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Advertising in Virtual Reality: A Hierarchy of Effects Paradigm

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Introduction

An organisation can achieve its marketing goals to the extent that it does better than its competitors in creating, communicating, and delivering value to its chosen target market, breaking through message and communication clutter (Srivastava & Dorsch, 2020; Kotler, 2000). Marketing communication has long moved beyond merely selling products or services, and instead focuses on using different media and tools to create a lasting impression and meaning in the minds of consumers. Advertising, aimed at increasing awareness about a brand or product, is one of the most prominent and widely used communication tools in marketing. One traditional definition renders it as a paid form of impersonal communication initiated by a known sponsor and deliberately targeted to an individual or a wider audience through the media. Advertising can

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influence the audience through informing or reminding them of a brand's existence, or alternatively, through persuasion, help them differentiate a product or organisation from competitors in the same market (Fill, 2005). The goal of this influence or persuasion is usually to elicit responses, such as attitudinal or behavioural changes, that would result in an intention to purchase the product or service.

Advancements in the information and communication technologies of the Internet and social media have changed how advertisements are served and how consumers respond to them. New spatial computing technologies such as extended reality (XR) (which includes augmented reality-AR, virtual reality-VR, and mixed reality-MR) are growing increasingly popular (Kwok & Koh, 2021; Alcañiz et al., 2019). While VR takes the user into a virtual environment, AR overlays virtual content on the physical world, and MR combines virtual objects and environments with real objects and environments (Alcañiz et al., 2019). The foray of big tech companies like Facebook (with their Oculus Quest VR devices) into extended reality technologies is gradually making these innovative technologies cheaper and more accessible to the wider public. VR is also finding a growing use for entertainment, sports viewing, and training (Lupinek et al., 2021).

A major consideration for advertisers in choosing between one medium or another is how accurately they can measure the effectiveness of a particular campaign in capturing the desired attention. Lack of precision in the measures of effectiveness of some digital advertising has either discouraged or slowed down its adoption (Santoso et al., 2020; Yoo & Baek, 2017; Logan, 2016). Advertisers need detailed metrics of engagement and interest in order to determine the effectiveness of a particular advertising technique or medium. In traditional media such as newspapers, billboards, and television, such metrics include readership and viewer counts, manually or automatically acquired. Advertisers would take more advantage of the more interactive and immersive media technologies, if only they could adequately harness their potential and then, even better, be able to measure how effective they are in engaging consumers.

Extended reality technologies potentially have some superior features, and hence opportunities, that the more traditional advertising media do not have. VR is highly interactive, immersive, and engaging. The

immersion is such that users feel almost physically transported into another world such that their participation and interaction in VR becomes almost as real as if it were taking place in their physical environment (Serrano et al., 2013). Furthermore, some VR devices (e.g. the HTC Vive Pro Eye) allow for the tracking and recording of eye movements, enabling advertisers to accurately measure the nature, type, and duration of eye contact with objects and services advertised in the medium.

Unfortunately, many advertisers are still using perspectives and strategies developed for traditional media to understand new media. The Hierarchy of Effects model (Lavidge & Steiner, 1961) describes the process of progression of learning and decision-making that consumers experience in response to an advertising message. Consumers move from the point of initial awareness of a product or service to becoming convinced, deciding whether to purchase or not. The Hierarchy of Effects model has traditionally been used to understand the consumer's decision-making journey, from knowing about the product to the moment of purchase. Studies abound (Powell et al., 2017; Wijaya, 2011; Olson & Thjømøe, 2009) about the application of this model to television and other traditional media, but there are limited studies on its application in virtual reality. Considering the huge potential of emerging technologies like VR, the Hierarchy of Effects model (HoE) can provide the needed framework to best understand the consumer decision-making pathway following their first encounter with a brand or product in this medium (Hazel & Kang, 2018).

The rest of the chapter proceeds as follows. After presenting an overview of advertising and virtual reality definitions, as well as conceptualisations of advertising in emerging markets, we address the traditional medium of advertising and then introduce virtual reality (VR). Against this background, and taking VR as a case study and exemplar of futuristic spatial computing technology for advertising, we suggest how the Hierarchy of Effects model offers a lens to understand better how consumers might be brought to interact with a brand presented through it. We believe that lessons drawn from applying HoE to VR suggest a pattern that can, to a great extent, be generalised to many emerging technologies (especially extended realities). The chapter concludes with some recommendations for organisations deploying virtual reality.

