The future of virtual reality in marketing and advertising: benefits and challenges for business

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Abstract: The purpose of the study is to summarise the features of the application, advantages, disadvantages, as well as to develop an effective toolkit for the implementation of virtual reality as a means of marketing promotion for modern companies. **Methodology**: The study is based on the use of general scientific methods, including analysis, synthesis, induction, deduction, generalisation, and systematisation. As a **result of the** study and achievement of the set goal, the following **results were obtained**: the essence and features of the use of virtual reality in business and product promotion were determined; the advantages and disadvantages of using virtual reality in marketing were specified; the main tools for implementing virtual reality in the marketing activities of modern companies were systematised. The **scientific novelty of the** obtained results lies in the development of specific areas of application of virtual and augmented reality for marketing promotion of products on the market. At the same time, the author takes into account the experience of the world's leading companies and considers a significant list of advantages and disadvantages of marketing use of virtual and augmented reality. In **conclusion, it is** worth noting that virtual reality can be used as an effective marketing tool that reaches a large audience and significantly increases the likelihood of product purchase. In general, virtual and augmented reality open up new marketing opportunities by creating unique immersive experiences, which can significantly improve conversion rates and sales. In the future, these technologies will become even more popular and play a key role in marketing.

Keywords: product promotion, target audience, augmented reality, risks, marketing campaign effectiveness.

Introduction

Today's market is highly competitive. This means that all representatives of small, medium, and large businesses should review their marketing activities and improve their efficiency. Speaking of marketing transformation, it is primarily about the introduction of modern technologies: innovative equipment, telecommunications, information technology, etc. Without this, progress is impossible, and companies that stick to conservative research methods will inevitably lose their audience and reduce sales.

The introduction of innovations involves the gradual automation of processes in companies through the use of special software. This significantly reduces the duration of business processes, simplifies employee interaction, and generally makes the company's work much more efficient. One such innovation in today's environment may be the use of virtual reality technologies to increase brand awareness and reach a large audience of consumers. In general, new technologies in marketing, such as virtual reality (VR) and augmented reality (AR), have become extremely popular in recent years (Akhter et al., 2022; Aleksieienko et al., 2020; Jaas, 2022). The use of VR and AR allows creating unique visual and emotional experiences that can help attract new customers. In particular, the use of virtual reality can significantly improve the visualisation of a particular product or commodity for a potential consumer and improve the company's image in terms of product promotion and customer focus.

Research Problem

The use of virtual reality is primarily based on the visual reproduction of the potential result that a customer will receive as a result of purchasing a product or service. Customers are usually very cautious about expensive purchases or those that involve intervention in the body, but with high-quality modelling of the result and presentation in the form of virtual reality, the likelihood of making a decision to purchase a product or service increases significantly (Bowen et al., 2023; Ida et al., 2020; Oneshko et al., 2021). Accordingly, today, manufacturers have an urgent need to develop effective mechanisms for implementing virtual reality technologies in the promotion of goods and services.

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Research Focus

Virtual reality is a three-dimensional environment, fully modelled and recreated by a computer, which is difficult to distinguish from what is actually happening. In recent years, virtual reality technologies have been actively used in marketing to visualise a future product, product, or potential service. Most commonly, virtual reality is used to model interiors by construction and repair companies, travel agencies, furniture manufacturers, car and other vehicle manufacturers. However, it is necessary to focus on how to use virtual reality to attract consumers, so that the investment in such a rather expensive marketing tool yields results.

Research Aim and Research Questions

The purpose of the study is to summarise the peculiarities of application, advantages, and disadvantages of virtual reality in the marketing environment, and to develop an effective toolkit for implementing virtual reality as a means of product promotion for modern companies.

To achieve this goal, the following tasks need to be completed:

1. define the essence and features of the use of virtual reality in marketing and advertising;

2. identify the advantages and disadvantages of using virtual reality in marketing;

3. to identify the main tools for implementing virtual reality in the marketing and advertising activities.

