Łukasz Łysik

Wroclaw University of Economics and Business
e-mail: lukasz.lysik@ue.wroc.pl
ORCID: 0000-0002-7886-5130

Karol Łopaciński

Wroclaw University of Economics and Business
e-mail: karol.lopacinski@ue.wroc.pl
ORCID: 0000-0001-5805-6750

USE OF VIRTUAL REALITY IN DIGITAL MARKETING COMMUNICATION

WYKORZYSTANIE WIRTUALNEJ RZECZYWISTOŚCI W CYFROWEJ KOMUNIKACJI MARKETINGOWEJ

Quote as: Łysik, Ł., and Łopaciński, K. (2019). Use of virtual reality in digital marketing communication. *Informatyka Ekonomiczna*, (4).

Summary: The practical utility of many VR instruments and tools has been recognized by marketing specialists – the rapid development of marketing approaches based on VR solutions is a good example of this trend and seems to offer the promise of a much wider application of VR in this context. Virtual reality is generally considered as one of the most promising technologies of the future, with enormous potential to influence the customer experience. This study presents an attempt at determining the effective impact of virtual reality upon marketing activities and its potential to influence and shape modern consumer behaviour. These objectives were addressed on the basis of literature studies and analytical evaluations of selected case studies involving the application of VR technologies in marketing. This paper constitutes an introductory chapter in a broader series of studies devoted to the examination of VR properties, the role of VR in the formulation of new paradigms in the realm of marketing, and the analytical evaluation of modern consumer behaviour.

Keywords: virtual reality, marketing communication, marketing, customer behaviour.

Streszczenie: Upowszechnienie się technologii wirtualnej rzeczywistości (VR) otworzyło wiele nowych możliwości rozwoju biznesu i społeczeństwa. Technoloia wirtualnej rzeczywistości została dostrzerzona i doceniona przez specjalistów do spraw marketingu, dzięki czemu aktualnie możemy obserwować coraz szersze ich wykorzystanie. Wirtualna rzeczywistość jest wskazywana jako jedna z najbardziej obiecujących technologii z olbrzymim

potencjałem w obszarze *customer experience*. Autorzy w niniejszym artykule za cel postawili sobie próbę odpowiedzi na pytanie, w jaki sposób wirtualna rzeczywistość wpływa na działania marketingowe oraz jak kształtuje zachowania współczesnego konsumenta. Dla tak postawionego celu zaplanowano studia literaturowe oraz analizę dostępnych przykładów wykorzystania technologii VR w marketingu. Niniejszy artykuł jest pierwszym z cyklu, który będzie dotyczył własności technologii VR, tworzenia się nowych paradygmatów w obszarze marketingu oraz analizy zachowań współczesnych konsumentów.

Słowa kluczowe: wirtualna rzeczywistość, komunikacja marketingowa, marketing, zachowania nabywców.

1. Introduction – the nature of Virtual Reality

The wealth of available technological solutions has left an indelible mark on the image of the modern society, changing the landscape of marketing and strongly influencing the behaviour of modern consumers (Kotler, 2009) who, in their purchasing decisions, place more and more significance on the purchasing experience rather than the physical product. As evidenced by reports published by Goldman Sachs (Goldman Sachs, 2016) and the Gartner Group (Gartner, 2017, 2019), virtual reality is commonly viewed as the "next big computing platform" and "emerging technology for business". VR technology has already gained recognition and popularity in many areas, including those related to marketing communication, customer service, and the design of experiential purchasing.

The Oxford Dictionary defines virtual reality as the "computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors". NASA (2016) presents a more technological approach to VR definition "Virtual reality is the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence". The fundamental element of a properly designed VR solution is the provision of the highest possible level of immersion, shaped by the following two dimensions (TECH, 2015):
- "Depth of Information: refers to the quality and amount of data the user is fed by the virtual environment itself. This could be achieved through the display resolution, graphics quality and complexity of the environment, sound quality, haptic feedback and such like;
- Breadth of Information: refers to how many senses are being stimulated by the virtual environment. The most basic of these should be audio and visual, while the most advanced systems should include stimulation of all five senses in order to enhance immersion."

An interesting approach to the VR concept can be found in (Asanowicz, 2011): "the key to the understanding of the notion of virtual reality lies in proper comprehension of the difference between imitation and simulation. Virtual reality

does not strive to imitate the physical reality, but rather to simulate it by generating its similes. In other words, imitation attempts to replicate (or mimic) an existing physical object, while simulation involves the generation of a non-existent reality – a presentation of an illusionary semblance. A good illustration of the latter is the concept of virtual memory in computing, allowing machines to operate under the 'illusion' of having access to additional physical memory circuits".

