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An Introduction to the Special Issue "Virtual Reality in Marketing": Definition, Theory and Practice

ABSTRACT

Virtual reality is an emergent technology of keen interest for marketers based on the novelty, uncertainty, complexity, and potential conflict it presents for marketing. The Special Issue provides insights into several aspects of virtual reality and its implications to the field of marketing. This article introduces the special issue and focuses on highlighting the articles in the special issue relative to offering a definition of virtual reality, highlighting theoretical contributions of the papers, and recommending managerial action for marketers wishing to leverage the opportunities provided by virtual reality.

Companies increasingly turn to digital solutions to connect with customers and to enhance clients' engagement with their products and brands (Barreda, Bilgihan, Nusair & Okumus, 2015). While most firms have a strategy that incorporates Web 2.0 platforms into their marketing mix (Batra & Keller, 2016), practices regarding the use of virtual environments and Virtual Reality (VR) are not as crystallized. In fact, the arrival and increasing penetration of VR applications pose a new set of challenges for companies. In the past, the infrastructural and computational demands presented entrants with severe limitations (Brooks, 1999; Nazir & Lui, 2016). With substantial recent technological advancements, together with the launch of several commercial VR head mounted devices, these limitations are increasingly phasing out, enabling businesses to exploit and embrace the creative potential inherent in these innovative technologies (Carr, 2016; Scroxton, 2016).

The present Special Issue focuses on an early exploratory investigation to how VR solutions are expected to modify the way we think about marketing, and how the different stakeholders may need to adjust and adapt their traditional practices to meet the changing needs of the market. Our initial review of the extant literature on virtual reality confirmed the existing lack of scholarly work, with the majority of the articles representing the areas of information science and general management, capturing substantially lower instances of marketing contributions.

In this editorial, we begin with a brief overview of the evolution of virtual reality within marketing scholarship, providing a preliminary definition for this rather complex phenomenon. Following, we present highlights of the contributions that are compiled in this issue, separating scholarly and managerial implications.

1. Virtual Reality – A complex construct

The concept of virtual reality is not a recent one. Sutherland (1970) envisioned virtual reality as a model of the real world that is maintained in real-time, sounds and feels real, and which the user can manipulate directly and realistically. Additional and more concrete references about virtual reality were offered by Krueger (1993) within his more general overview of interactive immersive environments. During the early 1990s, the majority of VR applications entailed simulations for training and design purposes, although still facing serious limitations in terms of end-to-end system latency (Brooks, 1999). Not surprisingly, the majority of early definitions approached virtual reality from a predominantly technological perspective that emphasized hardware requirements such as computers, gloves and headsets, and the necessary and harmonious interplay between the respective technological innovations (Gold, 1993; Greenbaum, 1992).

In his seminal paper, Steuer (1992) criticized these device-driven definitions for their heavy technological emphasis and lack of consideration for user experience. In his view, a theoretically grounded definition was needed to position virtual reality against other types of mediated experiences. Consequently, Steuer (1992) conceptualized virtual reality as "a real or simulated environment in which a perceiver experiences telepresence"; a construct which he subsequently defined as "the experience of presence in an environment by means of a communication medium" (p. 76). Several similar definitions followed that – while acknowledging the role of technology in the creation of the environment, increasingly shifted the focus from technical details towards emphasizing the importance of user presence and the exploration of the nature and characteristics of user experience (Biocca, 1992; Schuemie, van der Straaten, Krijn & van der Mast, 2001). A more comprehensive definition was put forth by Brooks (1999), who described VR experience as an encounter in which "the user is effectively immersed in a responsive virtual world" (p.16) in a way that allows a dynamic control over his or her viewpoint. Berg and Vance (2016) expanded upon this by positioning VR – also referred to as immersive computing technology (ICT) – as a "set of technologies that enable people to immersively experience a world beyond reality" (p.1) and engage in human encounters that mimic their own interpretation of the world around them. The above definitions highlight the inherent complexity of virtual reality, and demonstrate the increasing richness by which scholars capture not only the technical but also the human side.