The research involves testing the following hypotheses:

virtual reality can become a tool that has a significant positive impact on the marketing promotion of products and services provided by businesses;

The implementation of virtual reality tools requires a thorough business case;

The introduction of virtual reality into marketing and advertising activities of businesses has its drawbacks, which should be analysed especially carefully in the process of making decisions on the introduction of virtual reality as a marketing tool.

Research Methodology

General Background

The research is based on scientific publications related to the modern peculiarities of building a company's marketing activities and analysing product promotion tools. The study also focuses on understanding the essence of virtual reality and its adaptation to be used to promote various goods and services. There are few publications in the scientific space that deal specifically with virtual reality, and thus there is a need to develop a scientific basis for the introduction of this tool into the marketing activities of modern companies. The main users of information about the possibilities of using virtual reality are business representatives who can use this innovative tool to promote their products (Petrescu et al., 2021; Shahid et al., 2022; Woloszko, 2020). At the same time, the study may also be of interest to representatives of information technology companies that develop content for the presentation of products in the virtual reality format to understand how to present information and how to present a product or service.

Instrument and Procedures

The research toolkit is primarily based on the analysis of the experience of using virtual reality by companies and the generalisation of this experience to formulate recommendations on the opportunities and risks of using virtual reality to promote products. The proposed virtual reality implementation toolkit can be useful primarily for marketers of large companies interested in expanding their audience and increasing sales as a result of using virtual reality to promote products.

Using the method of scientific generalisation and systematisation, the article identifies the main types of virtual reality that can be used for product promotion by businesses, with an emphasis on the applied nature of each of the analysed types. The next step in the work was to apply the systematisation method, which allowed to determine the applied nature of virtual reality used by well-known international companies. The method of generalisation was used to identify the advantages and disadvantages of using virtual reality for the development of modern business. The algorithmisation method allowed to formulate an algorithm of actions and determine the tools for implementing VR and AR for marketing promotion of a modern company's products. The application of the complex of these methods allowed to reveal the topic of the study and achieve the goal.

Data Analysis

The study was based on the processing of more than 50 scientific and journalistic sources, as well as a significant amount of analytical material on the essence of virtual reality and the specifics of its use for promoting goods and services.

Research Results

Virtual reality is a simulated likeness of the world around us, artificially created with the help of technical means and presented in digital form. The created effects are projected onto the human mind and allow you to convey sensations as close to real as possible.

To immerse yourself in VR, you will need a special device - an immersive headset. In fact, this gadget is more like a helmet or three-dimensional glasses. It allows you to recreate the effect of physical presence in a virtual environment: you can see images, hear, smell, and even taste. And to activate tactile sensations, special gloves are often offered with immersive headsets (Huan et al., 2023).

According to the VRARA organisation, 45% of customers make a purchase decision faster after watching VR content (Ramazonovma, 2022). It stimulates purchasing power more than classic printed materials or an advertising banner. It is obvious that in the near future, virtual reality technologies will become a common tool for solving a wide variety of marketing tasks. Virtual reality is a technology that creates a world that is inaccessible to ordinary perception. The use of VR in marketing allows customers to interact with the brand to a new level by creating virtual tours of stores or offices, scenarios of open presentations, and streaming events from exhibitions and conferences. Augmented reality is a technology that allows you to expand the real world with additional elements, creating unique visual and emotional experiences. The use of AR in marketing is aimed at creating interactive advertising campaigns, providing additional information about services and products, and showing customers how they can use your product in real life.

Given the specifics of VR, it can be argued that creativity is the key to success when using VR and AR for marketing. Marketing specialists of companies that use VR should be focused on creating unique and memorable scenarios and visual effects that will help to attract the attention of customers. The optimisation of online resources should be at the highest level to ensure that users get the best possible emotional experience of the product and make a decision to buy it.