Virtual reality can by no means be regarded as a novel technology, VR imitations can be found in such early explorations as panoramic paintings and stereoscopic photography. These solutions from the pre-digital era were quite effective in generating in viewers a sense of being transferred to another reality – in this context, a reality of past historic events (VRS, 2016). The next step in the development of VR was marked by the introduction of a flight simulator solution in 1929 by Edward Link. In 1950, Morton Heilig presented his Sensorama (a stand equipped with a range of devices and emitters to offer an immersive, multi-sensory stimulation) (VRS, 2016; FI, 2015). Heilig was also the author of the earliest computerised VR solution in the form of a head mounted display (HMD), presented in 1960 (VRS 2016). The term 'virtual reality' was introduced and popularised by Jaron Lenier in 1987 (VRS, 2016). The next generation of VR technology followed suit, with more and more advanced solutions entering the market (VRS 2016; FI 2015; VS 2019; GADGET 2019):

- 1960 – Morton Heilig presents his model of a telespheric mask;
- 1961 – Comeau and Bryan, engineers from the Philco Corporation, present their Headsight, a head-mounted precursor of the modern HUD (head-up display);
- 1965 – Ivan Sutherland markets his Ultimate Display, a generator of virtual reality popularly referred to as the Sword of Damocles, due to its ominous presence (the device was large and mounted on a mechanical arm suspended from a ceiling);
- the 1970s mark the development of VR by various Silicon Valley companies; in 1977 Dan Sandin presents a first VR controller/manipulator, in the form of a glove;
- 1980s – Myron Krueger introduces a camera setup to translate human motion into virtual reality, a solution commonly regarded as a forerunner of modern technologies such as Kinect;
- 1993 Sega launches their Sega VR headset on the market;
- 1995 Nintendo presents their Virtual Boy table-top console;
- the 21st century provides ample selection of advanced solutions in support of a more and more immersive VR experience.

However, despite the wealth of effective solutions already available on the market, the idea of virtual reality has yet to be fully embraced, adopted and popularised before it may be perceived as a mainstream trend.

Modern economic entities are in the process of continuous adaptation to the changing environment and to the evolving expectations of their consumer base. New

technologies, with the notable inclusion of advanced VR solutions, offer the potential to change the image of modern marketing and to stimulate the effective formation of new behaviour and decision-making patterns among their consumers. The implementation of VR-type solutions – and the effective translocation of the purchasing experience outside the realm of the physical world – may prove quite potent in securing and maintaining a competitive advantage on any market.

VR represents an immersive technology aiming to replace the physical reality with a virtual representation by instilling a change of user patterns of perception, knowledge acquisition, and experience. Based on advanced configurations of hardware and software elements, virtual reality offers unparalleled capacity to reproduce existing environments or produce entirely new worlds. A virtual environment empowers users to trigger and receive stimulated sensory signals in a wide spectrum, covering visual, auditory, tactile and even olfactory/gustatory impulses. The VR technology replaces the physical world with a virtual environment which, when properly implemented, offers the potential to influence and stimulate user perception, knowledge accumulation, and purchasing experience.

Perception – according to a Korean study (Suh Lee 2005), the 'immersive telepresence' has a positive impact on user knowledge of the product, and the enhanced perception stimulates changes in behavioural patterns and the purchasing decisions of customers. The positive effects of this correlation are two-fold:

- from a consumer's viewpoint, it helps gain a better understanding of products and, consequently, make more informed purchasing decisions,
- from the viewpoint of a business enterprise, VR provides ways for customers to embrace and experience products even if they are not readily available to them in a physical form.

Knowledge accumulation: a number of studies (Li, Daugherty, and Biocca, 2001, 2002, 2003; Suh and Lee, 2005) provide arguments in favour of the view that VR has a positive effect on the cognitive capabilities of users, stimulating them to a greater extent compared to other forms of learning, particularly those based on the presentation of static images. This enhanced property makes VR a particularly useful instrument for experiential marketing purposes. VR technology is also a valuable approach to the presentation of complex products, giving users the chance to test them out in a virtual setting before they commit to the purchase.

Purchasing experience: VR has already changed the effective patterns of interaction between users and products, as the presence of a physical product is no longer necessary. As suggested by the results of a study commissioned by Eventbrite (Event, 2014), the share of the experiential economy in purchasing processes grows steadily year by year. For the generation of Millennials, 72% of the studied population declared their intention to increase purchase expenditures related to experiential rather than physical products. This provides the reason to believe that VR technology will be subject to close and detailed examination by modern and future consumers. At present, we are witness to an unparalleled generational transformation,

characterised by gradual departure from materialist ideas in favour of more experiential contents.

In addition to its use as a form of individual exploration, virtual reality offers a significant potential for business applications addressed to large audiences. The most promising areas of VR utilization include: tourism, entertainment, medical services, military and defence industry, and training. Some of the most obvious and verified benefits of VR in the area of marketing include the following (VRARA, 2019):

- easy access to a virtual database of products – the process has never been as simple and straightforward as it is nowadays: products can be viewed and accessed from any place and at any time, with high quality presentations and rich detail readily available,
- creation of an information-rich purchasing experience – based on the use of VR technology and other forms of behavioural guidance, consumers gain access to new possibilities and experiences, which may greatly stimulate their conversion,
- potential to study and analyse consumer behaviour – observation of user actions in a virtual world may provide useful information and better understanding of the most typical behavioural patterns – this knowledge may be employed in the design of more effective solutions,
- improvement of customer purchasing experience – based on the observation of user behaviour in a virtual representation of a real marketing environment, companies may employ advanced solutions in the design of the user experience at each and every point in their purchasing journeys.

