AR and VR as a Shaping Trend in Consumer Behaviour

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Abstract: Augmented Reality (AR) and Virtual Reality (VR) have been on the rise in recent years. These technologies have had a great impact on the marketing field and, especially, consumer behaviour. This paper examines the potential and influence of AR and VR as a shaping trend in consumer behaviour, including their usage across various industries and their impact on consumer engagement, purchasing experience and decision-making. We are discovering the challenges that are occurring with the adoption of AR and VR in marketing and retail, such as the need for innovation, privacy concerns, and potential ethical issues. Opportunities that those technologies bring with their adoption are also researched, including personalized shopping experiences, interactive advertising or virtual showrooms. The importance of the consumer perspective on the topic and the way marketers understand this perspective are also highlighted. This way, we provide information not only from the marketers' point of view but also, from the consumers` one, including challenges and obstacles they may face while interacting with selected technologies. At the end of the article, we suggest ways how companies may implement AR and VR in their marketing strategy, which in turn would provide them with the value they can give to their customers as well as an enhanced brand image on the market. Suggested ways may also be used as a starting point for further research, where a complex model of implementation would be created. The main goal of the article is to provide readers with information that brings a comprehensive understanding of the role AR and VR have in modern marketing, how it is shaping consumer behaviour, and how big and small businesses can use those technologies to stay competitive in an ever-changing environment. The article is based on theoretical research from trustworthy sources, both printed and digital, including statistical information from external sources.

Keywords: Augmented Reality, Virtual Reality, Consumer Behaviour, Marketing Communication.

1. Introduction

Challenges that occurred in the market during the last three years had a giant impact on both, online and retail shopping. First and foremost, most brands were, quite literally, forced to move their businesses online, either partly or entirely. During the COVID-19 pandemic, when social restrictions were in place, small businesses had to implement some measures in order to stay on the market. War in Ukraine that occurred last year brought a whole new wave of uncertainty among citizens in many countries, with prices rising on goods and services. To a big extent, changes were required on the market, since the competition in the online environment has grown, and a need for differentiation was in place. In our article, we want to speak about one of the biggest trends in shopping today – the usage of augmented and virtual reality.

In our article we are aiming to fulfill the following research objectives:

- To conclude a bibliography research and provide the necessary theoretical background on the topics of Augmented Reality (AR) and Virtual Reality (VR).
- To analyze real case studies of AR and VR usage in retail.
- To analyze the challenges of AR and VR in shopping.
- To write about the ways, how AR and VR may be implemented in brands` marketing strategies.

2. Theoretical background

We must start an article by providing a required theoretical background on both technologies to specify, what exactly we are talking about. Firstly, let's define what is virtual reality. By Merriam-Webster`s dictionary, virtual reality is: "*an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment*" (Merriam-Webster, 1987). Cambridge dictionary, on the other hand, says that virtual reality is: "*a set of images and sounds, produced by a computer, that seem to represent a place or a situation that a person can take part in*" (Cambridge Dictionary, 2015). As we may see, the definitions are somewhat different as they approach the topic from different angles. We find Merriam-Websters` definition to be more accurate since it mentions the way information is received, and it states that the user can affect the environment to some degree, while Cambridge one takes the user as a passive visitor of a virtual environment, not an active one. Both definitions state that the environment itself is generated on a computer, but we find neither of them to be completely satisfying. Jason Jerald summarized definitions of other authors: "*Virtual reality is defined to be a computer-*

generated digital environment that can be experienced and interacted with as if that environment were real." (Jerald, 2016). For our article, we find this definition to be appropriate since it summarizes the main ideas of VR perfectly: it is generated on a computer and it can be interacted with. We also may define key elements of experiencing VR:

- The participants;
- The creators;
- Virtual world;
- Immersion;
- Interactivity (Sherman, Craig, 2019).

Now, let`s take a look at augmented reality (AR) and how it is different. Since both terms have the word reality in them, it means that both somehow deal with the environment the user sees and interacts with. Unlike VR, AR doesn`t fully simulate the environment, meaning it does not create a whole new virtual world to experience but rather augments the real world. In the "*Handbook of Augmented Reality*", the following definition is provided: "*real-time direct or indirect view of a physical real-world environment that has been enhanced/augmented by adding virtual computer-generated information to it*" (Fuhrt, 2011). However, it is important to note that augmented reality usually has the goal of providing a user with an experience. The core idea is that AR may engage the user in an activity with an augmented element while leaving the user with an opportunity to interact with the real, physical world (Craig, 2013). Now, when the definition of both technologies was provided, we need to compare the two between each other to understand, in which use cases certain technology would be better or worse.