It should be borne in mind that there are different types of VR and AR, and you should choose which type will work best for a particular type of business. You can choose an app for smartphones, create your own VR helmet, or an AR helmet with the possibility of different scenarios and behaviours in the virtual space.

The types of virtual reality that can be used to promote products are presented in Table 1.

Table 1

Types of virtual reality that can be used to promote products by businesses

Type of virtual reality	Features of using VR for product promotion by businesses
VR technology with a full immersion effect	provide a plausible simulation of the virtual world with a high degree of detail. Their implementation requires a high-performance computer capable of recognising user actions and responding to them in real-time, and special equipment that provides an immersive effect (Ardito et al., 2021; Bag Ardito et al., 2023)
VR technologies without immersion	These include simulations with images, sound, and controllers that are broadcast on a screen, preferably widescreen (Bannikov et al., 2022; Cong et al., 2021). Such systems are classified as virtual reality because they far exceed other media in terms of their impact on the viewer, although they do not fully meet the requirements for VR. It is this type of virtual reality that is more affordable for many manufacturers and can be used by many companies to promote products
VR technologies with shared infrastructure	These include Second Life, a three-dimensional virtual world with social network elements, games, and others (Feshina et al., 2019; Li et al., 2021; Morra et al., 2018). Such worlds do not provide full immersion. However, virtual worlds have well-organised interaction with other users, which is often lacking in "real" virtual reality products
VR based on Internet technologies	These include, first of all, the Virtual Reality Markup Language, similar to HTML (Abou-Foul et al., 2021; Cambier et al., 2020; Dey et al., 2020). This technology is currently considered outdated, but it is possible that in the future virtual reality will be created, among other things, using Internet technologies

Due to the variety of VR types, it is a mistake to think that a VR helmet is primarily an accessory for gamers and fans of incredibly realistic films. In fact, virtual reality technology has long since moved beyond the entertainment industry. Nowadays, VR devices are used in various fields.

The world's leading manufacturers of consumer goods and various services are actively using VR to promote their products. It is logical to analyse the experience of these companies at the next stage of the study - Table 2.

Table 2

Experience of well-known international companies in using VR to promote their products

Company	Experience of using VR
Dyson	The household appliance brand has created a virtual showroom where customers can test hair styling appliances and vacuum cleaners in a 3D space. The virtual shopping experience is available only for Oculus headset owners
Volvo	The automaker was one of the first to conduct virtual test drives using the app and branded VR glasses. The technology was introduced before the launch of the new XC90 SUV model. The technology works as follows: the user downloads a special application from the company's website to his smartphone, which contains a panoramic video of a trip around Vancouver. Then the phone needs to be inserted into special Google Cardboard glasses (a cardboard analogue of a virtual helmet with lenses), start the video, and watch a virtual trip through picturesque places with a view from the car's interior
Merrel	To test a new hiking shoe line, the American shoe company invited customers to go on a virtual walk in the mountains
IKEA	The AR app of the IKEA home furnishing brand allows you to see how the furniture will look in the customer's space before it is purchased. You can "try out" several pieces of furniture at once, including complete room sets. Customers can see how the pieces fit into their rooms and how they look together. The reception of IKEA's augmented reality marketing has been positive, with the app having over 5,500 ratings in the Apple app

	store, with an average of 4.7 out of 5 stars. Customers reported that the app improved the user experience compared to the previous website
L'Oreal	Cosmetics and hair care brand L'Oreal has released an app called Makeup Genius that allows you to try different hair colours and makeup styles. Virtual trials are also a way to address the safety concerns caused by the coronavirus pandemic. Customers can test makeup without using generic samples that were often available in stores. In fact, they can try and buy products without ever going into stores. Makeup Genius works on both mobile and desktop devices, making it widely accessible. The app offers personalised recommendations and sends alerts when new products are available
Gucci	Gucci has launched an AR feature in its app to promote its new Ace sneaker line. Users can point the camera at their feet and see what different styles of sneakers look like. The app tracks movement, so they can see the shoes from different angles. Later, the company added this technology to Snapchat, opening up a whole new place for user-generated content. Installing the filter on Snapchat reduced the complexity for customers because they didn't have to download the Gucci app to try it
Prada	Fashion brand Prada has created a story filter that turns the letters PRADA into an acronym as part of a larger 2021 campaign. When people use the filter, a white sign behind them reads Prada's current mood. The sign then rotates through a series of sets of acronyms before randomly stopping at one. The filter adds a game-like feel to the user's story video, as they don't know what set of words they might get. This creates a sense of fun for users, so they are motivated to add the filter to their stories and thus promote Prada clothing