In summing up, it may be useful to cite selected global market values that attest to the growing popularity of VR solutions VR (Fortune 2019; STATISTA 2018; VIAR 2018):

- In a global dimension, the total value of the VR market in 2018 was established at USD 7.3 billion, with a projected increase to USD 120.5 billion by the year 2026, representing an annual growth of 42.4%.
- The number of VR set orders grows annually, from 3.7 million in 2017, through 4.65 in 2018, up to 6 million in 2019.
- Based on the latest estimates for the year 2019, the number of VR users has grown to 171 million of individual users.
- After testing a VR set, 81% of respondents were anxious to share the experience with others.
- After testing a VR set, 79% of respondents were inclined to revisit this experience.
- The word 'cool' was found to be the most frequent user opinion describing a VR experience.
- Continued focus on the development of VR technology and the associated solutions is evidenced on the part of such market giants as Apple, Facebook, Google, Sony, and Lenovo.

The above figures are clear evidence of the steady gain in popularity among users. A detailed evaluation of VR technologies and their role in marketing and purchasing path design will be addressed in subsequent sections of this paper.

2. Virtual Reality as a marketing communication tool

The digitization of modern communication is a growing and very visible phenomenon. The natural consequence of this situation is the enterprises' continuous adjustment and development of their marketing communications activities, which involve sending promotional information about the brand and its product offer to the market environment, as well as collecting feedback from the market. Marketing communication is one of the most important elements determining the establishment and maintenance of the company's relations with clients and other entities of the market environment. The effective use of marketing communication requires, not only very good knowledge of social phenomena and market processes, but also knowledge of instruments and information communication technology (Grudzewski, Awdziej, Mazurek, and Piotrowska, 2018). Companies that use modern marketing communication methods and tools are able to quickly and effectively interact with consumers and other entities of their marketing environment (Hajduk, 2016).

Analyzing the latest solutions in the area of marketing communication, it can be said that virtual reality technology deserves special attention. Virtual reality technology can be considered as one of the most modern and promising directions in the area of marketing communication, which has great potential in terms of impact on consumers and their purchasing behavior. Virtual reality looks extremely promising compared to promotional tools used by the companies thus far, since it offers completely new, previously unknown and custom-made options for the presentation of the product offer and brand popularization.

The potential of augmented reality has been recognized by the world's largest enterprises, resulting in continuous investment in this branch of technology. Currently it can be considered as one of the most developing solutions in the area of IT, and is extremely important from the point of view of the ordinary consumer, since the popularization and development of VR makes this technology more and more available to everyone, hence the equipment that is necessary to receive VR messages is becoming cheaper. In this way VR ceases to be only an exclusive tool for scientists and specialists from the IT industry and arrives within the reach of ordinary people. Therefore companies are increasingly willing and more likely to use this channel to conduct marketing communication. In a world saturated with promotional messages, VR presents itself as one of the few fresh and custom-made tools, and its content presentation capabilities are surprising and exciting for recipients.

The potential of VR in the area of marketing communication lies mainly in:
- new forms of product and service presentation, e.g. in 3D with 360 degree rotation option,

- very realistic content presentation, so that the recipient has the impression that they are watching it live,
- the possibility of very realistic viewing and testing of products in the virtual world,
- the variety of opportunities to engage consumers, by entering into interaction with the product or brand.

There are more and more promotional campaigns in the market that use the possibilities of VR. Generally they can be divided into those that rely on personal and social perception (Pindel, 2015). In the case of the first group, consumers have the necessary equipment and are ready to receive promotional messages at any time and place. Advertisements are then most often distributed via social media, e.g. uploaded on YouTube or published on a specific brand's website. The consumer is informed about the need to use VR glasses for the full effect of the video material. This kind of campaign is characterized by an increasingly wide communication range due to the popularization and high availability of inexpensive Google Cardboard glasses. They are made of cardboard and can be placed inside a regular smartphone, which displays an advertising video created in VR technology.

On the other hand, VR campaigns that are based on social perception are usually associated with the presence of consumers in a promotion site, such as industry fairs, where companies present themselves. These types of campaigns have a smaller range, but they are usually much more exciting for the recipients, since they often use very advanced equipment, which due to its price is usually unavailable to consumers in their daily lives. This refers to the VR goggles integrated with headphones, controllers enabling gesture control and even treadmills that give the impression of very real movement in the virtual world. This type of equipment allows the recipient to immerse in virtual reality very strongly. Therefore, the power of communication and the experience gained in this way are very strong. It can therefore be assumed that consumers who have experienced this kind of emotions at trade fairs will share the promotional message received there with other consumers, e.g. through whisper marketing.

In relation to the above, it can be stated that VR campaigns, both those based on personal perception and those based on social perception, have a positive impact on the general perception of promotional messages and attitudes towards the promoted brand, increasing its recognition in the process.