Advertising in an Emerging Market (the African Context)

Africa is an emerging but fast-growing market, and advertising is hugely important in reaching the continent's vast population of 1.3 billion people. From a general market or an economic perspective, emerging markets have one unique characteristic: their economy is growing rapidly, a fact shown by rising Gross Domestic Product (GDP), increased trade, as well as increased foreign reserves (Paul, 2020; Techo, 2018). Market size is an important determinant of economic progress, as shown by the BRICS (Brazil, Russia, India, China, and South Africa), which has seen growth spurred by market size. The aggregate GDP in emerging markets and developing economies including China is expected to grow by 5% in 2021 after a contraction of 2.6% in 2020. During the same period, some poorer economies are expected to experience a 3.3% increase in activities, after a contraction of 0.9% in 2020 (World Bank, 2021).

In spite of this growth in various economies, many brands still find it hard to succeed, and advertisers are having a hard time working in such markets. An increasingly diverse and complex world is a challenge for advertisers, who have to contend with multiple economic models, different types and sizes of social structures, firms, and marketing systems, as well as various purchasing habits and abilities (Makhlouf, 2019). Now that competitive advantage is shifting from low resource cost to technological capability, the survival of organisations will depend more and more on technological capabilities.

Advertising is a form of communication that continuously and subtly affects our daily lives, and in its pervasiveness, which we may be unaware of, reflects and sometimes manipulates our culture and influences our decisions (Swami & Dutta, 2010; Dyer, 2008). Various authors have suggested that we are each exposed to about 3500 advertisements daily (Dahlén & Edenius, 2007; Godin, 1999 in Richards & Curran, 2002), a number that varies depending on what is classified as advertising. "Advertising" has for a long time been described as every form of commercial, promotional activity, from sponsorship to email marketing (Schultz, 1995). Others (e.g. Osama Mohamed Abdelaziz, 2021; van der

Lans et al., 2021; Zgheib, 2017) view advertising as a way to differentiate one brand from the competition, while some consider it as a way to manipulate an audience (Kulikova et al., 2021; Katermina & Buyanova, 2020; Susser et al., 2019).

Each viewpoint presents only some aspects of the reality of "advertising". A single definition therefore lacks the required precision to distinguish advertising from other forms of marketing communication (Schultz, 2016; Bergkvist & Langner, 2017; Richards & Curran, 2002; Rust & Oliver, 1994). There is, however, one common "denominator" among these perspectives, which is that advertising is paid for and non-personal, there is a known sponsor, and it is disseminated through the mass media with a view to persuade or influence consumers or target audiences (Lamb Jr. et al., 2000; O'Guinn et al., 2000; Vanden Bergh & Katz, 1999). This is the definition of advertising adopted for the current study: a paid, non-personal communication by an identified sponsor, through the mass media to persuade or influence someone.

The technology frontier is becoming more sophisticated very fast. Extended reality (XR) is able to reproduce and render high-quality virtual environments and objects, making it a potential tool that can be used to generate, in consumers, experiences similar to what they would experience in the real world. By 2015, three three-year global projection of the number of VR users was 171 million people, with about 28 million of them estimated to be prepared to pay for the VR content they consume (Grudzewski et al., 2018).

Facebook is one of the big technology companies leading the way in extended reality innovations. As at 2020, the number of Facebook users in Africa was pegged at above 250 million subscribers (Internet World Stats, 2020). Another 2020 estimate put the number of Nigerian users of Facebook at 23 million (Statista, 2021). However, to date, Facebook does not have an office in Nigeria, the country with the largest population in Africa. Despite this, many Nigerians have Facebook's VR headset Oculus Quest (a virtual reality headset developed by Oculus, a division of Facebook), and the developer community around extended reality is growing. Facebook is currently experimenting with how to place advertising in VR games. The attempt has been met with varying degrees of success and acceptability by the public (BBC, 2021). It is therefore

expected that a country with the highest population in Africa presents a huge advertising market for such big tech companies in VR. Highlighting some differences between a virtual experience and an "indirect" one offered by traditional advertising may further illustrate the exciting and richer advantages that the former offers.