Compiled by the author based on (Afonasova et al., 2019; Dey et al., 2019; Dykan et al., 2021; Martin et al., 2022; Pawełoszek et al., 2022; Prokopenko, 2022)

The applications of VR in business are virtually endless: from ordering and surgery to digital twins that allow you to model and monitor the operation of manufacturing plants, supply chains, and other complex systems. AR and VR significantly increase the value and convenience created by these capabilities. In particular, these technologies improve how users visualise and therefore access all new data, how they receive information about product performance and use, and even how they interact with and control products. There are great opportunities for businesses to promote products using virtual reality and related technologies.

Thus, virtual reality marketing is attracting the attention of brands that promote themselves and their products using innovative technologies and have sufficient budgets for this. Sometimes VR marketing is visual and sometimes multisensory, depending on the device. A full virtual reality headset offers a fully immersive experience, while a VR Instagram filter simply overlays objects or images on the camera view. These filters are a form of augmented reality marketing (Al-Sai et al., 2022; Steinhoff et al., 2021). Because it is easier to apply, AR marketing is the most common type of virtual reality marketing. It is more accessible and less costly for many companies than creating a headset or their own VR helmet and space. Since augmented reality only requires a phone or desktop app, it is also more accessible to consumers.

The rise of augmented reality began with games like the hugely popular Pokemon Go. But brands quickly started using this technology in their marketing. Makeup company Sephora was one of the first to popularise augmented reality marketing with its Virtual Artist app (Arora et al., 2019; Bluhm et al., 2022; Girard, 2019). Customers can use the app to try out different makeup looks and receive personalised product recommendations.

In general, VR and AR create additional conditions for enriching marketing activities and attracting more customers. Therefore, it is worth systematising the benefits of using VR and AR for the development of modern marketing activities of manufacturers of goods and services. In general, the use of VR in marketing and product promotion has many advantages that can significantly improve the perception of the product by the audience - Table 3.

Table 3

Benefits of using VR in marketing and product promotion

The benefits of using VR in marketing and product promotion	Characteristics
Memorability and impressions	VR presentations provide a deeper impression and leave a more powerful mark on the audience's memory than traditional advertising materials. People feel more engaged with the product or brand, making them more likely to take further action
Emotional impact	VR can create strong emotional connections as it allows the audience to immerse themselves in a virtual environment where they can experience the product or service in a more personal way
Interactivity	VR provides an opportunity to interact with the product, try out its functions or features, which helps consumers better understand how the product can meet their needs
Creating a unique brand experience	Using VR allows you to create a unique experience for the audience, which can distinguish a brand from competitors
Reaching new audiences	Using VR, companies can attract the attention of a new audience, especially those interested in technological innovations
Virtual testing ground	Companies can use VR to test new products or services with audiences before launching them, getting feedback on their impressions and requirements
Ability to demonstrate complex products	For products that are difficult to demonstrate or explain using conventional means, VR allows you to create an interactive virtual demonstration
Application in education and counselling	VR can be used for staff training, client consultations, and other situations where the visual aspect is important
Increased influence on acquisition decisions	VR can help audiences better understand how a product fits their needs, which can positively influence their purchasing decisions
Creating virtual exhibitions and events	Companies can organise virtual exhibitions, where the audience can see products and communicate with company representatives without a physical presence

Compiled by the authors

In general, the use of virtual reality in marketing allows for deeper and more personal communication with the audience, providing an effective way to attract and impress consumers, but it also has disadvantages that should also be taken into account when planning marketing activities using VR tools, which should also be systematised in the form of Table 3.