Building on the principal elements represented in prior conceptualizations, we offer a comprehensive definition that captures the key distinctive characteristic features of virtual reality experience. Such a definition is also essential to serve as a frame of reference based on

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which VR experiences may be differentiated from encounters that take place within other forms of innovative communication media settings. Correspondingly, the following definition is proposed:

> *"Virtual reality incorporates computer-generated, interactive and highly vivid environments that enable the user to achieve a state of immersion through the ultimate experience of telepresence, and facilitate engagements in human encounters that are multi-sensorial, dynamic and resemble the user's perception and understanding of the real world."*

This definition is intended to serve as a starting point, and will be complemented via the contributions presented in the Special Issue.

2. Special Issue contributions

In the following section, we highlight key takeaways from the contributions showcased in the Special Issue, with particular attention to identifying implications for scholars and practitioners in the field of marketing. In addition to their specific aims, many of the articles offer a comparative assessment concerning the affordances of VR-based solutions against more traditional platforms and applications, which is important in terms of enhancing our general positioning of virtual reality in the field of marketing.

3. Implications for marketing scholarship

From a conceptual standpoint, the contributions of the current Special Issue confirm as well as complement the above definitions in meaningful ways. As a starting point, following up on earlier definitions of VR, Manis and Choi (2019) call for a clear distinction to differentiate between VR content, hardware and experience. Expanding upon Steuer (1992)'s conceptualization, the authors define the *VR content* "as an environment simulating a sense of presence in the real world or an imagined world". In their view, the *VR hardware* category brings together and extends earlier definitions within the field of Immersive Computing Technology (ICT), and here the authors emphasize the equipment that enables "the user to interact within, view and experience virtual reality content". Finally, building on the earlier work of Brooks (1999) and Berg and Vance (2016), Manis and Choi (2019) conceptualize *VR experience* as "an encounter in which the user is effectively immersed in virtual reality content by means of virtual reality hardware".

These differentiations are echoed in the work of Flavián, Ibáñez-Sánchez and Orús (2019), offering greater clarity in terms of crystallizing the boundaries between the new realities, technologies and increasingly hybrid experiences brought upon by VR encounters. More specifically, the authors present a framework that integrates technological embodiment, psychological presence and behavioral interactivity to propose a new taxonomy of technologies, which they refer to as the 'EPI Cube' (i.e. embodiment, presence and interactivity). The authors conclude that via adopting this triadic lens we may achieve a more comprehensive understanding of technology-enhanced experiences and ultimately the customer journey.

Frameworks that propose such distinction are helpful as they not only capture the multi-disciplinary orientation of VR, but also provide us with a useful framework for managing scholarly contributions more effectively. Furthermore, although the ultimate user experience will incorporate all three categories, it is useful to contemplate their interrelatedness and mutual impact on one another. Subsequently, the Special Issue contributions will be separated by their predominant emphasis on hardware, content and experience.

3.1. VR Hardware and adoption / technological embodiment

Based on their review of the extant literature, Manis and Choi (2019) highlight that the vast majority of VR based studies focus on content, including elements of telepresence, vividness and interactivity. At the same time, few of these studies examine VR content with hardware that is appropriate to stimulate an elevated sense of telepresence using high quality 3D simulation in highly immersive settings. In their contribution, the authors apply the Technology Acceptance Model (TAM) to VR, and develop and test a VR Hardware Acceptance Model (VR-HAM). Beyond the traditional elements of the original TAM, the authors find a robust impact of 'curiosity' on perceived ease of use, which is interesting and could be further explored in future work.

Laurell, Sandström, Berthold, and Larsson (2019) contribute to this line of work by exploring ways of VR technology diffusion, and identifying potential barriers to VR adoption. By employing Social Media Analytics (SMA) and Machine Learning (ML) to explore the impact of technology, network, price and triability, the authors find both technological performance and the amount of complements available as important barriers to VR adoption. Meißner, Pfeiffer, Pfeiffer, and Oppewal (2019) explore eye-tracking technology – a way to measure consumer visual attention during a shopping process – in a virtual reality context, and highlight numerous advantages above and beyond those possible in more conventional field settings.

3.2. VR content / psychological presence

The research put forth by Kandaurova and Lee (2019) contributes to the area of VR content, with their investigation of the impact of VR on empathy, guilt, responsibility and donation of time and money in a social marketing context. In their comparisons of content viewed on a VR-based versus traditional two-dimensional video media platforms, the authors conclude that VR platforms increase empathy, responsibility, as well as encourage higher intentions to donate money or volunteer time towards a social cause.

