

# Analysis of the Prospects for the Application of Virtual Reality Technology in Digital Marketing

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**Abstract:** In modern market competition, the ability to market and promote products and services has become one of the core elements of enterprise competitiveness. With the rapid development of virtual reality (VR) technology, its potential in digital marketing is constantly being explored. With the rapid development of virtual reality (VR) technology, its great potential in the field of digital marketing has gradually emerged. The purpose of this paper is to explore in depth the application scenarios of VR technology in the current market and predict the future development trend through literature survey method and case study method. Through these analyses, the paper explains the important role that VR technology plays in various aspects such as product demonstration, brand experience, and customer education and training. The paper argues that VR technology provides an innovative marketing tool that can significantly enhance the effectiveness of digital marketing. Through virtual reality technology, companies can create an immersive experience for consumers, enabling them to understand their products and services more intuitively, and at the same time enhance their brand awareness, which in turn increases their willingness to buy.

## 1 INTRODUCTION

With the rapid development of information technology, Virtual Reality (hereinafter referred to as VR) technology has gradually become the focus of attention in all walks of life. Since its birth in the 1960s, VR technology has gone through many iterations and updates, and now it has shown great application potential in many fields such as gaming, healthcare and education. Meanwhile, with the rapid development of Internet technology and the widespread popularity of mobile devices, digital marketing has gradually become an important means for enterprises to promote their products and services in today's society. In such a context, it is undoubtedly of far-reaching significance to explore the application prospects of VR technology in digital marketing. On this basis, this study focuses on two key topics of VR technology in digital marketing. Firstly, the study will delve into the application of VR technology in digital marketing, including its implementation strategies, technological tools,

and integration paths with marketing strategies. Second, the study will analyse the future development prospects of VR technology in digital marketing practices, assessing its market potential, technological advancement trends, and its contribution to the change of corporate marketing models.

## 2 DEFINITION AND CURRENT STATUS OF VR TECHNOLOGY

Virtual Reality (hereinafter referred to as VR) is a technology that uses computer modelling to create a three-dimensional virtual world, providing users with visual, auditory, tactile and other sensory simulations, and enabling users to produce immersive interactive scene immersive simulation (Guo & Hou, 2022). Since its introduction in the 1960s, VR technology has experienced an evolutionary process from the basic concepts to commercial applications. Since its inception in the 1960s, VR technology has evolved from a basic concept to a commercial

application. In the past decade, the popularity of VR devices has accelerated significantly due to the reduction of hardware costs and the improvement of computing power, which has driven its application in various fields. Currently, VR technology is more maturely used in vocational skills training, such as industrial and driver training. Industries such as gaming, healthcare and education are also increasingly adopting VR solutions to improve user engagement and provide innovative training, treatment and marketing methods. Relevant professional analyses report that the VR market will be \$25.11 billion in 2023 and is expected to reach \$435.39 billion by the end of 2030 (Verified market reports, 2024).

### **3 DIGITAL MARKETING OVERVIEW**

Digital marketing refers to a series of marketing activities, marketing organisations and marketing processes that are promoted and implemented using various digital technology tools. Its core objective is to create, communicate and deliver value to customers and other stakeholders (Sharma et al., 2020). Currently digital marketing strategies include seven main categories: content marketing, search engine optimisation, email marketing, search and social advertising, data-driven personalisation, use of marketing technology, and social media advertising (Olson et al., 2021). With the rapid development and popularity of Internet technology, digital marketing has become an integral part of a company's marketing strategy. With its advantages of high efficiency, precision, and interactivity, this type of marketing has gradually replaced traditional marketing as an important means for companies to acquire customers, enhance brand awareness, and increase sales. Existing studies have shown that explorer-type companies that prefer to be the first to launch new products and services pay more attention to the use of marketing technology than most other companies, which also side-steps the great potential value of digital marketing (Olson et al., 2021). Based on the real business practice, its

development status as a whole presents the following characteristics.