The biggest difference between technologies is that VR intends to completely "take people to another world", while AR only blends the real environment with certain virtual elements (Owens, 2022). To make it clear, let`s look at an example. If a person wants to experience a rollercoaster from their home, they can try to take a trip using a VR helmet. In such cases, AR won`t be much of a help due to lower levels of engagement and overall limitations this technology provides. Users will be able to produce an image of a rollercoaster on a table, for example, but it won`t make them experience it. Let`s consider another example. A person wants to buy a new pair of sneakers but is deciding between two models. Since those items are online exclusives there is no way to try them in a retail shop before purchasing. Using VR, a person will be able to try them on, but it still would require a headset, and certain problems can occur. Moreover, what if a person is on the move, has to decide quickly, or just doesn`t have a VR headset at the moment? In such cases, AR may come in handy. Most AR shopping activities are held through the phone of the user, making them usable anywhere and anytime. Another question is whether the user really needs to have a full-on immersion to check how a pair of sneakers would fit them. In most cases, trying them on with one`s camera would be sufficient. The same applies to most fields of online shopping, and in this article, we will look at several examples of usage of both technologies – AR and VR.

3. Virtual reality in shopping

Virtual reality in shopping has been a researched topic for more than a decade already. Based on the summarization of the research made by Xi and Hamari (2021), we can trace certain similarities among those studies. They found that the majority of existing scientific studies of VR in shopping simply attempt to create an identical environment user would encounter in a physical shop, thus trying to recreate the same experience. By using this approach, it is expectable that the results of those studies would be somewhat similar to studies of consumer behaviour in physical shops. In our article, we would like to look not only at this "traditional" approach to VR in shopping but also at other ways it may be used to enhance user experience while buying.

Before analysing certain examples, we need to emphasize that VR as a technology requires users to have a VR headset of any kind, making it less accessible for mass markets. If we look at high-end VR headsets, they tend to be rather expensive, with prices ranging from a few hundred to even thousands of euros, and not always meant for the general public. On the other hand, there are cheap alternatives, like the Google Cardboard, which can be bought for as low as 10 euros, but requires a phone with VR content to operate (Kerrebroeck, Brengman, Willems, 2017).

A recent study of consumers shows a big shift toward massive usage of VR technologies. In March 2022, the National Research Group conducted a study with 2500 respondents aged 18-64 throughout the United States of America. Among the highlights from this study, we need to emphasize that 13% of all households owned at least one VR headset, with 88% of owners using it multiple times per month and 60% using it more than once a week.

53% of respondents specified as a reason for purchase that they wanted to play games, followed by 33% who wanted to see what the hype around VR is about, and 32% of new technologies adopters (Navaratnam-Blair et al, 2022). Most VR headsets owners use VR for gaming – 72%, watching films or TV – 42%, or exercising – 35%. From this information, we can see the mental challenge VR technology has yet to overcome – showing people that the technology brings much more possibilities than just gaming. However, according to a systematic literature review made by Taufik, Kunz and Onwezen in 2021 (2021) on the topic, in all studies where there were only VR conditions by design, at least part of these experimental designs affected consumer behaviour and outcome measures. Since the second and third biggest amount of votes were given to the statements that were based on the interest in technologies, we may summarize that, today, most people are either buying VR headsets for gaming or out of general interest, without certain use cases in mind.

The first example we want to mention in our paper is the basic usage of VR – virtual showrooms or virtual shops. A great example of such a use is IKEA Immerse, which provided users with the possibility to experience VR shopping both in-store, and in the house of the users (Demodern, 2019). It provided users with an option to see, what certain pieces of the interior would look like in real size or even inside their rooms. The user could change the type of furniture in real-time, as well as the type of the material, its colour, as may be seen in figure 1, design variation, and even such details as lightning or putting out the candle were included. In the case of IKEA, which sells big furniture as well, such usage may be very appropriate for their customers, since it is not always easy to imagine how certain pieces will look inside certain rooms.