3. Virtual Reality and customer behaviour

Modern consumers are exposed to a wide assortment of advertising and marketing communication on a daily basis. In addition, the multitude of communication channels only adds to their feeling of indifference towards such information. In order to draw their attention and to get them involved in marketing activities, one need more effective methods of persuasion, preferably of a kind that directly stimulates

their awareness. As already noted, modern recipients of advertising campaigns display a clear preference for experiential stimuli which are meant to replace a physical contact with products. Solutions based on virtual reality technologies are quite fitting in the context of this trend, with their "try before you buy" approach realized without the need for physical contact with the products on offer. Providing experience is the ultimate goal here, and as evidenced in a number of studies, customer involvement in the purchasing process seems to increase with the number of varied experiential stimuli presented in the course of such a process (Esbjerg et al., 2012; Byun, and Mann, 2011; Borges, Chebat, and Babin, 2010; Arnold and Reynolds, 2012; Kozinets, 2008). According to (Jang, Hur, and Choo, 2019; Steuer, 1992), VR offers an environment where the perceiver can experience a sense of being physically present, and thus could be an effective means of providing shopping experiences that are consistent across online and offline channels. The same author (Steuer, 1992) places strong emphasis on the concepts of vividness and interactivity as the two most important elements affecting the virtual experience of users. Further explorations in this context (Steuer, 1992; Schuemie, 2001) provide arguments in favour of the view that the two aforementioned variables constitute a telepresence, a key concept for the understanding of virtual experience. Virtual reality has already been used as a tool by test laboratories to obtain metrics to predict consumer behaviour in physical stores (Burke, 1996, 2002; Campo, Gijsbrechts, and Guerra, 1999; Vrechopoulos, Keefe, Doukidis, and Siomkos, 2004; Vrechopoulos, Apostolou, and Koutsiouris, 2009; Breen, 2009; Bigné, Llinares, and Torrecilla, 2016).

The task of forming a virtual market as an equivalent of a physical shopping experience is well under way, but still requires solidification. Progress in this area has been largely complicated by the introduction of more and more advanced VR technologies, adding to the complexity of analyses related to customer behaviour. Nonetheless, the advance of VR technologies opens up new paths for expanding the range of stimuli associated with the purchasing process. Yet the introduction of VR solutions presents a challenge for the providers and sellers of products and services, requiring them to rapidly adapt to the new formulas of presentation and to redefine their hitherto permanent and undeviating structures and elements of the purchasing processes.

The application of VR technology alongside the physical elements of the sales process has been a subject of numerous studies. Modern researchers are largely focused on the analyses of the impact of VR upon customer behaviour and the associated customer experience (purchasing experience) (Lau, Lau, and Kan, 2012; Lee et al., 2011, Corvello, Pantano, and Tavernise, 2011, Lau, Lee, and Kan, 2010).

Below are some of the most important benefits offered by the use of VR technology as a tool for the better understanding of customer behaviour (VRARA, 2019):
• Potential for observing and tracking customer behaviour in a virtual replication of the physical purchasing environment;

- Potential for the creation of experience tailored to the preferences of specific segments and individual customers;
- Experience associated with purchase of each product in a virtual space may be individualised – this may significantly stimulate customer involvement at practically every stage of the purchasing journey;
- The technology may be used to effectively guide customers by providing relevant information in easily digestible forms at each stage of the purchasing journey;
- Potential for the design of a highly immersive purchasing space that, apart from providing relevant information, has the power to entertain or induce other unique experiences related to each product or service;
- Potential for effective multi-sensual stimulation greatly enhances the feeling of immersion in the purchasing journey, consequently producing more intensive experience in a virtual setting.

The VR solutions may provide digital content users with unique, highly immersive experiences of both an informative and entertainment value. The new technology plays an important role in the design of highly involving customer experience, which can be directly translated into other benefits, such as company image or product reception, depending on the intentions of the authors. As aptly observed by Helen Chun, "there is a fine line between using virtual reality as an effective tool to engage consumers and trigger their curiosity for further exploration versus providing them with a vicarious tool that will dampen their visit intention (Cornell, 2018)."

According to Schroeder (2002, 2006, 2011), the immersive character of the experiences perceived by customers is predominantly affected by the customer's present state of mind and the capabilities of the VR solutions employed. The author also places emphasis on the following correlation: the more immersive the technology, the more real is the experience perceived by customers. In addition, Schroeder emphasises the weight of relations between VR technology and the consumer, as a prerequisite for better understanding of the nature of virtual space and the purchasing experiences associated with this form of product marketing.

The subsequent sections of this paper will be devoted to presentations and analytical evaluations of case studies involving the use of VR in marketing communication. These will serve as sources of information on customer behaviour preferences. It may be noted at this point that, despite numerous examples of practical VR implementations in the marketing of products and services, the genuine scientific interest in this type of activities is a fairly recent development.

4. Practical implementations of VR in marketing communication

Virtual reality in the area of marketing communication has many interesting applications. Despite the fact that this technology is being used in marketing activities relatively recently, one can observe more and more promotional campaigns that are

based on its capabilities. In the further part of the article, selected VR campaigns are presented, which were selected by the authors. In each of the campaigns described below, virtual reality has a different role and pursues different communication and sales goals.