Table 3

Disadvantages of using VR in marketing and product promotion

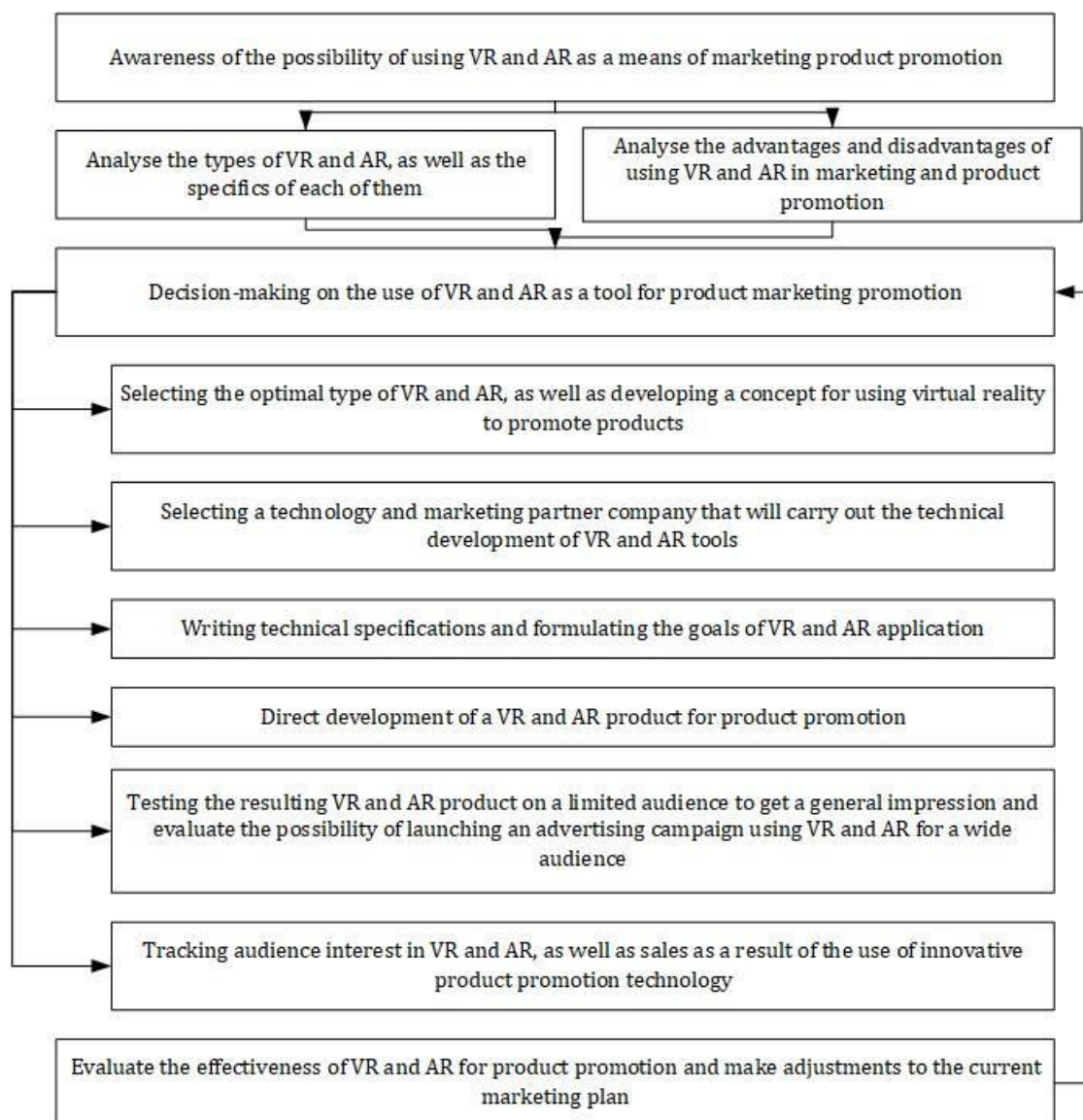| Lack of VR application in marketing and product promotion	Characteristics
High cost	Developing VR content can be expensive. The cost of creating a high-quality virtual experience includes not only software development but also hardware, testing, production of virtual models, etc.
Limited accessibility for the audience	Not all users have access to VR equipment. This can limit the reach of the target audience and reduce the effectiveness of campaigns
The need for training and learning	Using VR can require time and effort to learn how to interact with the technology. This can be off-putting to those who are not willing to invest time in training
Physiological limitations	Some people may experience discomfort while using a VR headset, such as motor disorders, blurred vision, or dizziness
Technical problems	VR equipment can be prone to malfunctions, interruptions, or technical issues, which can degrade the user experience and cause a negative impression
Limited options for some products	Some products can be challenging to render in VR, especially if they don't have a large visual aspect or require interaction that is difficult to implement in a virtual environment
Competition with other visual media	Traditional marketing tools such as photos, videos, and infographics also remain powerful means of attracting audience attention, so VR must compete with these methods

