences that may not exist in reality (Pizzi, et al., 2025).

This technology has been widely adopted across various domains, including entertainment, education, training, advertising, marketing, and knowledge management, due to its ability to generate a strong sense of presence and immersion. VR systems rely on the integration of digital content, software platforms, and specialized hardware to facilitate natural and intuitive interaction, creating the perception of a realistic environment. These applications are typically developed through advanced simulation processes designed to produce immersive virtual worlds, allowing users to gain a deeper understanding of their components, such as users, digital content, devices, and underlying system engines (Adib Bin & Kausik, 2024)

2. Augmented Reality (AR)

Augmented Reality constitutes another key dimension of immersive technology, characterized by its ability to overlay digital elements onto the real-world environment in real time, rather than replacing it entirely. Although the concept originated in the 1990s, its widespread adoption has been driven by advancements in internet technologies, smartphones, and interactive digital systems (Dargan, et al., 2023).

AR operates by superimposing three-dimensional digital objects or informational content onto physical surroundings, thereby enhancing user interaction while maintaining a connection to the real environment. Its applications have become increasingly prominent in everyday life, particularly in fields such as entertainment, marketing, and social media, where it enriches user experience by introducing interactive visual and informational elements. By integrating virtual objects, animations, or data into real-world contexts, AR enhances sensory perception and increases the attractiveness and effectiveness of user experiences (Ramalaksmi, et al., 2025).

3. Mixed Reality (MR)

Mixed Reality refers to environments in which physical and virtual elements are integrated to varying degrees, allowing both to coexist and interact within a unified framework. It is often viewed as an advanced extension of both VR and AR, as it enables simultaneous perception and interaction with real and digital components in a seamless and context-aware manner (Chen, 2024).

Unlike AR, which typically overlays digital content onto the physical world without deep integration, MR embeds digital elements more fully into the real environment, making them part of the user's immediate context. At the same time, MR differs from VR in that it does not isolate users from their physical surroundings but instead allows them to interact with virtual content while remaining aware of and engaged with the real world. This dimension aims to create a hybrid reality that combines the immersive qualities of VR with the contextual integration of AR, opening new possibilities for applications in fields such as construction, research, marketing, and industry. The increasing availability of specialized devices, such as advanced smart glasses, has further supported the development and adoption of mixed reality experiences (Colamatteo & Pagnanelli, 2024).

Sensory Marketing

First: Origins of Sensory Marketing

In its early stages, the concept of sensory marketing did not receive widespread global attention, as it was commonly assumed that consumers primarily sought to satisfy their needs through the functional attributes of physical products (Xancó-Grau, et al., 2025). However, ongoing transformations in the marketing environment have demonstrated that fulfilling customer needs extends beyond tangible product features to include intangible experiences associated with emotions and sensory perceptions. As a result, multisensory marketing approaches have emerged as effective strategies for engaging consumers, given their ability to appeal to emotional dimensions and enhance perceived value (Shahid, et al., 2022).

As a result, the increasing pace of change in competitive markets, coupled with rising consumer expectations, has compelled organizations to explore innovative tools and approaches for value creation. Traditional marketing models have become insufficient in addressing the complexities of modern markets, prompting a shift toward experiential strategies grounded in sensory marketing (Rao & Huang, 2025). This approach has gained prominence as one of the most advanced marketing practices in recent years, as it emphasizes active customer participation and focuses on delivering satisfying experiences that go beyond the functional benefits of products. By fostering emotional connections with brands, sensory marketing contributes to

strengthening customer engagement, particularly in contexts where consumer loyalty has declined due to evolving consumption patterns (Sullivan & Fosso, 2024).

Second: Concept of Sensory Marketing

Understanding sensory marketing requires an initial consideration of sensation and the human senses as fundamental scientific foundations of this field. Sensation can be defined as the ability to perceive both external and internal stimuli through the five primary human senses: sight, hearing, smell, taste, and touch. The term “sensory” is therefore associated with all stimuli related to these senses and the psychological and behavioral responses they evoke. Satisfying sensory needs is considered a key factor in interpreting consumer behavior, as it plays a significant role in influencing subconscious processes and guiding individual decision-making (Hussain, 2019).