Two of the articles address the issue of self-presentation in virtual settings. Messinger, Ge, Smirnov, Stroulia, and Lyons (2019) explore the relationship between avatars constructed in virtual environments and the individuals they represent. The authors find relatively high levels of congruence between real life and virtual selves, with enhancements in the virtual avatar across dimensions that are perceived as weak in real life. Similarly, in comparing Augmented Reality (AR)-based virtual try-on product presentations with more traditional Web-based platforms, Yim and Park (2019) find AR-based solutions particularly advantageous in the case of customers with an unfavorable body image. Although the aims of the current Special Issue focus predominantly on VR-based solutions, Yim and Park (2019) offer a systematic comparison between AR and VR, and thus also complement contemporary scholarship in a meaningful fashion.

3.3. VR experience / behavioral interactivity

We begin this section by highlighting the contributions offered via conceptual reviews in the current Special Issue, and then move to empirical pieces. Building on their comprehensive literature review, Cowan and Ketron (2019) propose a dual process model for effective VR usage, differentiating between high and low levels of customer involvement. In their assessment, high product involvement situations that boost tangibility and immersivity may be particularly desirable when product knowledge is not too elevated, as in these cases the VR experience works particularly well to enhance imagination, telepresence, and subsequently co-creation opportunities. The authors caution against employing the same approach when product knowledge is already high, as in these instances higher tangibility and immersion may induce information overload and ultimately lead to frustrations and suboptimal outcomes. Loureiro, Guerreiro, Eloy, Langaro, and Panchapakesan (2019) provide additional insights and identify important takeaways for scholars as well as practitioners along each stage of the consumer journey; namely pre-purchase, purchase and post-purchase. Boyd and Koles (2019) extend the current literature on the customer journey from a value-in use perspective, with particular

emphasis on the B2B context; in turn addressing a substantial lack in the contemporary literature.

Moving on to empirical contributions, in their study exploring the differences in effectiveness of different VR formats and devices, Martínez-Navarro, Bigné, Guixeres, Alcañiz, and Torrecilla (2019) establish significant variations between traditional versus VR-based commerce. In particular, they demonstrate a dual route to illustrate the influence of VR on consumer purchase intentions in virtual stores; one through emotions and sense of presence, and another through the affect evoked by the virtual environment and brand recall.

In their exploration of virtual product placement in VR videos, Wang and Chen (2019) employ the theory of dialogic engagement to explain engagement / meaning making via visual components in interactive media. By manipulating the extent of interactivity and dynamicity across three different types of product placement conditions, the authors link high levels of dialogic engagement with more pronounced co-creation experiences that can maximize the co-creating process of meaning. In this sense, interactivity and dynamicity are fundamental to obtaining an immersive and meaningful encounter. Along the same lines, Hudson, Matson-Barkat, Pallamin, and Jegou (2019) found interaction with virtual objects to increase a sense of immersion. In particular, immersion, interaction with the virtual environment, and social interaction were found to be salient to satisfaction with the VR experience and ultimately boost consumer loyalty.

Although most contributions emphasize the ability of VR-based solutions to outperform more traditional platforms, it is not always the case. In particular, within the context of experiential consumption, Deng, Unnava and Lee (2019) conclude that in situations with high perceived similarity between the real and the virtual experience, VR-style solutions may dissuade consumers from future consumption. These findings confirm that careful attention must be given to the benefits and overall aims associated with VR usage, and some situations may be better suited for such engagements than others.

4. Implications for management practice

Managerially-speaking, virtual reality is a nascent technology but one of great interest for marketing managers based on industry data suggesting 7% of businesses currently deploy VR while 23% of firms have plans to deploy VR in the next 3 years (BRP-Consulting, 2018). Current implementation can best be described as an act of discovery given that 64% of firms deploying VR describe their efforts as experimental (Capgemini, 2018). It can also be said that VR's role in marketing can only be expected to grow in prevalence and importance according to reports suggesting that the amount of time consumers spend in front of a screen recently reached 47% in 2017 compared to 41% in 2015 and 33% in 2007 (Hall & Takahashi, 2017). Not to be ignored, experts expect that VR will play an equally important role in business-to-business marketing between business enterprises (ICTC, 2017).