Compiled by the authors

In general, unconsciously addressing VR's shortcomings and limitations can lead to a negative impression of a product or brand. Before implementing VR strategies, you should carefully evaluate all aspects and determine how this technology will impact your target audience.

However, it should be understood that the use of VR and AR is part of the marketing of the future, so it is worth developing an algorithm of actions and presenting tools for implementing this modern technology in product promotion for a modern company - Fig. 1.

Figure 1

Algorithm of actions and tools for implementing VR and AR for marketing promotion of a modern company's products

Awareness of the possibility of using VR and AR as a means of marketing product promotion
Analyse the types of VR and AR, as well as the specifics of each of them
Analyse the advantages and disadvantages of using VR and AR in marketing and product promotion
Decision-making on the use of VR and AR as a tool for product marketing promotion
Selecting the optimal type of VR and AR, as well as developing a concept for using virtual reality to promote products
Selecting a technology and marketing partner company that will carry out the technical development of VR and AR tools
Writing technical specifications and formulating the goals of VR and AR application
Direct development of a VR and AR product for product promotion
Testing the resulting VR and AR product on a limited audience to get a general impression and evaluate the possibility of launching an advertising campaign using VR and AR for a wide audience
Tracking audience interest in VR and AR, as well as sales as a result of the use of innovative product promotion technology
Evaluate the effectiveness of VR and AR for product promotion and make adjustments to the current marketing plan

Compiled by the authors

Thus, the possibilities of VR and AR in working with customers are almost endless. Using the principles of online marketing, virtual and augmented reality blurs the idea of what advertising is. International brands can use it to display their products on any trading platform or exhibition. Clothes stores create virtual fitting rooms for customers to see how the item fits them. Furniture stores place virtual furniture in real homes, and customers can use an app installed on a tablet to find suitable places for their potential purchases. Accordingly, if the risks are reduced, the use of VR and AR opens up great opportunities for manufacturers to work with the audience.

Discussion

The use of VR and AR to promote goods and services by modern companies is increasingly being considered in the scientific literature, with many ambiguous aspects that scientists are paying attention to.