Traditional Advertising Media

Traditional advertising began with the development of printing in the fifteenth and sixteenth centuries. A century later, weekly newspapers in London began publishing advertisements, a trend that reached its peak in the eighteenth century (Britannica, 2021). Television and radio became the most pervasive media in western industrialised nations. When in 1941 the first TV ad appeared by a company selling the Bulova wristwatch for four to nine dollars, it did not seem much like a revolution because only the 4000 people who had a TV in New York at that time were able to see it. The 10-second ad, which had a voiceover saying "Americans run on Bulova time", ran on the eve of the entry of the United States into World War II. The setting and timing made America stand out as a technology forerunner (Mertes, 2021). The Internet has now revolutionised advertising in a most dramatic and revolutionary way, changing how advertisements are broadcast and increasing exponentially the number of people who can see ads. It has also changed how consumers interact with ads, influencing how they are affected as a result.

Traditional media has been used to gather and disseminate news and information to a heterogeneous and dispersed audience, to set agendas and frames for conversations. Also, because traditional media are easily accessible, advertisers have continued to patronise them in order to reach as many people as possible within the shortest time.

Radio, television, and newspapers, among others, have been the traditional media platforms used by advertisers to make their goods and services known to a heterogeneous mass audience. However, traditional media is not able to connect more intimately and more directly with the target, but is rather more adept at delivering information. For this reason, it cannot be solely relied upon to reach the desired advertising target

audience all the time (Papasolomou & Melanthiou, 2012). Traditional media also lacks interactivity as it is usually linear or uni-directional. Consumers are thus mostly at the receiving end of the information, with little input into what they receive. Product advertising is thus often linear, with one ad following the other and consumers viewing information in a predetermined sequence beyond their control.

The linear flow of information in traditional advertising media such as TV and newspapers stands in sharp contrast to more interactive media (Bezjian-Avery et al., 1998). Although we suggest that non-traditional advertising media would be richer and more persuasive, not all authors agree. Dahlén and Edenius (2007) argue that non-traditional adverts are not persuasive enough to make experimental subjects take action. Respondents in the Dahlén and Edenius (2007) study stated that they did not as readily form a mental representation of them as advertising. The authors argue that when the audience sees an advert, say on social media, it is less persuasive, as they do not consider it an advert but rather perceive it as publicity or mere information. However, when they see the same ad on TV, it feels more like an advertisement. Alcañiz et al. (2019) argue the opposite: that non-traditional advertising media provide a richer experience. According to them, a virtual environment provides a richer experience than traditional advertising and viewers tend to equate the advert with a direct experience. In other words, consumers may learn better in a virtual experience than in a direct experience. Therefore, both traditional and non-traditional advertisements should be seen as complementary and not in competition, as both contribute to actualising the advertising goals set by a brand.

Many people are distracted when they watch entertainment programmes on television. A study by Edelman Global Survey (2013) found that 96% of respondents simultaneously use a device while viewing entertainment on another device, and that of those, 51% do so regularly. Other factors that determine how people consume and their level of engagement with the advertised brand include their personality traits. Another is the "distance" between the viewer and the device. The more physically near the person is to the advertising image, the closer they are likely to feel towards it. This is greater with VR than with traditional media.

Virtual Reality

Virtual reality (VR), though in its early stages, is fast gaining ground and also attracting increasing attention in the mainstream media. VR is a virtual, three-dimensional, highly interactive, simulated, computer-generated environment where a real person can play an active agent role (Onyesolu & Eze, 2011; Mazuryk & Gervautz, 1999), depending on whether they are *observing* or *embodying* a character. The realism of the three-dimensional virtual environment is often enhanced with spatial sound, and sometimes with haptic feedback. Experiments are even under way to add smell to the VR experience (Wang et al., 2021; Munyan et al., 2016). VR may allow users to be brought in contact with virtual representations of other people, past and present, real or imaginary (Onyesolu & Eze, 2011; Isdale, 1998; Baieier, 1993). This multimedia environment is a virtually rendered digital space that the user sees, usually by wearing a VR "headset" designed as a head-mounted display (HMD). This has sensors that track the movements of the user's body and hands, which in turn can be used to move objects inside the virtual environment or to control the "movement" of the user's virtual representation (avatar) in VR. Thus, the virtual movements respond to the real-world movements of the user. A virtual environment in VR attempts to replace the elements and cues of the physical world with digital equivalents. In this way, VR is potentially more immersive and engaging than the physical world, which, in the best representation of VR, is completely blocked out (Fox et al., 2009).