Firstly, the diversification of digital marketing channels is obvious. Enterprises can use a variety of platforms to execute marketing activities, including but not limited to social media (e.g. WeChat, Weibo, Facebook, Instagram, etc.), search engines (e.g. Baidu, Google), emails, mobile apps and video platforms (e.g. Jittery, YouTube). Each channel has its own specific attributes, and companies should choose the appropriate channel to implement precision marketing based on their own needs and target customer groups. Secondly, data analytics occupies a central position in digital marketing. Through the use of big data analytics and artificial intelligence technology, companies can collect real-time data on user behaviour, gain insight into user needs and preferences, and then formulate more accurate marketing strategies. In addition, content marketing has become a key component of digital marketing. High-quality content can attract users' attention, enhance brand image and increase user stickiness. By writing blog posts, producing videos, publishing social media posts and other methods, companies provide valuable content to establish an emotional connection with users and achieve brand communication and sales conversion. Finally, personalised marketing is becoming a growing trend. As technology continues to advance, companies can use big data and artificial intelligence technology to provide users with personalised recommendations and customised services. By analysing data such as users' browsing history, purchase records, interests and hobbies, companies can provide personalised marketing messages to enhance user experience and satisfaction.

### **4 ANALYSIS OF THE APPLICATION OF VR TECHNOLOGY IN DIGITAL MARKETING**

#### **4.1 VR Technology in Brand Experience**

VR technology helps brands stand out in product launches and marketing campaigns by designing

specific contexts. In 2017, Wolf in Motion created a virtual reality experience for Glenfiddich that allowed users to feel as if they were in a Scottish distillery. The experience enables users to record their wine tasting experience with a virtual paintbrush and enjoy personalised interactions. Visually, it emphasises brand elements to create a unique aesthetic experience that enhances personalisation and visual appeal. Auditory, music that stimulates positive emotions is used to deepen the sense of pleasure. Tactile, it combines the tactile sensations of the product and the environment to provide a total immersive experience (Peng, 2022). Such campaigns not only capture consumers' attention, but also make them feel part of the brand story, thus deepening their identification with the brand. Research has shown that digital marketing has a positive and significant impact on brand emotional attachment and brand attitudes, and one of the key points of great marketing is the ability to increase consumers' social brand engagement (CBE), which in turn enhances their brand emotional connection and memory points (Lee, 2023). Since the interaction between customers and brands greatly depends on the environment they are in, when combined with VR technology, brands are able to create immersive experiential environments that allow consumers to experience products and services in a virtual world in a holistic manner, i.e., CBE and its impact on customer feedback is significantly enhanced to a large extent in a typical virtual reality experience with a high degree of immersion and interactivity (Hudson et al., 2019, Wedel et al., 2020). It has been established that branded virtual reality experiences can create memorable events and stimulate strong emotions, which have a positive impact on enhancing consumer perceptions and attitudes towards the brand. When branded virtual reality experiences are transformed from mere storytelling to hands-on storytelling, the level of customer interaction is significantly increased, resulting in more positive perceptions and attitudes towards the brand (Regt et al., 2021). The intention of 'participating in storytelling' coincides with the content marketing strategy in

digital marketing, which shows that the combination of VR technology and digital marketing can not only provide brands with an innovative way of communication, but also further strengthen the effect of content marketing strategy through immersive experience.

## 4.2 Application of VR Technology in Product Display

Compared with traditional marketing methods, immersive marketing based on virtual reality (VR) technology demonstrates its unique personalised features. This marketing model not only precisely meets the individual needs of consumers, but also creates a rich space for interaction and association through its multi-sensory interactive function (Wang et al., 2024). Customers face an 'imagination gap' when they have difficulty conceptualising the benefits of a product or the outcomes of a service. This is a challenge across industries and often leads to purchase delays or abandonment, resulting in significant losses to the organisation. Using VR technology to map digital content to physical environments and allow customers to visually experience products can help bridge the imagination gap and facilitate informed purchasing decisions, creating value for both businesses and consumers (Hilken et al., 2023). According to the report, nearly half of millennial consumers have used VR technology to preview their holiday destinations, and it can be envisioned that in the future, users may be able to enter a virtual product display space through VR headsets or glasses (The Priceline Group, 2016). In this space, they can freely rotate, zoom in and out of the product, and even explore the internal structure of the product. In addition, the application of VR technology in product display is not only limited to static display, it can also achieve dynamic demonstration. Take the automotive industry as an example, through VR technology, users can sit in the virtual driver's seat and experience the thrill of driving, and even simulate the driving experience in various road conditions. This dynamic demonstration not only shows the appearance of the product, but also reveals the functions and performance of the product, allowing users to have a deeper understanding of the product. For aircraft, ships and other large or complex equipment, the