Product presentation is a very popular direction of VR development in marketing and may apply to almost any type of product, but it is best suited for the presentation of physical equipment which – for various reasons (e.g. size, cost of construction, distance) – is not readily available for direct presentation, such as large-scale machinery, airplanes, factories or production lines. The example of General Electric (GE) represents this well. GE is a major American producer of machinery, equipment, energy production technologies, oil rigs and other products. Following the decision to take part in the annual Formnext venue – the world's largest fair devoted to the presentation of 3D printing technology, the company was anxious to present their entire range of industrial 3D printing solutions, but the task posed a serious logistic challenge, as many of their printers are the size of a bus. VR technology proved to be the most effective solution. The company prepared a virtual showroom presenting the entire range of their 3D printing equipment. Customers wearing VR headsets were invited into a virtual lobby offering a selection of industry. After making their choice (such as medicine, aviation, etc.), they were able to view and test specific models, complete with presentations of the whole printing process. Thanks to the VR technology, they could examine each model in detail and compare the quality and precision offered by each device. The VR solution proved much more effective compared to regular oral presentations and films. In addition, it helped GE compile an exhaustive presentation of their product offer at a decidedly lower cost (FWDVR, 2019).

Another direction of using VR in marketing communication is building brand awareness and identification based on the storytelling concept. Stories may be employed to present not only physical products, but also abstract notions and ideas which cannot be expressed in physical product form. VR may serve to reinforce the appeal of storytelling efforts, since it allows for user immersion in the story. This approach is much more effective compared to other forms and strategies in building effective brand identification and brand awareness among clients. "Displaced", a movie presentation prepared by New York Times reporters, is a splendid example of such a strategy. "Displaced" is a story depicting heart-breaking scenes from the lives of children forced to leave their homes as a result of military conflicts. The film is available on smartphone devices and can be viewed in a 360° VR mode using basic Google Cardboard devices. The New York Times documentary presents tragic events in a highly immersive fashion, with viewers invited to walk the ruined streets alongside migrant children, listening to the first-hand accounts of their plight. The 360-degree mode allows for even deeper immersion, with the picture following the direction of the viewer's gaze. The film was downloaded by more than a million New York Times' subscribers. The decision to place the viewer at the centre of the

story proved successful not only by inviting a larger audience, but also by stimulating a broader discussion on the devastating effects of war. The campaign was an effective tool in raising the social awareness of the problem, but it also proved equally effective in promoting the NY Times brand itself (MBRYONIC, 2019).

The specific VR capabilities mean that more and more companies are using this technology to product conceptualisation for marketing purposes, i.e. supporting sales through the presentation and accentuating less immediate benefits or properties of products. An example is Key Technology – a manufacturer and designer of food processing systems – which utilised VR in conceptualising their highly complex food sorting platform VERTYX at the Pack Expo exhibition. Through immersion in a 360° presentation, visitors were offered a detailed presentation of the system's minutiae which cannot be observed and appreciated in a physical product or which are too difficult to express in documentation form. In addition, the simulation presented various food sorting modes available in a graphical and highly comprehensible form, helping the users understand the principles of the system's operation. Visitors could examine the intricacies of the sorting processes from within the machinery, and from any angle. This strategy definitely helped Key Technology present their system as highly efficient and unique, compared to solutions offered by their immediate competitors. The project was part of a comprehensive B2B market campaign designed to build brand awareness among food industry companies and to present the complex food processing techniques and technologies in an easily digestible format (Becker, 2019).

VR is also good for building emotional ties between consumers and the brand through interaction. This type of VR use fits in the segment of experiential marketing and involves the stimulation of a positive brand experience. This is achieved by persuading recipients of marketing communication to interact with the brand and to help them get involved in activities they aspire to, with Samsung being a good example here. This very famous brand, in cooperation with NASA, designed an interesting campaign which could only be realised in a VR setting. The goal was to provide customers with experiences akin to those felt by astronauts walking on the Moon's surface, particularly the effects of the Moon's gravitational pull. Visitors, wearing astronaut suits, special harnesses and VR headsets with headphones, were fully immersed in a visual and sensory depiction of a space mission to the Moon. Equipped with NASA expertise, Samsung concentrated their efforts on providing the experience of reduced gravitation, which was produced by a system of pulleys attached to the harness, in sync with the visual projection of movement over the surface of the Moon, giving a realistic simulation of a low-gravity walk. This particular element of a broader campaign promoting the Samsung Gear VR headset proved effective by offering viewers the chance to share the experiences they always aspired to but would never have the privilege of participating in. The company was able to answer this challenge by giving viewers a unique chance to reach the unreachable, to satisfy their curiosity, and to live their dream (MBRYONIC, 2019).

Another area of VR applications in marketing communications is reinforcing brand awareness through the education of customers on the company and its products. McDonald and Lowe's are examples of this kind of activity. The British division of the McDonald's fast food franchise developed a unique educational and marketing campaign utilizing VR for the dissemination of the company's approach to responsible cooperation with suppliers of the food products used in their menus. The campaign was an account of a seven-month journey across Great Britain, with detailed tours of various companies involved in the network. Visitors, equipped with VR goggles, were invited to examine and understand the nuances of the network's production lines, to help them build brand awareness and reduce their previous reluctance associated with the socially prevailing perception of fast-food products as highly processed and unhealthy (Feltham, 2016).