Within this framework, sensory marketing can be conceptualized as a marketing approach that emphasizes the interaction between the human mind and sensory stimuli. It focuses on the cognitive processes and physiological responses that arise when consumers are exposed to specific sensory cues (Wedel & Zhang, 2020). This approach is primarily concerned with creating a multisensory brand experience that contributes to the development of positive and lasting consumer perceptions. As a result, sensory marketing strategies integrate elements of transactional marketing—centered on exchange processes—with relational marketing, which emphasizes the establishment of long-term relationships with customers. This integration facilitates the delivery of cohesive multisensory experiences that strengthen brand characteristics and consumer engagement (Kulkarni & Kolli, 2022).

Third: Importance of Sensory Marketing

Contemporary research highlights the central role of sensory stimulation in shaping consumer purchasing behavior and influencing perceptions of brands and products. When applied effectively, sensory marketing contributes to improving consumers’ emotional states, enhancing decision-making processes, and increasing their willingness to spend. This form of marketing places particular emphasis on subconscious influences that shape purchasing decisions, as empirical evidence suggests that sensory cues can exert a significant positive impact on consumer behavior (Ledro, et al., 2025).

The importance of sensory marketing also lies in its ability to provide holistic and integrated experiences during interactions between organizations and customers, whether in physical retail environments or digital platforms. Its relevance is further reinforced by its capacity to respond to external factors such as technological advancements and evolving consumption patterns, as well as internal factors related to consumer perceptions of quality, satisfaction levels, purchasing decisions, and duration of engagement within retail environments. Since individuals interpret their surroundings through the combined use of their senses, sensory marketing serves as an effective tool for enhancing the overall brand experience (Shahid, et al., 2022).

In this context, several studies suggest that consumer decisions are often driven more by emotional responses than by purely rational considerations. The feelings generated through positive or negative sensory experiences have a direct influence on attitudes toward products

and services. Therefore, understanding consumers' emotions, values, beliefs, and cultural contexts is essential for maximizing brand impact (Zhu, 2023). In this regard, emotionally driven persuasion strategies play a crucial role in guiding purchasing behavior and fostering long-term customer loyalty (Pizzi, et al., 2025).

Fourth: Objectives of Sensory Marketing

Sensory marketing aims to provide consumers with distinctive experiences that engage multiple senses by delivering carefully designed stimuli related to products and their associated interactions. These experiences contribute to shaping consumer perceptions, attitudes, preferences, and purchasing decisions. Another important aspect is that this approach seeks to achieve sustainable competitive advantages by enhancing the sensory, emotional, and cognitive benefits perceived by consumers (Lee, et al., 2026).

As a result, sensory marketing focuses on strengthening the connection between consumers and products, improving purchasing behavior, and enabling emotional responses that may, at times, outweigh purely rational considerations. The primary objectives of sensory marketing can be summarized as follows (Chatterjee, 2022):

1. Developing a unique brand identity and enhancing sensory awareness of the brand.
2. Attracting consumers to points of sale and increasing their frequency of visits.
3. Influencing consumers' subconscious processes to support purchase decisions.
4. Fostering long-term brand loyalty through memorable and positive experiences.

Fifth: Dimensions of Sensory Marketing

1. Visual Marketing

Visual marketing is associated with the sense of sight and encompasses a range of environmental stimuli such as layout, lighting, color schemes, and brightness. These elements play a central role in influencing customers' moods and guiding their purchasing behavior. Among the dimensions of sensory marketing, the visual aspect is the most dominant in service environments due to its ability to capture attention, stimulate interest, enhance enjoyment, and create visual harmony within the space (Sample & Brasel, 2020).

Research indicates that colors evoke different psychological responses. For example, pink is often linked to feelings of romance, green is associated with nature and calmness, yellow is used to attract attention and convey positivity, while red is commonly employed to stimulate excitement and appetite. Contemporary studies emphasize the importance of lighting and color perception as critical components of sensory marketing strategies, given their ability to influence emotions and shape consumer impressions (Elliot, 2015).