Figure 1: IKEA Immerse UI

Source: "IKEA Immerse" (2018), [online], Demodern, https://demodern.com/projects/ikea-vr-immerse.

But we believe that VR has a much bigger potential in shopping. A great example of a company that approaches VR from different angle is *The North Face*. As an example let's look at the campaign from South Korea from the year 2015. The idea was to create the most immersive experience possible, for which a replica of the South Pole camp was created inside the shopping mall to introduce a new collection of coats McMurdo (Davidge, 2015). When entering the spot users were provided with *The North Face* coats, to be more engaged in the experience. They were next invited to take a seat and put on the VR headset. In virtual reality, they were riding with a dog sled on the South Pole. However, VR was only one part of the experience prepared for its customers. After some time in the virtual reality, when a user was already engaged, the headset was taken off and the user got to ride the same dog sled inside the mall, as shown in figure 2. At the end of the ride, customers were able to grab the specific model of McMurdo coat. This way company was able to create a unique experience and combine VR, retail, and their brand`s value – *Never Stop Exploring*, all in one campaign, thus not only potentially increasing sales, but building a strong image of the brand, connection with the customers, as well as gaining media attention. We believe, that today such VR campaigns have the most potential in shopping, to cover the goals of increasing sales, building connections with customers as well as bringing attention to the brand from the media and public side.

Figure 2: The North Face South Pole Campaign

Source: THE NORTH FACE KOREA. (2015) "맥머도 남극탐험 | 노스페이스 The North Face #Sudden Exploration #VR Experience with Oculus", [online], THE NORTH FACE KOREA, https://www.youtube.com/watch?v=FSfkE4emoBE.

4. Challenges of virtual reality in shopping

As with every new technology, VR massive adoption will require overcoming certain challenges that will occur. In this part of our paper, we want to describe a few that are present now on the market in connection with virtual reality in shopping.

- **Need for innovation** (National Research Council, Computer Science and Telecommunications Board, Committee on Virtual Reality Research and Development, 1995). On the one hand, as we already mentioned, only a small percentage of households own a VR headset today, creating a big question about the profitability of such activities. Most VR headsets tend to be expensive, while cheaper alternatives don`t provide a similar level of experience. On the other hand, the technology is still not that advanced so any business could create a VR experience for their audiences without breaking the bank. Today, with the creation of Artificial Intelligence (AI) services, VR also got affected. Services like Skybox Labs from Blockade Labs enable users to create 360-degree images from any text prompt they input.
- **Security threats.** While security threats are common on the internet, the virtual environment brings a whole new level of information hackers may want to collect from the consumer. From their movements and manners up to the changes in the virtual reality person is experiencing, all of this may be a target for hackers.
- **Imitation of the real experience.** To make a user believe that the VR experience is real, the visual itself is not enough (ScienceSoft, 2021). Things like sound, smell and other little disruptions are essential for the recreation of what we consider to be real experience. As soon as those external factors are not included, the brain will realize that, thus not associating the VR experience with the real one. As a solution, different methods may be provided, from the creation of special environments or special soundtracks to the usage of modern technologies providing 360-degree sounds to increase level of immersion.

5. Augmented reality in shopping

Augmented reality (AR) has been used on the market for more than 5 years already, and statistics show us, that interest in the technology only rises over time. According to the research held in 2022 by McKinsey&Company, 48% of respondents are interested to use a "metaverse" technology, where belong AR and VR, for shopping in the following 5 years. Moreover, 38% said that they were already using AR in 2022, compared to only 23% in the year 2017 (Keenan, 2022). According to the leading Visual Commerce company Threekit (2023), 61% of consumers prefer those retailers, that provide AR experiences for them, as well as 71% of consumers express their willingness to increase their shopping frequency if they were to utilize AR technologies. From this data, we may state that AR may serve as a factor that increases customer confidence since they can try the product virtually before buying or ordering it. Another interesting data from this research says that 40% of consumers

are open to the idea of paying more for a product that can be customized with the help of AR. This information may serve as a great insight for brands who are afraid to invest in AR as a technology – since almost half of the consumers are prepared to pay more, those investments may pay out fast. To show just how widespread this technology has become already, according to the same researchers, in 2023 more than 1 billion people use AR worldwide, however, only 1% of retailers stated that they are using VR in their businesses. This information shows that there is still a big open space for brands to get noticed and increase sales thanks to AR.