Lowe's – an American retail network specialising in home improvements – focused on educational activities in its stores. The company was quick to notice that, while many of their customers were clearly interested in DIY home and garden work, some of them left the stores empty-handed, believing that they lack the skills required for the job. To address this problem, the company decided to provide customers with basic DIY training. Based on the assumption that the best method for learning skills is to apply them in a practical setting, Lowe's introduced their HoloroomsHowTo – dedicated spaces designed to support the learning of DIY skills through the use of VR solutions. Customers were invited to perform a wide range of home repairs and modifications, such as laying floors, tiling and plastering, installing a sink, replacing light fixtures, etc. The tasks were performed with the help of a VR headset, a pair of headphones and a handheld manipulator. The holorooms invited customers to perform simple repairs in a step-by-step fashion. Instead of simple presentations such as those found in DIY manuals or YouTube productions, customers were offered a fully immersive environment designed to stimulate them into action and increase their involvement and, above all, they had the chance to utilise and test out specific products offered by Lowe's before committing to their purchase. This type of learning by doing proved quite effective in popularising basic DIY skills related to home improvement, plumbing, electricity, and even simple construction projects. The project also proved effective in persuading participants to buy some of the products after testing them in a virtual setting (Lowe'sInnovationLabs, 2017).

Promotional VR campaigns can also be based on the possibilities of competitions and other forms of interaction with customers in the context of brand promotion and product presentation. An example is Progressive Insurance – an American insurance company – that organized a motorboat fairs and exhibition project addressed to customers. The project was part of a marketing campaign designed to propagate information on non-standard forms of insurance offered by the company to cover special types of property, such as boats and campers. The venue's main attraction came in the form of a virtual powerboat race, with visitors invited to compete against one another. Participants were seated at real cockpits, complete with steering wheels

and throttles, wearing VR headsets and motion sensors. They received scores for their placement, but also for checking control points and collecting boosters. After each race, scores were presented on a virtual board, to offer users the chance to compare their results. The virtual race was not only received with enthusiasm, but also proved successful in stimulating many participants to invest in the non-standard range of services offered by the company. Their involvement was further enhanced by emotions, most specifically: the thrill of competition (FWDVR, 2019).

A unique example of the use of VR in marketing campaigns is testing physical products in a virtual setting, such as wearing a piece of outdoor equipment in a virtual representation of a relevant environment. This form of marketing campaign is limited to a narrow selection of products: footwear, clothing, backpacks, or elements of home design. Merrell, a producer of footwear, utilised the potential of VR in a unique way in their campaign of Capra hiking boots, inviting customers to wear them in a VR setting representing spectacular tourist and mountaineering routes and hazardous experiences. The campaign was presented at the Sundance Film Festival in 2015. Participants, wearing Capra boots and VR headsets with motion sensors, followed a set of physical obstacle courses protected by rope railings, designed to mimic an adventurous mountain route taking in the spectacular views, climbing along narrow ledges, using belays, and crossing crevasses using rope bridges. To enhance the illusion of reality, designers utilised other gimmicks, such as air fans to mimic gusts of wind, vibrating platforms to bring a sense of ground shaken by a falling boulder. The resulting combination of real and virtual stimulations of senses offered an impressive level of immersion in a virtual reality. Owing to motion sensors, the users involved in the testing experience could directly interact with the virtual environment, for example by dodging falling rocks. The project was praised for its unparalleled illusion of reality, and proved equally successful in promoting the Capra model (MBRYONIC, 2019).

A much more involving VR solution was presented by Limbic Life, manufacturer of medical equipment and producer of a special chair for the rehabilitation of patients with mobility problems. The chair is designed to promote rapid recovery after a crippling condition or accident. It may also be used in place of more intensive forms of exercise for those patients who, due to their age or physical condition, are unable to walk without support. Being intent on boosting patient involvement in activities prescribed to them, Limbic Life initiated a series of studies (project VITALICS) in cooperation with RehaClinic, to explore the potential offered by virtual reality. Using the Gear VR headset solution, the company produced a virtual environment to offer a wide range of highly immersive experiences to patients using the chair, such as walking, running, and even flying. Based on the use of modern VR technology, the company was able not only to reinforce the involvement of patients in physical activities, but also to provide them with effective forms of emotional rehabilitation. The effects observed among project participants were impressive, with a tangible improvement of both general comfort and the quality of exercise. It appears that the

results of the project invite further efforts on the part of the product supplier (e.g. showroom presentations as a principal strategy), as the prospect of a VR journey with health benefits may be a selling point for many customers in this particular segment of services (Swaney, 2017).

5. Conclusions

Virtual Reality technology should be considered as the one of the most promising solutions with a broad application scope in marketing and marketing communication. Its strong impact on consumer behaviour and the positive impact on their perception of products and brand recognition is clearly visible. VR is a tool that gives consumers a very real and hitherto unknown experience, which affects their perception, learning and shopping experience. The dynamic development of VR and increasing investment in this branch of technology have resulted in more and more companies deciding to use this channel for marketing communication with the market. In addition, purchasing processes are changing, in which, thanks to VR, the experience with products in the virtual world (without interacting with their physical counterparts) plays an increasingly important role. This situation means that companies must change their approach to both product presentation and promotion, but also to redefine existing purchasing processes. There are more and more marketing campaigns using the potential of virtual reality, but they are still not in the mainstream of marketing communication. The reason for this situation is still the relatively low availability and high price of VR tools, and thus the relatively low range of advertising messages. This situation changes constantly, and it can be assumed that in the coming years VR will become permanently one of many tools of the integrated marketing communication systems.