traditional display methods need to spend a lot of time and cost of physical display, while VR technology allows products to be presented to customers in a virtual environment, enterprises do not need to actually transport and set up a display site, thus saving a lot of time and resource costs. the appropriate use of VR technology in product display, is conducive to showing customers that the enterprise embraces innovation and walks in the forefront of the technical. Appropriate use of VR technology in product demonstrations can help to show customers that the company embraces innovation and is at the forefront of technology, thereby enhancing the company's brand image and attracting more customer attention through digital marketing strategies.

#### **4.3 VR Technology in Customer Education and Training**

Using VR technology, enterprises are able to design customised training content that meets individual needs based on user feedback and behavioural tendencies, thereby improving educational effectiveness and making marketing campaigns more precise and efficient. In addition, the application of VR technology eliminates geographical restrictions and helps enterprises expand their market reach globally. For example, in marketing courses, VR technology can simulate real marketing situations, build realistic scenarios, provide diverse activities for experimental learning, help lecturers and students closely integrate theoretical knowledge with practical experience, and develop and design branding and advertising projects for groups in need [13]. Although customer education and training is not explicitly mentioned in the core strategy of digital marketing, the integration of virtual reality (VR) technology into customer education and training in business practice not only significantly improves the quality of service, but also deepens and enriches the digital marketing strategy. This application essentially constitutes a highly personalised content marketing strategy. In this way, companies are able to collect valuable data on user behaviour to support the optimisation of their marketing strategies, while at the same time demonstrating their professionalism and industry leadership through the provision of high-quality educational resources. Ultimately, these apps become an important tool for building and

maintaining long-term customer relationships, creating value for customers and deepening the connection between them through ongoing interaction and building a strong customer base.

#### **4.4 Technological Advantages and Challenges**

Research results show that VR marketing tools have demonstrated great effectiveness in the current market, an advantage that stems mainly from their ability to greatly enrich the consumer experience (Alcañiz et al., 2019). With the help of immersive virtual reality technology, commercials improve the richness and vividness of images and show better immediate results, resulting in more positive consumer responses [15,16]. Researchers have further found that head-mounted display (HMD) VR technology can significantly increase the overall perceived value of a brand to consumers through virtual product evaluation in a gamified environment and with the help of brand-enhanced emotional response transfer (Zeph et al., 2021). The value of assets in the virtual world can be multiplied according to their size and these assets can be placed in areas where users' attention is more focused as revealed by target group analyses. On a theoretical level, these assets can be transferred and reused in other similar worlds, so the need for new marketing materials is relatively low in the digital world (Silvestru et al., 2021). In addition, VR technology has the advantage of significantly reducing environmental costs. Since these marketing elements exist primarily in the digital world, these digital products are neither processed nor accompanied by recycling procedures or strategies. The only quantifiable impact on the environment is the amount of electricity used by the team designing these elements and the end user (Silvestru et al., 2021).

However, the application of VR technology in digital marketing also faces many challenges and difficulties. First, the cost of hardware is an important issue that requires urgent attention. Specifically, a high-quality virtual reality experience usually requires high-performance computers, head-mounted displays, and other auxiliary equipment, the acquisition cost of which is relatively high, as well as the subsequent maintenance costs. Especially in customer education and training scenarios, in order to achieve better human-computer interaction, it is



necessary to pursue interaction algorithms with maintainability, efficiency, and flexibility, and the research in this field is difficult and requires high investment costs (Yu et al., 2019). At the same time, the high cost of virtual reality devices may, to some extent, limit their popularity among the general consumer population. It is worth noting that despite the significant advances in current VR technology, research has shown that most virtual reality studies are still confined to the use of simpler immersive virtual reality interfaces with relatively limited virtual capabilities (e.g., 360° video and screen-based virtual reality) (Alcañiz et al., 2019). In addition, the use of VR technology in digital marketing faces a number of other pressing challenges. For example, the development and production of virtual reality content usually requires a significant investment of time and resources, which may further increase the overall cost of the project. Meanwhile, the popularisation and promotion of VR technology also needs to address the issue of user acceptance. Some users may feel uncomfortable with VR technology and may be concerned about the risk of privacy leakage, which may affect their experience and confidence, and thus hinder the application of VR technology in digital marketing. Therefore, the application of VR technology in digital marketing still requires further research to address and solve these challenges and difficulties, so as to promote its wide application and development in this field.