The papers on virtual reality in marketing published in this special issue of JBR provide important insight for marketers seeking assistance in the deployment of VR into various aspects of marketing. From a product perspective, research by Messinger *et al.* (2019) suggests that VR can be used for product development based on the finding that individuals use VR environments to create improved images of themselves. Similarly, Yim and Park (2019) discusses consumers' use of VR for self-expression and find that consumers with unfavorable self-perceptions may find VR most rewarding as a way of expressing their desired self. These enhanced self-representations made available via the use of avatars inform marketers about customer aspirations, and proper interpretation of them can be used as the basis for new product development initiatives that allow and facilitate consumers to achieve these aspirations.

Boyd and Koles (2019) discuss how VR enables marketers to enhance the product value experienced after purchase. Focusing on business-to-business (B2B) market situations, the research argues for the use of VR in removing obstacles that can inhibit buyer and seller collaboration toward value creation. The paper by Boyd and Koles represents the only research focusing on B2B markets in this collection. This is concerning because VR is expected to equally impact B2C and B2B markets. Nonetheless, it is important to recognize that B2B markets are unique from B2C markets for multiple reasons including a larger presence of group buying, greater information search, and heavier usage of long-term contractual arrangements. Our hope is that future research will fill this void in the B2B marketing literature, and the paper by Boyd and Koles can act as a catalyst motivating future research.

The papers also address the issue of how VR can enable effective promotional activity. Wang and Chen (2019) provide empirical evidence indicating that allowing consumers to have control in VR environments increases their interest in a brand and willingness to consider the brand. They also highlight the role of video as a forum for VR-related product placement, and the authors offer suggestions regarding the implementation of VR for promotional purposes. Further evidence of VR's role from a branding perspective is provided by Martínez-Navarro *et al.* (2019) which suggests that promotion can be more effective than traditional offline environments in achieving important promotional outcomes like brand recall.

In addition to brand recall, the papers identified several other financial and behavioral outcomes associated with VR. From a sales perspective, analysis reported by Martínez-Navarro et al. (2019) suggests VR experiences can enhance consumer purchase intentions. In addition to advancing intentions toward initial purchases, Hudson *et al.* (2019) show that VR can also enhance important post-purchase outcomes relevant to the field of marketing, including satisfaction and loyalty. Donations and volunteerism are additional consequences of importance to marketers that were found to be associated with VR (Kandaurova & Lee, 2019). The piece by Loureiro *et al.* (2019) presents an extensive review of the extant literature showcasing relevant studies in simulated realities within the area of VR and marketing. Employing a text-mining approach, the authors identify seven key topics that appear to be most prevalent, including virtual setting, manufacturing and new product development, gaze tracking and service configuration, interaction, experiential marketing, VR applications, and finally communication and social media.

Despite the multiple positive outcomes linked to VR, excitement for these findings must be tempered in the context of research conducted by Deng, Unnava and Lee (2019). The researchers show that within the context of museum visits and leisure travel, VR can actually reduce purchase intentions for experience-related products because of VR's ability to realistically replicate actual consumer experiences. Future research is needed to identify what additional contexts VR may be able to potentially replicate before marketers can fully understand the extent to which VR may cannibalize product sales. Along these lines, the contribution by Laurell *et al.* (2019) emphasizes the persistence of performance limitations associated with contemporary VR technology that is disadvantageous in that it is likely to hinder adoption and ultimate success. On an encouraging note, Meißner *et al.* (2019) highlight the ability of VR settings to complement eye tracking methodologies in order to advance consumer research, providing marketers with innovative ways to assess and enhance shopper experience.

Finally, several papers provide recommendations related to the implementation of VR by marketers. Cowan and Ketron (2019) discuss the importance of considering the level of product involvement when using VR and discuss how the choice of high or low involvement can impact brand engagement by making consumer decisions more taxing from a cognitive perspective. Flavián, Ibáñez-Sánchez and Orús (2019) provide a typology for use when implementing VR. The research focuses marketers on considering VR implementation from a technological, human, and behavioral perspective and explore how these VR-related factors can potentially impact customer experience associated with the VR technology. According to Manis and Choi (2019), whether

to have high or low involvement or to focus on technology, human, and/or behavior should be driven by the purpose of creating an enjoyable experience for consumers because enjoyment is a key factor driving consumer adoption of VR and VR's subsequent impact on purchase intentions.

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