

# Impact of Virtual Reality on Consumer Purchase Intentions: A Neuromarketing Perspective

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## ABSTRACT

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Virtual Reality (VR) has emerged as a transformative tool in digital marketing, offering immersive and interactive experiences that foster deeper emotional connections between consumers and brands. This article explores the impact of VR on consumer purchase intentions from a neuromarketing perspective. It highlights how VR enhances consumer engagement by providing realistic, personalized experiences that influence decision-making processes. By analysing emotional and cognitive responses through neuromarketing techniques, such as EEG and fMRI, the study reveals that VR marketing significantly enhances consumer trust, brand loyalty, and purchase intent. The paper also compares VR marketing with traditional digital methods, demonstrating that VR's immersive qualities lead to higher engagement and more informed purchasing decisions. The research underscores the growing relevance of VR as a competitive tool in the evolving digital marketing landscape, offering strategic insights for businesses aiming to capitalize on this technology.

**Keywords:** Consumer Purchase Intentions, Digital Marketing, Emotional Engagement, Neuromarketing, Virtual Reality (VR)

## 1. Introduction

Virtual Reality (VR) has become a powerful tool in digital marketing, offering immersive and interactive brand experiences that engage consumers like never before. The VR market is rapidly expanding, with studies showing its effectiveness in enhancing brand-consumer interactions and creating memorable marketing campaigns (Gupta & Bansal, 2022).

Brands are leveraging VR to improve marketing efficiency and consumer engagement. Companies like IKEA and Nike have implemented VR to allow customers to visualize products in their environment, leading to higher purchase intent (Juan et al., 2019). Research suggests that VR marketing significantly influences consumer behaviour, fostering deeper emotional connections with brands and enhancing overall brand loyalty (Kumar et al., 2024).

Furthermore, VR's integration into digital marketing strategies extends beyond e-commerce. Virtual reality is now used in interactive advertising, experiential marketing, and even education-based promotional content. A recent study highlights how VR enhances consumer decision-making by offering a simulated experience of products and services before purchase, reducing uncertainty and increasing confidence in purchase decisions (Zaki et al., 2023).

With advancements in VR technology, including AI-driven personalization and real-time interaction, businesses that adopt VR marketing strategies are poised to gain a significant competitive advantage. The future of VR in marketing will likely see further growth with increasing adoption across multiple industries, making it a vital tool in the digital marketer's arsenal.

### 1.1 Increasing Relevance of Neuromarketing in Understanding Consumer Behaviour

Neuromarketing, the fusion of neuroscience and marketing, is increasingly recognized as a critical tool for understanding consumer behaviour. Traditional marketing research relies heavily on self-reported data, which can be subjective and influenced by various biases. In contrast, neuromarketing employs scientific techniques such as functional Magnetic Resonance Imaging (fMRI), Electroencephalography (EEG), and eye-tracking to uncover subconscious consumer responses to marketing stimuli (Alsmadi & Hailat, 2021).

Recent studies highlight that neuromarketing provides more accurate insights into consumer decision-making processes. Research has shown that emotional responses to advertisements, product packaging, and brand messaging significantly influence purchasing behaviour (Devaru, 2018). By analysing neural responses, businesses can optimize advertising strategies, improve product placement, and enhance customer experiences, leading to higher engagement and conversion rates (Colaferro & Crescitelli, 2014).

Furthermore, neuromarketing research has revealed that consumers are not always rational decision-makers. Instead, their purchasing choices are often driven by subconscious factors, including emotions, memories, and brand associations. For instance, brain-imaging studies have demonstrated that specific colours, sounds, and scents can trigger positive emotional connections, increasing brand preference and purchase intent (Akbari, 2014).

Despite its potential, neuromarketing raises ethical concerns regarding consumer privacy and manipulation. Researchers argue that while neuromarketing can enhance marketing effectiveness, it should be used responsibly to ensure transparency and ethical considerations (Savchenko et al., 2021).