There are many ways AR can be used to help customers while buying products or services. The most popular and used one is through social media apps and camera filters (Keenan, 2022). To a big extent, it is due to the simplicity of this method – you don`t need to create a whole new application, it is enough just to make an AR filter, and users will be able to use it through, applications like Instagram. It doesn`t mean that the process is very easy, but many brands are capable of it. It is also worth mentioning that social networks themselves are providing users with applications, where AR filters can be created, like Spark Studio by Meta or SnapAR Lens Studio by Snapchat.

The first example of AR usage we want to talk about is in a form of a virtual try-on. As it can be derived from its name, the customer gets the ability to try on a product on themselves before buying, anywhere and anytime. A whole range of successful implementations can be named, but we will take a look at two – one with the usage of the social network, and the other outside of it. The first was made by the luxury fashion brand – Farfetch in collaboration with Snapchat. The idea and the whole process were simple – the customer just had to stay in front of the camera, and vocally say, which type of clothes they would like to try on. After that, the software would search for appropriate results in the brand`s catalogue and put them directly on the person`s body. Also, people could`ve shared photos of themselves with try-on and buy products directly from the filter (Kristensen, 2022).

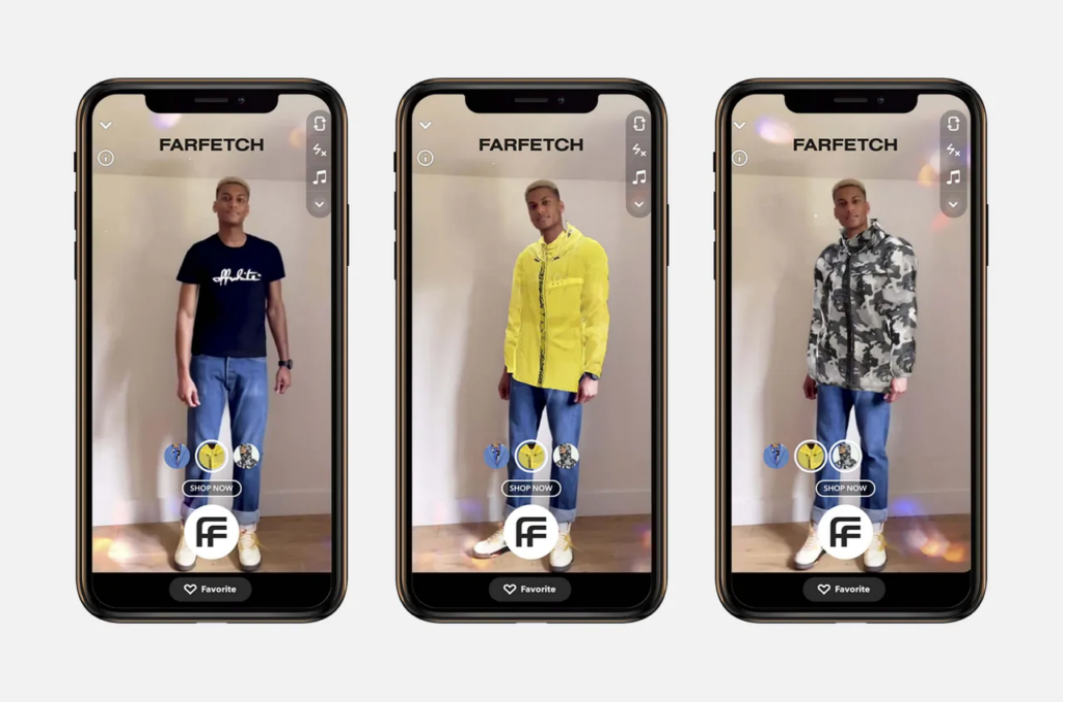

Figure 3: AR filter by Farfetch on Snapchat

Source: Kristensen, E. (2022) “The 6 Best Virtual Try-On Examples We’ve Seen”, [online], Drip, https://www.drip.com/blog/virtual-try-on-examples.