2. Gustatory Marketing

Gustatory marketing relates to the sense of taste and is widely applied in the food industry. Many companies rely on offering product samples or tasting experiences to directly influence consumers' purchase decisions. This approach is effective because taste experiences enhance

consumers' perceptions of product quality and increase their confidence, which in turn positively impacts sales performance (Mehta, et al., 2024).

The literature highlights that food purchasing decisions are often strongly driven by taste experiences, making this dimension a key determinant of consumer behavior. As a result, organizations strive to accommodate diverse and evolving consumer preferences while considering cultural differences and individual tastes, as these factors significantly shape consumption patterns (Fernqvist, et al., 2024).

3. Olfactory Marketing

Olfactory marketing is linked to the sense of smell, which has gained increasing attention due to its strong connection with memory and emotional responses. Scents have the ability to evoke past experiences—whether positive or negative—and directly influence individuals' psychological states, making them a powerful tool in shaping consumer behavior (De Luca & Botelho, 2021).

In service environments, scents are used as marketing stimuli to enhance customer experiences and extend the duration of their stay, as well as to encourage repeat visits. Some brands deliberately develop distinctive signature scents, whether natural or artificial, to establish a unique sensory identity. A common example can be found in cafés, where the aroma of coffee plays a fundamental role in shaping the overall atmosphere and reinforcing customer impressions (Roschk & Hosseinpour, 2020).

4. Tactile Marketing

Tactile marketing is associated with the sense of touch, which is considered one of the most influential senses in evaluating product quality. Since the skin is the largest sensory organ in the human body, physical interaction with products enables consumers to form perceptions regarding attributes such as texture, weight, smoothness, durability, and packaging quality (Krishna, Luangrath & Peck, 2024)

In many situations, consumers prefer to physically handle products before making purchase decisions, particularly when evaluating samples. Touch serves as a critical means of assessing quality, supported by the high density of sensory receptors in the skin. Additionally, tactile elements play an essential role in packaging design, as they directly affect perceived value and product attractiveness (Meliksetyan, 2025).

5. Auditory Marketing

Auditory marketing relates to the sense of hearing and involves the use of sound and music to shape the physical and emotional atmosphere of service environments, such as restaurants, hotels, and retail stores. Research has demonstrated that the type and tempo of music can influence consumer behavior, including movement speed within a store and the length of time spent in a given space (Hultén, 2021).

Sounds and music also contribute to creating an environment that aligns with the brand identity and allow marketing messages to be communicated in a subtle and indirect manner. Furthermore, auditory stimuli can trigger memories and past experiences, strengthening the

emotional connection between consumers and brands. The literature suggests that the dimensions of sensory marketing are most effective when applied in an integrated and coordinated manner, rather than in isolation, to achieve a meaningful impact on consumer behavior (Kulkarni & Kolli, 2022).

Conclusions

Based on the comprehensive review presented in the article, several key conclusions can be drawn:

1. Immersive technologies (AR, VR, and MR) have significantly transformed modern marketing by creating interactive and engaging consumer experiences that enhance perceived value and strengthen customer engagement.
2. The influence of immersive technologies on consumer behavior occurs mainly through psychological mechanisms such as presence, immersion, trust, and satisfaction, which collectively shape purchase intentions and consumer responses.
3. Sensory marketing enhances the effectiveness of immersive technologies by stimulating multiple senses simultaneously, thereby strengthening emotional connections with brands and improving consumer decision-making.
4. The integration of visual, auditory, tactile, olfactory, and gustative stimuli in immersive environments provides more effective and memorable consumer experiences than relying on isolated sensory dimensions.
5. Immersive technologies help bridge the gap between physical and digital environments by reducing uncertainty, increasing consumer confidence, and supporting personalized customer experiences that foster long-term loyalty and competitive advantage.
6. Despite the growing interest in immersive technology and sensory marketing, further research is needed to develop integrative models and explore underrepresented sensory dimensions, particularly smell and taste, within digital and immersive environments.

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