As technology advances, the role of neuromarketing in shaping future marketing strategies is expected to grow, offering businesses a competitive edge by enabling them to create more engaging and personalized marketing experiences based on real consumer brain responses.

## 2. Theoretical Background

### 2.1 Virtual Reality in Consumer Marketing

Virtual Reality (VR) is an immersive technology that uses computer-generated environments to create interactive experiences for consumers. In marketing, VR allows brands to engage consumers by providing virtual experiences that simulate real-world interactions with products or services. As a marketing tool, VR has evolved significantly, from simple virtual tours to fully interactive environments that can influence consumer decisions. The integration of VR into marketing strategies is seen as part of a broader trend in utilizing advanced technologies to create more personalized, experiential interactions with consumers (Shahab, Shahzad, & Yasin, 2022). This evolution includes using VR to deepen consumer engagement, create memorable brand experiences, and ultimately influence purchasing decisions (Alcañiz, Bigné, & Guixeres, 2019).

### 2.2 Case Studies of Brands Successfully Implementing VR

Virtual Reality (VR) has become a transformative tool in marketing, allowing brands to offer unique and immersive experiences to their customers. As the technology continues to evolve, businesses across industries are integrating VR into their marketing strategies to enhance customer engagement, improve purchasing decisions, and strengthen brand loyalty. Below are some notable case studies of brands that have successfully leveraged VR to enhance their marketing efforts.

**Table 1:** Case Studies of Successful VR Implementations in Marketing

<i><b>Brand</b></i>	<i><b>VR Application</b></i>	<i><b>Outcome/Impact</b></i>
OKKO, Gucci, Lowe's, and Burger King	Used VR and AR technologies to enhance customer experiences, such as Lowe's offering virtual home improvement experiences and Burger King integrating VR into campaigns (Vasylyk & Kovshova, 2021).	Increased sales, improved customer engagement, and brand loyalty.
Gucci	Created immersive VR fashion shows allowing consumers to experience the brand in a virtual environment (Jung et al., 2019).	Increased brand awareness, created emotional connections, and improved consumer enthusiasm and loyalty.

<b>Brand</b>	<b>VR Application</b>	<b>Outcome/Impact</b>
Walmart	Used VR to enhance retail experiences by allowing customers to virtually try products and visualize them in their homes before purchasing (Queiroz et al., 2018).	Improved shopping experiences, increased sales.
Audi	Implemented VR in showrooms to allow customers to experience car models virtually before purchasing.	Enhanced customer experience and decision-making, leading to higher purchase intent and satisfaction.
IKEA	Used VR to allow customers to visualize furniture in their own homes, creating a more engaging shopping experience.	Improved customer satisfaction and engagement, leading to increased sales.
Nike	Introduced VR in stores to allow customers to virtually try on shoes and see different designs.	Boosted customer engagement and sales by providing an interactive and immersive shopping experience.
L'Oréal	Implemented VR technology to let customers virtually try on makeup products in stores and online.	Increased customer engagement and satisfaction, driving higher conversion rates.

These case studies showcase the broad applications of VR in marketing, from virtual product demonstrations to immersive brand experiences. By integrating VR, these brands have not only enhanced their customer engagement but also gained valuable insights into consumer behaviour, ultimately fostering stronger emotional connections with their audiences.

## **2.3 Benefits and Challenges of VR in Marketing**

### **2.3.1 Benefits of VR in Marketing**

Virtual Reality (VR) offers several compelling benefits to marketers looking to engage consumers in innovative and interactive ways:

- **Enhanced Consumer Engagement:** VR creates immersive experiences that foster deeper emotional connections between consumers and brands. By enabling consumers to interact with products or services in a virtual environment, VR makes the marketing experience more memorable, leading to increased engagement and brand loyalty (Chen & Zhong, 2024).
- **Realistic Product Demonstrations:** One of the primary advantages of VR is its ability to offer highly realistic product demonstrations. Consumers can experience products virtually, allowing them to make more informed purchasing decisions, as demonstrated by VR test drives like those from Volvo and Audi (Chen & Zhong, 2024).
- **Global Reach:** VR can break down geographical barriers, enabling brands to reach a global audience. By offering virtual experiences, brands can create a universal marketing platform that appeals to consumers worldwide without the need for physical presence (Dahane et al., 2022).
- **Interactive and Personalized Experiences:** VR allows for highly personalized experiences. Consumers can interact with brands in ways that feel tailored to their preferences, which can increase consumer satisfaction and influence purchasing decisions (Isufi et al., 2023).

### **2.3.2 Challenges of VR in Marketing**

While VR offers significant benefits, there are also several challenges that marketers need to address:

- **High Costs of Implementation:** One of the major hurdles to adopting VR is the significant cost of developing VR experiences, including the need for specialized equipment, software, and content creation. This can be particularly challenging for smaller businesses (Chen & Zhong, 2024).

- **Technological Limitations:** Despite advances in VR technology, it still faces challenges related to hardware capabilities, such as the need for powerful computers or VR headsets. These technical barriers may limit its widespread use and accessibility (Dahane et al., 2022).
- **Consumer Adaptation:** Not all consumers are comfortable using VR, and there may be resistance to adopting the technology, particularly among older demographics or those unfamiliar with the technology. Additionally, some users may experience discomfort, such as motion sickness, when engaging with VR content (Kushnarevych & Kollárová, 2023).
- **Ethical and Privacy Concerns:** VR technology involves the collection of sensitive data about users' behaviors, movements, and preferences. These concerns regarding user privacy and data protection must be addressed to ensure ethical marketing practices and build consumer trust (Isufi et al., 2023).

## 2.4 Neuromarketing as a Tool to Analyse Consumer Behaviour

Neuromarketing employs various techniques such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and eye-tracking to monitor brain activity and physiological responses to marketing stimuli. These tools provide valuable data on consumer attention, emotional engagement, and preferences, enabling marketers to design more effective campaigns and products. By integrating these findings, companies can create tailored marketing strategies that resonate with the subconscious needs and desires of consumers, enhancing brand loyalty and purchase intent.

### 2.4.1 Overview of Neuromarketing: Principles, Methods, and Applications

Neuromarketing is an emerging field that merges marketing strategies with neuroscience to understand how consumers' brains respond to marketing stimuli. By observing and analyzing consumers' unconscious and physiological reactions, neuromarketing provides deeper insights into decision-making processes and consumer behavior (Rahaman et al., 2021). The main principles of neuromarketing involve the use of neuroimaging tools to capture real-time brain activity, which allows marketers to understand consumers' preferences, emotions, and decision-making patterns at a subconscious level (Mladenović & Milićević, 2022).

### 2.4.2 Key Neuromarketing Techniques (EEG, fMRI, Eye Tracking, Facial Expression Analysis)

- **EEG (Electroencephalography):** EEG is used to measure the electrical activity in the brain. It is highly effective in understanding emotional responses to stimuli, providing insights into how individuals react emotionally to advertising or products (Mladenović & Milićević, 2022).
- **fMRI (Functional Magnetic Resonance Imaging):** fMRI measures brain activity by detecting changes in blood flow, which can indicate neural activity. It is particularly useful for understanding how different brain regions are activated during exposure to marketing stimuli and consumer decision-making processes (Singh, 2020).
- **Eye Tracking:** Eye-tracking technology is used to monitor where and how long a person looks at various stimuli (e.g., products or advertisements). This method helps identify visual attention patterns, which can guide marketers in optimizing product placement and advertising strategies (Kumar & Singh, 2016).
- **Facial Expression Analysis:** This method involves analyzing micro-expressions to gauge emotional reactions to marketing stimuli. By measuring facial expressions, marketers can better understand consumer sentiments and tailor their marketing messages accordingly (Mishra & Shukla, 2020).