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First of all, it is about efficiency (Andersson et al., 2022; Bamel et al., 2021; Holwerda et al., 2021). Some researchers believe that VR and AR can provide an unparalleled level of immersion and interaction with the product, which will provide a more tangible experience for customers. Others believe that these technologies are still not that widespread and may not be effective in reaching a wide audience. In general, it is worth noting that today only large companies with powerful advertising budgets can afford to use virtual reality to promote their products. Accordingly, evaluating the effectiveness of virtual reality in promoting products and services should be a priority when making decisions about the implementation of this tool. Evaluation of effectiveness leads to the need to determine the cost and affordability (Austin et al., 2021; Barbaglia et al., 2022; Grewal et al., 2020). Developing VR and AR applications can be expensive and time-consuming. This is especially true for VR, which requires specialised hardware. AR may be more accessible when using smartphones, but there are limitations that cannot always be overcome. Accordingly, for small companies with limited marketing budgets, the use of artificial intelligence technologies may be too expensive and not financially justified, which is largely confirmed by the opinions of scientists that were processed in the course of the study.

When analysing the potential of virtual reality, researchers often focus on the user experience (Arslanalp et al., 2019; Del Giudice et al., 2021; Iankova et al., 2019). On the one hand, VR and AR can create an immersive and impressive experience for users, which contributes to a deeper perception of the product. But on the other hand, they can also cause health problems (dizziness, blurred vision) and disorientation. However, if used in a dosed manner, VR is still a tool for high-quality promotion of goods and services. This aspect is quite controversial, as virtual reality should be subject to certain restrictions and rules, so that it does not have a negative impact on consumer health. Some researchers also focus on advertising intrusiveness (Hughes-Cromwick et al., 2019; Olson et al., 2021; Petrescu et al., 2020). If not implemented properly, VR and AR can be fundamentally embedded in the user experience, causing negative associations with advertising, which can scare away potential customers, and therefore VR and AR should be used under the supervision of an experienced professional. In the context of data protection, attention should be paid to privacy and security (Prathapan et al., 2019; Riggs et al., 2023; Vyshnivska et al., 2021). And here we should agree with the majority of researchers that the use of AR can create privacy issues, as applications can track the location and other personal data of users. This can cause resentment and lead to confrontation from consumers. If consumers feel concerned about their data being shared, consumer loyalty is created (Becker et al., 2023; Cherniaieva et al., 2023; Lucato et al., 2019). Accordingly, the correct use of VR and AR can help to form a deeper connection between the brand and customers. However, improper use can cause backlash and negatively affect customer loyalty, and as a result, consumer reactions to new promotions and tools should always be monitored. All in all, the successful use of VR and AR in marketing promotion depends on how companies can balance user experience, innovation, efficiency, and ethical standards.

Conclusions and Implications

The study proves that virtual reality provides marketers with unique opportunities to create immersive visual experiences for consumers. Through the use of realism, interactivity, and personalisation, it becomes possible to immerse the audience in fascinating virtual worlds and create memorable ads. Marketers should be attentive to the specifics of VR in advertising, create engaging stories, use unique design and visual effects, and stimulate activity and social interaction. It is worth considering the advantages and disadvantages of each type of virtual reality and the specifics of their implementation in the marketing environment. Another necessary step is to measure the effectiveness of marketing campaigns and track new trends in VR development. Virtual reality opens up new horizons for online marketing and the use of its potential can bring significant success, but it must be implemented in a balanced manner in marketing activities.

The limitations of the study and implementation of all recommendations are primarily the high cost of developing software and hardware for the use of virtual reality, and it ~~should~~ be understood that Ukrainian companies, for example, do not have such large advertising budgets that would allow them to invest in the development of advertising campaigns based on virtual reality technologies.

Suggestion for Future Research

Further research on the chosen topic may concern the ethical aspects of the use of virtual reality, in particular, the involvement of children in the virtual world, which is addictive. It is also possible to study the use of virtual reality for marketing development in the context of costing the costs of their implementation and evaluating the effectiveness of the results obtained. Another area of research related to the use of virtual reality for business could be the analysis of data protection technologies from competitors. Since in the digital age, it is possible to obtain information about business plans or innovations through the use of network technologies, businesses should pay special attention to the development and implementation of information security systems and internal information systems.

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