The second example was made by the brand eyerim in Slovakia. They implemented an AR filter on their website, instead of using social media. The brand itself specializes in selling glasses, so the AR filter they created allowed users to try glasses on them. It was called “Magic Mirror” and worked simply, you just open the glasses of your liking, push the button, and a window with a filter will appear. Since everything is happening right on the company`s website, there are no barriers for purchase after trying. Customers can also go to a catalogue and try different products at once – without the need of opening many carts of products.

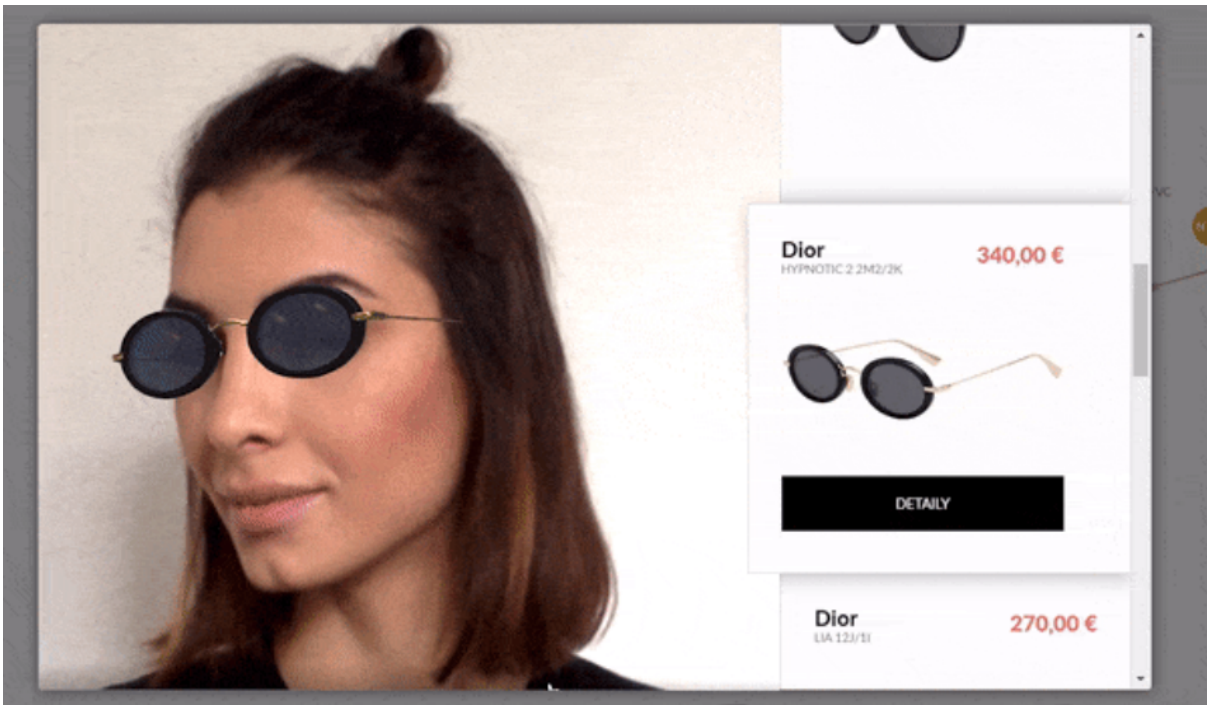

Figure 4: AR filter by Eyerim

Source: Patrícia. (2019) "eyerim predstavuje: Magic Mirror", [online], Eyerim, https://eyerim.sk/blog/magic-mirror.

But virtual try-on is just one way augmented reality can be used. Let`s take a look at some other types of usage. AR filters in shopping may also be used to help customers with the problems they can encounter while making a decision. For example, we all know how frustrating choosing the right size of sneakers can be. Different brands have different measures, and you don`t know for sure if shoes will fit you when ordering something new. To deal with this problem, Nike in 2019 released Nike Fit, an AR application where customers could measure their feet, and get the correct size for Nike shoes. As a result, the number of returns has reduced, and overall performance on Nike shoes was improved (Taoufiki, 2022). As we can see, such highly-personalised and helpful AR extensions can also be created with enough creativity and resources. It can be possibly used not only in the fashion sphere but, for example, while purchasing medicine from a store, for example, so the person can see the whole medicine instruction or precautions right from the product page.