### 2.4.3 How Neuroscience Explains Consumer Reactions to VR Experiences

Neuroscience provides valuable insights into how consumers react to Virtual Reality (VR) experiences, as VR is particularly effective in eliciting emotional and physiological responses. Studies using fMRI and EEG have shown that VR experiences activate areas of the brain associated with emotions and decision-making. When consumers interact with a VR environment, their emotional responses are heightened, which can significantly influence their attitudes toward a product or brand. This heightened emotional state can lead to increased engagement, brand recall, and purchase intent (Rahaman et al., 2021).

Additionally, eye-tracking and facial expression analysis have been employed to understand consumer reactions to VR advertisements or virtual product placements. These techniques help marketers determine which elements of the

VR experience capture the most attention and evoke the strongest emotional responses, providing valuable data for optimizing VR-based marketing strategies (Singh, 2020).

## **2.5 Consumer Purchase Intentions & Decision-Making in VR Environments**

In addition to psychological factors, social influence also plays a key role in shaping consumer behavior in VR environments. Virtual reality platforms often incorporate social elements, such as shared experiences or peer interactions, which can affect a consumer's purchase intentions. The presence of others, including friends or influencers within a VR space, can create a sense of validation or urgency, encouraging consumers to make purchasing decisions based on perceived social norms or trends. This social influence significantly impacts consumer decision-making in these immersive environments.

### **2.5.1 Psychological and Emotional Factors Influencing Purchasing Behaviour**

In Virtual Reality (VR) environments, psychological and emotional factors play a significant role in shaping consumer purchase intentions. One of the primary psychological influences is the sense of immersion. When consumers feel fully immersed in a VR environment, it enhances their emotional engagement and involvement with the products. This immersion leads to a stronger emotional connection, which can increase their purchase intentions (Loureiro et al., 2020).

Further, emotional responses to the virtual environment, such as excitement, curiosity, and enjoyment, have been shown to influence consumers' choices and their likelihood to make a purchase. For example, studies indicate that in highly immersive VR settings, consumers tend to make more variety-seeking purchases, are less price-sensitive, and exhibit higher satisfaction compared to traditional online shopping experiences (Meißner et al., 2020).

Moreover, VR environments can create emotional triggers that resonate deeply with consumers' desires, enhancing their overall experience. These emotions can serve as powerful motivators for purchase decisions, making VR a highly effective tool for influencing consumer behavior (Biercewicz et al., 2024).

### **2.5.2 Role of Immersion and Interactivity in Shaping Consumer Trust**

The sense of immersion and interactivity are crucial components in shaping consumer trust in VR environments. Immersion refers to the extent to which consumers feel "present" within a VR environment. A high level of immersion can lead to positive emotional experiences and higher consumer satisfaction, which can, in turn, foster trust in the brand or product being presented. For example, research shows that when consumers experience high immersion in VR shopping, they are more likely to trust the environment and feel confident in their purchasing decisions (Wang & Datta, 2005). Interactivity, on the other hand, plays an important role by allowing consumers to actively engage with products or brands in a virtual space. The ability to interact with products enhances the sense of control, which can build trust. Studies have shown that when consumers can manipulate or test products in VR, they are more likely to perceive the environment as reliable and trustworthy (Kang et al., 2020).

Additionally, empathy created through interaction in VR environments has been found to positively affect consumers' perceptions of trust. Consumers who experience a high degree of empathy and responsiveness from virtual sales agents or interfaces are more likely to trust the brand and make a purchase (Beyari et al., 2024).

## **2.6 Synthesis of Existing Research on VR and Neuromarketing**

Research also highlights the synergy between VR and neuromarketing techniques in enhancing consumer decision-making. Neuromarketing tools such as eye-tracking, EEG, and biometrics, when applied in VR environments, provide deeper insights into consumer preferences and emotional responses. Studies have shown that combining VR with these techniques allows for a more accurate understanding of subconscious consumer behaviour, helping marketers tailor experiences that influence purchasing decisions more effectively.