VR simulates the natural stereoscopic viewing mechanism by digitally generating right-eye and left-eye images of any given object or scene in 3D. The information provided from both eyes helps the viewer's brain integrate the information to create the perception of 3D space (Ye et al., 2007; Wann et al., 1995;). Thus, VR technology creates the illusion in the mind of the user that the images shown on-screen have depth and presence, rather than being a flat image projected onto the screen. With this, they are able to perceive the objects projected more accurately, realistically, and precisely. VR affords a greater level of interactivity than traditional media. In VR, a user in a virtual space is able to engage within

the environment and each action taken has an immediate and observable effect that the user can more tangibly relate to. The interactivity of VR keeps the user engaged cognitively and actively, unlike other passive media like television (Kim et al., 2021).

Advertising has continued to evolve along with technological innovations. Compared with traditional media, VR allows higher levels of interactivity and realism, which results in visual richness (Grudzewski et al., 2018; Van Kerrebroeck et al., 2017; Choi & Taylor, 2014). To achieve a more realistic presentation of products and services, image richness is an important factor to consider in marketing communication. Cheng, Chieng, and Chieng (2014) suggest that the richness of imagery can be affected by sound or animation. The realism of VR content can also positively affect consumers' attitudes towards the advertised brand and even stimulate purchase intentions.

The possibilities of VR are almost limitless. It is expected to herald several innovations that would impact human life and work in several different ways. Over 15 years ago, Cline predicted that VR would find its way into various aspects of human activity, with notable impacts on behaviour, cognition, and communication (Cline, 2005).

VR technology can change our daily lives—from how we communicate to how we spend our leisure time. VR is finding increasing use in sectors such as education, training, engineering, medicine, manufacturing, design evaluation, architecture and architectural walk-through, behavioural and clinical studies, physiotherapeutic treatment of psychological disorders, and entertainment and gaming (Halabi, 2020; Solmaz & Van Gerven, 2021; Safikhani et al., 2021; Brady et al., 2021; Teoh et al., 2021). VR technology is now widely recognised as a major breakthrough in technological advancement in science. Though still early days, many big tech companies (Facebook, Google, Apple, HTC, and Amazon) are injecting huge human and material resources into extended reality research and development. The billions of dollars expended thus far provide a glimpse of the projections they are making for the future of VR and other extended realities.

Features of VR that Support Advertising

4.1.1 Eye tracking. This feature (present in VR HMDs such as the HTC Vive Pro Eye or the Varjo VR-2 Pro) tracks the movement of the eye, recording its coordinates throughout the experience to indicate exactly what the viewer is seeing. For businesses and advertisers, determining the effectiveness of digital advertising has remained a key issue so that they can accurately determine how successful a medium is (Hall, 2020). Since eye movements have been linked to cognition, this feature would allow for the collation of more in-depth information about the user. It would also allow for more granular and precise monitoring and measurement of engagement with the object of advertising.

4.1.2 Immersion. VR is immersive. Users enter a virtual space, somewhat cut off from the physical world. The VR Head Mounted Display (HMD) covers their entire face, with headphones blocking out external sound, fully immersing the user in the VR world.

4.1.3 Physical Tracking and Live Rendering. During VR use, the device tracks the external and internal environment. By tracking the physical position and movement of the user, it is able to position the physical user within a defined virtual space. The computer continuously renders the digital images in accordance with the changes in the user's physical position around the play area. Thus, moving the physical head or body gives the illusion that one is actually moving in the virtual world. This synchronous and high-fidelity rendering of virtual imagery contributes to the experience of "presence" in VR, thus increasing the user's engagement with the advertised brand.

4.1.4 Interactivity. In VR, users can interact with digital objects the same way they do in real life (Kim et al., 2021; Vergari et al., 2021). They can "touch" digital objects, throw or lift them. Through the implementation of "physics" in VR, some of these motions respond appropriately to the amount of force exerted by the user, respecting the laws of physics (e.g. heavier objects move more slowly, or require both hands to lift). An example of this physics implementation can be found in the VR game *Boneworks* (Cameron, 2020).

Advertisements and Virtual Reality

In the field of cognitive and social psychology, VR has been dubbed the "empathy machine" (Hassan, 2020; Bujić et al., 2020). This is due to its ability (through transporting the user to a different virtual world) to take the perspective of people in some distant and remote place. Perspective-taking is possible by observing (in VR) other circumstances, or taking up the virtual body (embodying) of the within-VR character. Either way, perspective-taking illustrates virtual reality's visual power, which can be taken advantage of to increase a user's affinity and closeness to a product or brand. VR allows people to "escape" from the real world to a virtual one, thus finding application in industries like real estate, medicine, entertainment, and sports (Hassouneh & Brengman, 2015).