References

Arnold, M. J., and Reynolds, K. E. (2012). Approach and avoidance motivation: investigating hedonic consumption in a retail setting. *Journal of Retailing*, *88*(3).

Asanowicz, A. (2011). Zrozumieć VR. Geneza rzeczywistości wirtualnej. *Architecturae et Artibus,* (4).

Becker, B. (2019). *9 VR marketing examples that you'll want to steal for 2020*. Retrieved November 11, 2019 from https://blog.hubspot.com/marketing/vr-marketing-examples

Bigné, E., Llinares, C., and Torrecilla, C. (2016). Elapsed time on first buying triggers brand choices within a category: a virtual reality-based study. *Journal of Business Research.*

Borges, A., Chebat, C. J., and Babin, B. J. (2010). Does a companion always enhance the shopping experience? *Journal of Retailing and Consumer Services*, *17*(4).

Breen, P. (2009). *Shaping retail: the use of virtual store simulations in marketing research and beyond*. Bloomington: Store Marketing Institute White Paper.

Burke, R. R. (1996). Virtual shopping: breakthrough in marketing research. *Harvard Business Review*, (74).

Burke, R. R. (2002). Technology and the consumer interface: what consumers want in the physical and virtual store. *Journal of the Academy of Marketing Science*, (30).

Byun, S. E., and Mann M. (2011). The influence of others: the impact of perceived human crowding on perceived competition, emotions, and hedonic shopping value. *Clothing and Textiles Research Journal*, *29*(4).

Campo, K., Gijsbrechts, E., and Guerra, F. (1999). Computer simulated shopping experiments for analyzing dynamic purchasing patterns: validation and guidelines. *Journal of Empirical Generalisations in Marketing Science*, *4*.

Cornell. (2018). How does virtual reality impact the consumer experience? Retrieved November 21, 2019 from https://business.cornell.edu/hub/2018/01/11/virtual-reality-consumer-experience/

Corvello, V., Pantano, E., and Tavernise A. (2011). The design of an advanced virtual shopping assistant for improving consumer experience. In E. Pantano, H. Timmermans (Eds.), *Advanced technologies management for retailing: frameworks and cases*, IGI Global.

Esbjerg, L., Jensen, B. B., Bech-Larsen, T., Barcellos, M. D., Boztug, Y., and Grunert, K. G. (2012). An integrative conceptual framework for analyzing customer satisfaction with shopping trip experiences in grocery retailing. *Journal of Retailing and Consumer Services*, *19*(4).

Event. (2014). *Millennials. Fueling the experience economy*. Retrieved November 21, 2019 from https://eventbrite-s3.s3.amazonaws.com/marketing/Millennials_Research/Gen_PR_Final.pdf

Feltham, J. (2016). *McDonalds is using VR to teach people about its food production (and tractor driving)*. Retrieved November 21, 2019 from https://uploadvr.com/mcdonalds-using-vr-teach-people-uk-food-production/

FI. (2015). *History of Virtual Reality*. Retrieved November 19, 2019 from https://www.fi.edu/virtual--reality/history-of-virtual-reality

Fortune. (2019). *Virtual reality market size, share*. Retrieved November 21, 2019 from https://www.fortunebusinessinsights.com/industry-reports/virtual-reality-market-101378

FWDVR. (2019). *Brands learning why VR is perfect for marketing.* Retrieved November 17, 2019 from https://www.fwdvr.com/2019/04/02/3-brands-learning-why-vr-is-perfect-for-marketing/

GADGET. (2019). *Historia VR*. Retrieved November 20, 2019 from https://gadzetomania.pl/57627,historia-vr 20/11/2019

Gartner. (2017). *Top trends in the gartner hype cycle for emerging technologies*. Gartner, Inc. Retrieved November 21, 2019 from https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/

Gartner. (2019). Gartner top 10 strategic technology trends for 2020. Gartner Inc. Retrieved November 21, 2019 from https://www.gartner.com/smarterwithgartner/gartner-top-10-strategic-technology--trends-for-2020/

Goldman Sachs. (2016). *Virtual and augmented reality: understanding the race for the next computing platform*. Goldman Sachs Group, Inc. Retrieved November 18, 2019 from https://www.goldman-sachs.com/insights/pages/technology-driving-innovation-folder/virtual-and-augmented-reality/report.pdf

Grudzewski, G., Awdziej, M., Mazurek, G., and Piotrowska, K. (2018). Virtual reality in marketing communication – the impact on the message, technology and offer perception – empirical study. *Economics and Business Review*, *4*(18), 3, 36-50. DOI: 10.18559/ebr.2018.3.4

Hajduk, G. (2016). Challenges for marketing communications in the digital age. In G. Mazurek, J. Tkaczyk (Eds.), *The impact of the digital world on management and marketing* (pp. 183-195). Warszawa: Poltext.

Jang, J. Y., Hur, H. J., and Choo, H. J. (2019). *How to evoque consumer approach intention toward VR stores? Sequential mediation through telepresence and experiential value*. Fashion and Textiles, *6*.