### **2.6.1 Findings from Previous Studies on VR's Impact on Consumer Decision-Making**

Several studies have explored how Virtual Reality (VR) influences consumer decision-making, with notable findings on the psychological mechanisms that drive purchasing behaviour:

- **Emotional Engagement and Decision-Making:** VR environments significantly enhance emotional engagement, which plays a critical role in shaping consumer decision-making. A study found that VR experiences positively influenced consumer attitudes and decision-making by providing immersive and

emotionally engaging interactions with products. Consumers are more likely to make purchase decisions based on the emotional connection developed in VR, compared to traditional media (Shahab et al., 2022).

- **Cognitive vs. Emotional Decision-Making:** The research also highlights the dual pathways in consumer decision-making. VR's ability to create realistic experiences impacts both cognitive and emotional aspects of decision-making. In tourism marketing, for example, VR significantly affected consumers' attitudes toward a destination, primarily through emotional engagement, more so than conventional video-based marketing (Shahab et al., 2022).
- **Improved Brand Loyalty and Purchase Intent:** By immersing consumers in a brand's world, VR increases their trust and loyalty toward the brand. Studies have shown that consumers who engage with VR campaigns exhibit higher purchase intentions and stronger emotional ties to the brand (Alsmadi & Hailat, 2021).

### 2.6.2 Comparative Analysis of VR-based Marketing vs. Traditional Digital Marketing

When comparing VR-based marketing to traditional digital marketing, several key differences emerge:

1. **Immersive Experiences vs. Passive Engagement:** VR-based marketing offers an immersive, interactive environment that deeply engages consumers, contrasting with traditional digital marketing, which is often passive, relying on text, images, or videos. VR creates a sense of presence, making consumers feel as though they are physically interacting with the product or brand, which can lead to stronger emotional connections and more informed purchase decisions (Meißner et al., 2020).
2. **Impact on Decision-Making and Purchase Intent:** Research suggests that VR marketing, due to its interactive nature, can lead to higher purchase intent compared to traditional digital ads. In a comparative study, VR experiences led consumers to make decisions based on a broader variety of products and were less influenced by price compared to traditional video-based marketing (Kang et al., 2020).
3. **Customization and Personalization:** VR allows for higher levels of customization and personalization. Brands can create tailored experiences for individual consumers, based on their preferences and behaviours, something that traditional digital marketing often lacks. VR's ability to adjust the shopping experience according to user actions offers greater potential for consumer satisfaction and loyalty (Shahab et al., 2022).
4. **Consumer Trust and Engagement:** While traditional marketing can build brand awareness, VR has been shown to enhance consumer trust and long-term engagement through its immersive capabilities. The high level of engagement in VR environments strengthens consumer perceptions of brand authenticity and trustworthiness, fostering better customer relationships (Alsmadi & Hailat, 2021).

## 3. Research Methodology

This study analyses the impact of Virtual Reality (VR) on consumer behaviour and marketing, focusing on emotional engagement, decision-making, and the effectiveness of VR-based versus traditional marketing. Using secondary data from peer-reviewed journals, books, and industry reports, relevant research was sourced from databases like Google Scholar, Web of Science, Scopus, and Consensus. Inclusion criteria focused on recent studies (last 10 years) related to VR marketing and neuromarketing, while non-peer-reviewed and non-English articles were excluded. Thematic analysis was used to identify key themes such as emotional engagement, cognitive decision-making, and purchase intentions. Comparative analysis examined studies contrasting VR marketing with traditional digital methods, highlighting VR's advantages and limitations.