Due to its unique features, VR performs in a superior way some traditional advertising functions, such as informing, persuading, entertaining, educating, and providing social inspiration (Hamilton et al., 2021; Ahn, 2021; Spielmann & Orth, 2021). Using VR to create lasting impressions while achieving all the uses mentioned above can build a sense of value and loyalty to a brand.

A virtual world such as exists in VR allows for a flexible combination of different advertising methods in a single channel. Products can be "placed" as digital three-dimensional objects in VR, thus mimicking what happens in the real world with billboards or television. Advertising can also be placed as mini-games within a VR experience (Vedrashko, 2006).

A number of advertising agencies are now experimenting with VR In-Game Advertising (IGA), which is the placement of advertising in virtual reality experiences (Lupinek et al., 2021). One expected benefit of IGA over traditional advertisements is that consumers are less likely to multitask during game play. Apart from the long development cycle of video games, advertisers are still hesitant about embracing video games as an advertising platform due to the uncertainties surrounding accurate measures of advertising effectiveness in VR.

Another concern advertisers have with regard to integrating IGA into games is how to do this effectively without distracting the players and affecting their enjoyment of the game, which may alienate them from the

advertised brand. Studies are still ongoing in search of empirical support for the influence that virtual reality communication has on message perception and attitude towards a brand (Grudzewski et al., 2018).

The interactive nature of VR allows users to relate to objects representing brands in novel ways. In VR, users (consumers) can pick up products and examine them from different angles in a more realistic manner using one or two hand-held controllers. Highly realistic images and videos are easily integrated into VR applications, allowing players to interact with a "hyper-realistic" model of a product virtually (Petit et al., 2019). This type of interaction mimics real-world interaction and facilitates consumer learning of the product and improved familiarity with the product. Virtual reality thus holds promise as a new medium for rich, varied advertising methods that are more immersive, more absorbing, and more interactive. VR ads can take the form of "placement" of the 3D depictions of a product within an educational experience, on billboards, during musical performances, in movies, as 360-degree videos, short video clips, and games, and through cross-promotional offers and activities.

Some VR Ad Placement Techniques

Advertisers are still experimenting to find the most effective ways to place ads within VR, while causing minimal disruption to the user. The less disruptive an ad is, the greater the chance that the user will not feel any aversion towards the brand represented. Three of the methods for placing ads in VR are:

- Playing a one-time video at the beginning of the VR experience (Lee & Faber, 2007).
- Embedding the brand or product in the VR experience so that participants interact actively with it as a natural part of the experience (Redondo, 2012).
- Having the user "enter" a VR "virtual room" in the course of the experience. A virtual room (a sub-app within a VR experience) may contain an environment, an object (representing the brand), and the interactions. Users will be encouraged to visit the room, usually in

exchange for some reward, such as game points if the VR experience is a gamified one.

Here is how the cross-platform game engine owners Unity Technologies describe an attempt at IGA: "The Ad appears in a natural part of the game's storyline. Never forced, the player has the ability to choose to enter into the room, in which they then become fully immersed in the brand's experience for 30-60 seconds. Upon completion, they receive some sort of reward or gift for viewing, creating a memorable experience" (Unity3D, 2019).

Hierarchy of Effects Model

The Hierarchy of Effects model describes how advertising influences a consumer's decision to purchase or not purchase a product or service. Determining the hierarchical processes in marketing allows us to predict behaviour and obtain information on what advertising strategy to adopt. This process should aid the organization and execution of tasks and the exercise of different functions (physical or conceptual) within a firm (Preston & Thorson, 1983; Barry & Howard, 1990). It was conceived by Lavidge and Steiner (1961) and is one of the leading theories in the marketing communication framework (Kucuk, 2017). This hierarchy depicts the sequence of consumer learning and decision-making experiences when they have come in contact with an advertisement. It is structuring of a product or service's advertising message objectives, such that a sale is made at the end. With the Hierarchy of Effects model, the advertising campaign objectives include awareness, knowledge, liking, preference, conviction, and purchase (Fig. 11.1).

Lavidge and Steiner (1961) represented the communication process in their hierarchy models. They saw advertising as a long-term investment that moves the consumer through various steps and stages over time, beginning with product awareness to the "knowledge", 'liking', and 'preference' and moving ultimately to actual purchase (Barry & Howard, 1990; Wijaya, 2015; Augustin & Liaw, 2020).