Many consider AR to be the future of shopping, both online and retail. We agree with that statement, but only partly. In our opinion, it is not only the future of shopping but also its present. Of course, there are many more ways of implementation and usage, both online and retail, and in this article we didn`t cover even a quarter of them, which leaves a giant field for further research. One thing is certain, AR is a technology that brings a completely new dimension to shopping, and it is changing shopping the way we know it.

6. Challenges of augmented reality in shopping

- **Privacy concerns**. The key requirements for the usage of augmented reality are access to the users' camera and, oftentimes, location (Arth, Schmalstieg, 2011). This brings concerns about the privacy of the user and the safety of their information. If some AR application gets hacked or data from it gets breached, it may mean that the hackers behind it not only get access to the personal data but also the real footage from the camera, as well as the location from which this footage was taken.
- **Device challenges** (Abed, 2018). Even though today most phones are capable of handling AR filters or extensions without problems, the situation may change when the light conditioning is worse, for example, in the evening. In a dark environment, not every camera can handle the situation, understand where the object is, and provide an appropriate AR experience. This challenge, however, will most likely get solved by itself in a few years, since technologies, as well as mobile phones, are constantly becoming better, and even today many budget phones are capable of most things in connection to VR.

- **Ethical issues**. Many AR filters are aimed at people`s faces, making anonymity a big question for the usage of the technology. Also, many of those filters are projected to somehow "improve" the face of the person, what can lead to the creation of unrealistic expectations, reality distortions or even mental problems. Research on ethical issues were conducted in connection to different brands or social networks, however, we were not able to find many of them about the usage of AR, which is surely an interesting topic for further research.

7. AR and VR implementation into the brand`s marketing strategy

We think that it is necessary to divide possible implementation of AR and VR into the brand`s marketing strategy based on the size of the company, technological background, interests of the public and target audience. Today, virtual reality still seems to be a rather niche marketing opportunity for the brands, that have bigger budgets for their marketing. To summarize, on our opinion, as of June 2023, if the company wants to create a VR experience for its customers, we would recommend creating these activities not to increase sales, but to build unique experiences, get media attention, and build an innovative image of the brand. A great example of what we mean was portrayed in "The North Face South Pole Campaign" which we described earlier. It was such a unique experience for the customers, that even years after the campaign was conducted, it is still talked about.

On the contrary side, augmented reality has already become deeply integrated into the market, and both, small and big brands use it in a certain way. One of the biggest advantages of it is that augmented reality activities may be accessed with most smartphones today. Smaller brands may tend to create simpler filters, like mini-games on Instagram or face filters on Snapchat. Bigger brands also tend to use such simple filters as well as more complex AR extensions, like the ability to try brands` furniture inside of a house in case of an IKEA, or trying on clothes like Farfetch. In today`s market, it seems to become more of a necessity to use AR to stay relevant among competitors, as well as build the image of a modern, progressive brand in the heads of the customers. In our paper, we also provided statistics on how consumers perceive AR today, and why investment in this technology is worth it for many businesses. To summarize, if the company wants to implement AR in its marketing strategy today, we would recommend making it in a way that can be not only entertaining but also helpful for the consumer. As we mentioned in the examples earlier, if the company sells glasses or clothes, an AR filter with these products may be a good idea. And the similar idea may be implemented for almost any business on the market. Our main advice is to try to make AR a helping tool for the consumer – and not implement it as just modern technology for the sake of modern technology.

8. In conclusion

VR revolution has been predicted to appear on the market for many years already, but only now it starts to seem that the possibility of it actually happening appears on the horizon. Every year we see more companies doing VR activities, more headsets are being sold and companies face a larger need for differentiation. AR, on the other hand, has revolutionized the consumer market and greatly affects customer behaviour. In the conclusion of our paper, we also have to mention the limitations of the study conducted. It is important to understand, that we took a look only at a tiny fraction of the information, and examples available as of today, and since technologies are on the rise and actively developing, new papers, scientific research, market analysis, and case studies are being created and published every month. It is also important to acknowledge that, like with any new technology that comes to the mass market, it is required to follow its development and adapt one`s marketing strategy according to the current trends in the market and remember, that what is valid today does not have to be valid on the market tomorrow. As AR and VR technologies continue to advance, we can expect to see more and more brands incorporating them into their marketing strategies. While the potential profitability of certain AR and especially VR marketing activities may still be uncertain, the positive experiences and engagement levels seen in the market suggest that these technologies are here to stay. As the cost of entry continues to decrease and the technology becomes more widely available, we can expect to see more and more brands adopting AR and VR as part of their marketing strategies.