### 4. Implications of VR and Neuromarketing for Consumer Engagement

Research consistently shows that VR technology significantly enhances consumer engagement by providing an immersive experience that cannot be matched by traditional media. Studies reveal that VR fosters deeper emotional responses from consumers, making the interaction with products or services more memorable and impactful. Consumers are more likely to engage with brands that offer VR experiences due to the heightened sensory involvement and emotional engagement (Sheena et al., 2023). Moreover, VR enables consumers to form emotional connections with brands, enhancing customer loyalty and satisfaction through enriched product experiences (Azmi et al., 2021).

#### 4.1 Emotional and Cognitive Effects of Immersive Experiences:

Immersive VR experiences activate both emotional and cognitive responses, which play a critical role in consumer decision-making. For instance, VR technology leads to stronger emotional responses (e.g., excitement or joy) compared to traditional advertising formats, thus increasing the likelihood of purchase intention. Additionally, VR's immersive qualities, such as interactive product demonstrations, allow consumers to form mental associations with the brand, influencing their cognitive evaluation of products (Leanza, 2017).

#### 4.2 VR Marketing vs. Traditional Marketing

Studies comparing VR marketing to traditional advertising highlight its superior ability to create immersive and personalized consumer experiences. Research consistently shows that VR enhances consumer engagement, elicits stronger emotional responses, and significantly influences purchase decisions. Unlike traditional digital ads, VR enables consumers to actively interact with products, improving brand perception and fostering greater brand loyalty. The immersive nature of VR also enhances consumer recall and retention (Chen & Zhong, 2024). Additionally, VR outperforms traditional marketing in areas such as consumer trust, product perception, and purchase intent. Studies comparing VR product demonstrations to traditional advertisements indicate that VR generates higher engagement and deeper emotional connections, ultimately driving more consumer action (Isufi et al., 2023).

#### 4.3 Neuromarketing Evidence on VR's Influence on Purchase Intentions

Neuromarketing studies indicate that VR significantly enhances brain activity in regions associated with attention, memory, and emotional processing. Functional Magnetic Resonance Imaging (fMRI) and Electroencephalography (EEG) research reveal that immersive VR experiences activate emotional centers of the brain, influencing both unconscious and conscious decision-making, which directly impacts purchase intentions (Biercewicz et al., 2024). Additionally, VR environments lead to higher levels of attention and information retention, further strengthening consumer purchase behavior. EEG-based studies show that consumers exposed to VR ads exhibit greater attention and emotional engagement compared to traditional digital ads, highlighting VR's superior ability to capture and sustain attention for more effective decision-making (Trabulsi et al., 2015).

#### 4.4 Strategic Implications for Marketers

Businesses can leverage VR technology to create more engaging, personalized, and memorable marketing campaigns by focusing on the emotional and cognitive responses that VR elicits. Research suggests that interactive VR experiences allow consumers to engage with products in a virtual space, strengthening their emotional connection with the brand. Integrating VR into the decision-making process—such as virtual try-ons or product demos—enhances product realism and consumer confidence. Additionally, highly personalized VR content aligned with consumer preferences increases the perceived relevance and emotional impact of brand messaging (Chen & Zhong, 2024; Hushain et al., 2024). Despite high initial costs, businesses can maximize VR's long-term value by using it to build stronger customer relationships and brand loyalty, making it a strategic tool for enhancing marketing ROI (Kushnarevych & Kollárová, 2023).

### Conclusion

The integration of Virtual Reality (VR) in marketing strategies significantly impacts consumer behaviour by enhancing emotional and cognitive engagement. Neuromarketing research reveals that VR elicits strong emotional responses, which, in turn, influence consumer purchase intentions. Compared to traditional digital marketing, VR offers a more immersive, personalized, and interactive experience, fostering greater brand loyalty and trust. Despite challenges such as high implementation costs and technological limitations, businesses that leverage VR can gain a competitive edge by creating memorable and impactful marketing campaigns. As VR technology continues to evolve, its role in shaping consumer behaviour and driving purchasing decisions will likely expand, making it an essential tool for marketers seeking to enhance customer engagement and optimize their marketing strategies.

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