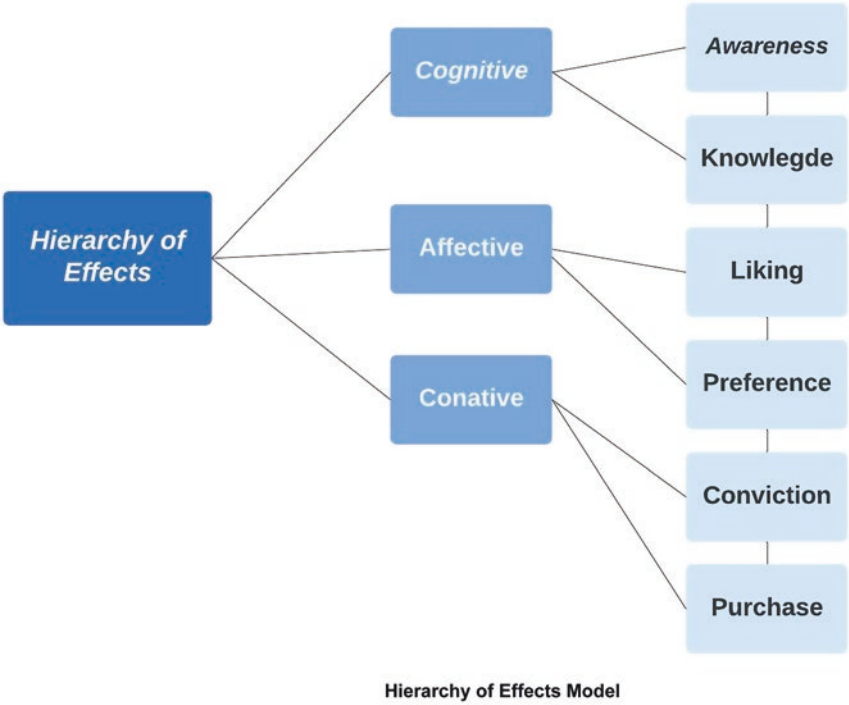

Fig. 11.1 Hierarchy of Effects models; Source: Adapted from Lavidge and Steiner

The model tries to explain the process through which advertising messages create an impact on the consumer. According to the model, the stages are grouped into three main processes. These are the cognitive, affective, and conative processes (Wensley, 2016). Cognitive implies that consumers have received the message and are aware of it. Message strategy in this area is used to create influence on customers' minds, beliefs, and knowledge. The affective process refers to consumers' attitudes and their reactions to the advertising messages. Message strategies invoke the feelings of customers, enhancing product likeability. The final process, conative, represents the actual purchase of the advertised product or service (Wijaya, 2015; Clow & Baack, 2007; Kerin & Hartley, 2015).

VR, Advertisement, and Hierarchy of Effects Model

The Hierarchy of Effects model (HoE) affords, through VR, a potentially better understanding of the customer through some unique features of the technology. According to the HoE, following an initial "meeting" with a brand, the customer follows six steps that should result in purchase or alienation. The steps are, chronologically: awareness, knowledge, liking, preference, conviction, and purchase (each successive pair representing respectively cognition, affection, and conation) (Miraki et al., 2021; Augustin & Liaw, 2020; Wijaya, 2015).

Compared to other technologies, such as TV, VR is potentially more immersive and interactive. A greater immersion, as is found in VR, means that the user feels more "present" in the virtual environment, resulting in an increased awareness of both the environment and the objects therein. Through subjective measures (surveys or interviews), or objective measures (eye-tracking features of high-end VR devices), advertisers are able to measure the degree of awareness attained by the user during the VR experience.

VR is also more interactive. Rather than passively "watching" the scenarios, users can more actively interact with the environment and objects as if in the physical world. Combined with the immersive property, such interactivity can potentially increase the user's theoretical and practical understanding of the brand within VR (knowledge). Like awareness, this knowledge can be captured through both subjective and objective measures, providing the second dimension of the Hierarchy of Effects model.

The realism of VR provided by a greater immersion and interactivity should increase the chances that a user will return to such VR experiences (Al-Ghamdi et al., 2020; Farah et al., 2019), with the result that they encounter the advertised brand more frequently. In the presence of alternatives, a user's decision to repeatedly interact with a particular VR experience may connote a greater liking and preference. This can provide measures of the third and fourth dimensions of the HoE, respectively. A greater liking and preference ought naturally to result in a greater conviction about a brand or product and ultimately purchase.