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References:

Craig, A.B. (2013) Understanding Augmented Reality: Concepts and Applications, Morgan Kaufmann, Waltham.
Davidge, J. (2015) "North Face's South Pole virtual reality brand experience", [online], Because Connected Experiences, https://www.becausexm.com/blog/north-face-s-south-pole-virtual-reality-brand-experience.
Fetisov, E. and Talochka, A. (2022) "7 Benefits of Augmented Reality in Retail and E-Commerce", [online], JayDevs, https://jaydevs.com/benefits-of-augmented-reality-in-retail-and-ecommerce/.
Fuhrt, B. (2011) Handbook of Augmented Reality, Springer, New York.
"IKEA Immerse" (2018), [online], Demodern, https://demodern.com/projects/ikea-vr-immerse.
Jerald, J. (2015) The VR Book: Human-Centered Design for Virtual Reality (Acm Books, 8) Illustrated Edition, Morgan & Claypool Publishers, Waterloo.
Keenan, M. (2022) "How Augmented Reality (AR) is Changing Ecommerce Shopping", [online], Shopify, https://www.shopify.com/enterprise/augmented-reality-ecommerce-shopping.
Kerrebroeck, H.V., Brengman, M. and Willems, K. (2017) "Escaping the crowd: An experimental study on the impact of a Virtual Reality experience in a shopping mall", Computers in Human Behavior, Vol 77, pp 437-450.
Kristensen, E. (2022) "The 6 Best Virtual Try-On Examples We've Seen", [online], Drip, https://www.drip.com/blog/virtual-try-on-examples.
National Research Council, Computer Science and Telecommunications Board and Committee on Virtual Reality Research and Development (1995) Virtual Reality: Scientific and Technological Challenges, National Academy Press, Washington, D.C.
Navaratnam-Blair, F. et al (2022) Beyond Reality Is the long-awaited VR revolution finally on the horizon, National Research Group, New York.
Owens, B. (2022) "Augmented reality (AR) in e-commerce and retail: What's next for brands?", [online], Whiplash, https://whiplash.com/blog/augmented-reality-in-ecommerce/.
Patrícia. (2019) "eyerim predstavuje: Magic Mirror", [online], Eyerim, https://eyerim.sk/blog/magic-mirror.
Sherman, W.R. and Craig, A.B. (2019) Understanding Virtual Reality: Interface, Application, and Design, 2nd Edition, Morgan Kaufmann, Cambridge.
Taoufiki, S. (2022) "Augmented Reality in E-commerce : How AR boosts online shopping ?", [online], MBAMCI, https://mbamci.com/augmented-reality-in-e-commerce-how-ar-boosts-online-shopping/.
Taufik, D., Kunz, M. C. and Onwezen, M. C. (2021) "Changing consumer behaviour in virtual reality: A systematic literature review", Computers in Human Behavior Reports, Vol. 3, pp 1-16.
THE NORTH FACE KOREA. (2015) "맥머도 남극탐험 | 노스페이스 The North Face #Sudden Exploration #VR Experience with Oculus", [online], THE NORTH FACE KOREA, https://www.youtube.com/watch?v=FSfkE4emoBE.
threekit. (2023) "23 Augmented Reality Statistics You Should Know in 2023", [online], threekit, https://www.threekit.com/23-augmented-reality-statistics-you-should-know-in-2023.
"virtual reality" (1987), [online], Merriam-Webster, https://www.merriam-webster.com/dictionary/virtual%20reality.
"virtual reality" (2015), [online], Cambridge Dictionary, https://dictionary.cambridge.org/dictionary/english/virtual-reality.
"Virtual Reality for Shopping: Overview" (2021), [online], ScienceSoft, https://www.scnsoft.com/virtual-reality/shopping.
Willson, T. (2021) "Explore Mont Blanc With The North Face's All-New Immersive Experience", [online], Hypebeast, https://hypebeast.com/2021/9/the-north-face-vectiv-power-further-vr-360-info.
Xi, N. and Hamari, J. (2021) "Shopping in virtual reality: A literature review and future agenda", Journal of Business Research, Vol 134, pp 37-58.