## **5 THE FUTURE OF VR TECHNOLOGY IN DIGITAL MARKETING**

### **5.1 Future Development Trends**

In the future, virtual reality (VR) technology is expected to become more popular and accessible. With the gradual reduction in the cost of hardware devices and continued improvement in performance, more and more enterprises and individual users will be able to easily access and use VR technology. This will open up a wider space for brands to utilise VR technology for marketing and promotion, thereby further enhancing their market influence. Secondly, VR technology will be closely integrated with social media platforms. By embedding virtual reality

content, brands will be able to interact and communicate with users more conveniently. Users will experience products and services in person through VR technology and share experiences and evaluations, forming a new social marketing model. In addition, the application of VR technology in the field of e-commerce will be more extensive. Consumers can try on clothes, try cosmetics or experience home products online, significantly reducing the uncertainty and risk of shopping. This immersive shopping experience will enhance user satisfaction and loyalty, and promote the development of e-commerce. In summary, the development prospect of VR technology in the field of digital marketing is extremely broad. With the continuous progress of technology and deeper application, VR technology will become an important tool for brand marketing, bringing users a richer, unique and personalised experience.

### **5.2 Recommendations for Business Practices**

Current research points to the fact that virtual reality advertising does have significant short-term effectiveness, and for companies with large IT budgets and a reputation for innovation, making the most of VR technology will be key to improving the effectiveness of digital marketing (Leung et al., 2020). However, firms need to be aware that when the general evaluation of the target brand is already very positive, a less attractive product in a VR advert may result in consumers' evaluations of the brand becoming less positive (Zeph et al., 2021). Therefore, when designing VR advertisements, companies must ensure that their content is sufficiently attractive and innovative, and carry out strict control in the development process, testing and acceptance, etc., to ensure the smoothness and realism of the VR content in order to maintain the brand reputation. In addition to the application of VR technology in advertising, companies should also pay attention to the synergistic effect of VR content with other marketing channels. For example, VR content can be combined with social media, email marketing and other channels to form a multi-channel communication and expand influence. Finally, enterprises should also pay attention to laws, regulations and ethical constraints when using VR technology for digital marketing. For example, it

should ensure that VR content does not infringe on consumers' legal rights and interests such as privacy and portrait rights. At the same time, they should also avoid using overly exaggerated or false promotional means to avoid triggering negative public opinion. To sum up, enterprises should, on the basis of a full understanding of its characteristics and laws, plan scientifically and integrate VR technology into all aspects of digital marketing in order to enhance the marketing effect and brand influence. In this process, enterprises need to focus on market research, technological innovation, content design, channel synergy and compliance with laws and regulations to ensure the successful application and continuous optimisation of VR technology in digital marketing.

## 6 CONCLUSION

VR technology, as an emerging technological tool, has demonstrated its unique value and potential in a variety of fields. In digital marketing, the application of VR technology in brand experience, product display, and customer education and training is particularly promising. Through immersive experience, VR can provide consumers with a new way of interaction, enhance their sense of participation and experience, help enterprises more effectively deliver brand information and enhance brand image, and can also be integrated into customer education and training to improve the quality of teaching and establish a good corporate image. However, to achieve this goal, companies need to overcome challenges such as technology costs and user acceptance, and actively explore the integration of VR technology with a variety of digital channels. There are still many issues that deserve in-depth research on VR technology-enabled digital marketing. Future research directions can start from the following aspects, such as studying the application effect of virtual reality technology in different types of enterprises to explore the best practice of virtual reality technology in different marketing scenarios, or studying the possibility of combining the application of virtual reality technology with other emerging technologies, so as to achieve smarter and more personalised marketing effects. Through the in-depth exploration of the above research directions, the application of virtual reality

technology in digital marketing is expected to develop further and create greater value for consumers and enterprises.

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