In one case of marketing communication in a more developed market, OREO, the largest brand owned by Mondelēz International in the United States, in 2016 ran a VR advertising campaign called "Wonder Vault" to launch a new product. The VR experience transported viewers into a magical land of milk rivers and cupcake-flavored Oreo biscuits. This phantasmagorical 360-degree experience was viewed with a cheap VR device made from cardboard (the Google VR Cardboard). This marked Oreo's first venture into VR (Sharma, 2020). Even though the VR viewer was not sophisticated, it still resulted in an increased awareness and knowledge about the new product, more people got to develop a liking for the product, and there was an increase in audience engagement. Ultimately, more than 3.6 million people who viewed it were enticed (Harwell, 2016).

HoE in VR

We illustrate HoE in VR with a hypothetical case. A game called *VR Sports Challenge* playable in the Oculus Rift allows a player the use of his virtual hands to play one of four sports: baseball, basketball, hockey, or American football. In the (virtual) playing field of the American football game, for example, the player sees an environment that looks like the real-life equivalent. Although the game has no VR advertisement, an advert could be placed across the stadium/arena advertising boards. To thus create awareness about a brand, the advert has to be engaging but simple. The realism of the VR experience already makes objects appear life-size and close, which positions the brand to be properly seen, thus ensuring awareness and knowledge—the *cognitive* process.

The *affective* stage is where the consumer builds a liking for what is being advertised and begins to consider the product's benefits. The uniqueness of the product and how it differs from others is also considered, helping the consumer make a choice. One feature of VR is the simulation of "presence", which is here influenced by an absorption of the user in the experience (Barnes, 2016). It can facilitate the *affective* stage where the total attention of the user is in the experience.

The *conative* stage is the behaviour or action stage of the process. This is when the consumer, after considering the benefits and costs, and having made a decision about their preference, then buys the real product after "coming out" of the virtual experience.

VR provides advertisers a further ability to arouse the player's desire towards increasing their conviction about purchasing the advertised product. One way to do this would be to allow the consumer to "test" or "feel" the product, both of which can be simulated in virtual reality, thus improving their confidence in their purchase decision-making.

Recommendations

Virtual reality promises to be a major component of a digital technology advertising future, and advertisers should therefore include it in their marketing plans. However, the novelty of the technology requires adequate skills and knowledge to enable advertisers to design and deploy it appropriately. This would require planning for the needed training and education of talents. For the HoE model, the advertisers deploying it in VR need to understand the right persuasive skills and deploy it for success.

VR experiences work well with storytelling. Advertisers using VR to increase brand awareness and affinity should consider embedding these within stories, which may have a greater chance of appealing to varied audiences, leading the consumer to thinking, feeling for the product, and then acting towards purchase.

VR can potentially be so real that users think they are in the physical world. Advertisers can take advantage of this by deliberately designing VR experiences that are as similar to the real brands as possible. This should increase brand recognition and potentially grow affinity.

Users' preferences often depend on their characteristics, such as demographic uniqueness. Advertisers in VR should invest in user-centric research in order to better adapt VR experiences to their uniqueness.

A device that is as immersive and interactive as VR potentially collects a huge amount of personal information of the users, often in real time. Adequate consideration should therefore be given to the privacy and

security of user information, as well as protection of their right to privacy, especially among more vulnerable users, such as children.

Conclusion

Virtual reality (an expression of extended reality) presents a novel and potentially more engaging digital advertising medium. This chapter applies the Hierarchy of Effects model in a novel way to VR. We suggest that VR's inherent abilities to induce a more immersive perspective-taking and the more realistic interaction made possible with digital objects affords advertisers a better understanding of the cognitive, affective, and conative processes involved in users' interaction with a brand. This improved understanding should also cover the steps of awareness, knowledge, liking, preference, and conviction about the brand or product, hopefully leading to taking action: purchase.

Africa possesses one of the fastest-growing populations and markets. Its relatively young population is also one of the fastest adopters of digital technology, evidenced by many technology startups. The cost of consumer-grade VR is falling and, although it is still an innovative technology in Africa as in the rest of the world, since technology democratises digital access, the continent should prepare to *leapfrog* development by taking advantage of VR.

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