Kotler, Ph. (2009). Marketing management. Harlow: Pearson Education Limited.

Kozinets, R. V. (2008). *Brands in space: new thinking about experiential retail*. In T. M. Lowrey (Ed.), *Brick & mortar shopping in the 21st century*, Mahwah, NJ: Lawrence Erlbaum Associates.

Lau, H. F, Lau, K. W., and Kan, C. W. (2012). *Exploring consumers' virtual shopping experience in virtual reality*. In *The 2012 International Congress on Engineering and Information*. Shanghai.

Lau, K. W., Lee, P. Y., and Kan, C. W. (2010). From distance shopping to virtual shopping. *International Journal of Design Sciences and Technology*.

Lee, S. E., Domina, T., and MacGillivray, M. (2011). Exploring consumers' flow experiences in virtual shopping: an exploratory study. *International Journal of Electronic Marketing and Retailing*, *4*(2).

Li, H., Daugherty, T., and Biocca, F. (2001). Characteristics of virtual experience in electronic Commerce: a protocol analysis. *Journal of Interactive Marketing*, (15), 13-30.

Li, H., Daugherty T., and Biocca, F. (2002), Impact of 3-D advertising on product knowledge, brand attitude, and purchase intention: the mediating role of presence. *Journal of Advertising*, (3), 43- 58.

Li, H., Daugherty, T., and Biocca, F. (2003). The role of virtual experience in consumer learning. *Journal of Consumer Psychology*, (13), 395-408.

Lowe'sInnovationLabs. (2017). Retrieved November 21, 2019 from http://www.lowesinnovationlabs.com/holoroomhowto

MBRYONIC. (2019). Retrieved November 17, 2019 from https://mbryonic.com/best-vr-marketing/

MISQ. (2005). *The effects of virtual reality on consumer learning: an empirical investigation*. Retrieved November 21, 2019 from https://www.misq.org/the-effects-of-virtual-learning-on-consumer-learning-an-empirical-investigation.html

NASA. (2016). *Virtual reality: definition and requirements*. Retrieved November 21, 2019 from https://www.nas.nasa.gov/Software/VWT/vr.html

Pindel, D. (2015), *A co by było gdyby? Wirtualnie rzeczywisty marketing*. Retrieved November 21, 2019 from https://marketerplus.pl/teksty/artykuly/a-co-by-bylo-gdyby-wirtualnie-rzeczywisty-marketing/

Schroeder, R. (2002). *Social interaction in virtual environments: key issues, common themes, and a framework for research*. In R. Schroeder (Ed.), The social life of avatars: Presence and interaction in shared virtual environments, Springer.

Schroeder, R. (2006). *Being there together and the future of connected presence*. Presence: Teleoperators and Virtual Environments, *15*(4).

Schroeder, R. (2011). *Being there together: social interaction in virtual environments*. Oxford University Press. London.

Schumie, M. J., Straaten van der, P., Krijn, M., and Mast van der, C. A. (2001). Research on presence in virtual reality: a survey. *Cyberpsychol. Behav.*, *4*(2), 183-201.

STATISTA. (2018). *Virtual Reality (VR) – statistics & facts*. Retrieved November 21, 2019 from https://www.statista.com/topics/2532/virtual-reality-vr/

Steuer, J. (1992). *Defining virtual reality: dimensions determining telepresence*. Journal of Communication *42*(4).

Suh, K. S., and Chang, S. (2006). User interfaces and consumer perceptions of online stores: the role of telepresence. *Behaviour & Information Technology*, (3).

Suh, K. S., and Lee, Y. E. (2005). The effects of virtual reality on consumer learning: an empirical investigation. *MIS Quarterly*, (29), 673-697.

Swaney, R. (2017). *VR technology brings innovation to healthcare rehab*. Retrieved November 21, 2019 from https://insights.samsung.com/2017/10/17/vr-technology-brings-innovation-to-healthcare-rehab/, 21/11/2019

TECH. (2015). *Virtual reality*. Retrieved from https://www.techopedia.com/definition/4784/virtual-reality-vr

VIAR. (2018). *Virtual reality market.* Retrieved November 21, 2019 from https://www.viar360.com/virtual-reality-market-size-2018/ 21/11/2019

VRARA. (2019). *How virtual reality improves customer shopping experience at supermarkets*. Retrieved November 19, 2019 from https://www.thevrara.com/blog2/2019/4/8/how-virtual-reality-improves-customer-shopping-experience-at-supermarkets

Vrechopoulos, A., Apostolou, K., and Koutsiouris, V. (2009). *Virtual reality retailing on the web: emerging consumer behavioural patterns*. The International Review of Retail Distribution and Consumer Research Distribution and Consumer Research.

Vrechopoulos, A., Keefe, R. M. O., Doukidis, G. I., and Siomkos, G. J. (2004). Virtual store layout: an experimental comparison in the context of grocery retail. *Journal of Retailing*, *80*(1).

VRS. (2016). *History of virtual reality*. Retrieved November 19, 2019 from http://www.vrs.org.uk/virtualreality/history.html

VS. (2019). *History of VR.* Retrieved November 19, 2019 from https://virtualspeech.com/blog/history--of-vr