

A Study on Application of Technology in Marketing with wpecial Reference to Augmented Reality

Neelesh

Sachin

III Semester MBA,

Post Graduate Department of Business Administration,

Alvas institute of Engineering & technology

Mijar, Moodbidri, Dakshina kannada Dt

sachinpoojary9110@gmail.com

neeleshgowdamadwa@gmail.com

Abstract

In recent years, both managers and academics have given augmented reality (AR) more consideration. Aspects of AR that have received little attention in the marketing field include its effect on sales or brands, for example. A comprehensive strategy to AR is still lacking, though. As a result, the authors describe "Augmented Reality Marketing" as a brand-new, strategically sound, and perhaps revolutionary marketing subdiscipline. In addition, they suggest the BICK FOUR framework (branding, inspiring, convincing, and keeping) as a means of organising pertinent objectives as they explore a sophisticated customer journey model for AR Marketing strategy. The establishment of various key distinctions between AR Marketing and conventional digital marketing ideas is another addition. For example, the concept of reality has been redefined (reduced reality, normal reality, and augmented reality).

Introduction

A growing body of research tackles marketing-related issues surrounding Augmented Reality. In AR, virtual content is integrated into a user's perception of the real-world. The extant research of AR Marketing has only sparsely outlined the broader umbrella of AR. AR Marketing represents a novel, potentially disruptive, subdiscipline within marketing. More specifically, similar to the advent of the world wide web accompanied by online marketing, search engine optimization, and social media, AR-infused marketing activities can be positioned within AR Marketing.

Here, we synthesize findings from academic research, industry presentations, and discussions during the 5th International AR VR conference with industry observations to present a definition of AR Marketing. Specifically, this special issue reflects a collection of articles enhancing the understanding of AR and its contributions to the marketing discipline. In total, several articles explore new AR Marketing-related concepts and developments, ranging from AR shopping apps AR experiences associated with flow. The various research contexts assess managerial perspectives, luxury products, and web-based versus AR presentations In light of these findings, we discuss (1) AR Marketing and (2) its unique characteristics. As such, AR represents a strategic element beyond being a promotional tool for sales and being limited to a customer scope. We also introduce, as part of AR Marketing, an AR customer journey model and summarize common objective.

Objectives

According to the issues discussed in the literature review, the aim of this research paper is to look at the ways in which AR experiential marketing leads to the creation of a perceived experiential value, which is widely accepted to contribute to the development of customer satisfaction. The objectives for this study will focus on two areas agreed by most scholars to be the main components of experiential value: functional and emotional. The three objectives are as follows:

Objective 1: To explore the ways in which AR experiential marketing can enhance convenience. The first

objective is looking at convenience defined for this study as the functional value offered by the opportunity to experience the brand/product before buying it, therefore providing an answer to questions like "how time and cost efficient is this application for consumer?", "how many functional aspects of the product can the consumer experience through AR?". Convenience was demonstrated to be a key issue in increasing the purchase consideration and therefore determining the movement of consumer from the pre-purchase stage to the during-purchase stage, having a major contribution to the cumulative aspect of customer satisfaction .

Objective 2: To explore the ways in which AR experiential marketing influences enjoyment levels. Enjoyment is considered by many academics as one of the most important emotional and the prime aspect searched by consumers when engaging in a consumption experience. This is also one of the primary links between experiential marketing outcomes and customer satisfaction.

Objective 3: To explore the ways in which AR experiential marketing affects brand attitude. Attitude as an emotional value was chosen for this paper because brand attitude is always a communication objective in marketing and if there is no positive attitude towards the brand among the target audience, then there is little purchase likelihood which will bring to an end the customer's purchasing process and therefore not creating any customer satisfaction.

Research Methodology

Because this research focuses around the concept of perceived experiential value, the methodological approach chosen will be interpretative "underpinned by the belief that social reality is not objective but highly subjective – shaped by our perceptions". The lack of any AR experiential marketing research studies and the few mainly quantitative experiential marketing studies have led the researcher to take an exploratory qualitative approach which will also extend marketers' understanding of AR experiential marketing's effects on experiential value. This approach will allow a deeper mining into the participants' mind and will provide a more accurate representation of consumers' subjectivity. Focus groups will be the method used for this qualitative study because they are dynamic group discussions much like real unconstrained everyday conversations which have the capacity of surfacing meanings and emotions about AR experiential marketing applications that might not be articulated elsewhere. They also help in identifying particular attitudes and behaviours, being one of the popular methods of gathering consumer responses to marketing communications. Because the objectives of this research are related to functional and emotional values perceived by consumers, the interaction with other group members may motivate the participants to expand and refine their own ideas and perceptions of AR experiential marketing. A semi-structured approach informed by the previous- mentioned objectives will be used in conducting these focus groups being rather flexible but also overcoming the researcher's inexperience in research studies which, in the case of an unstructured approach, might become risky leading to serious deviation from the subject (Bell, 2005). Before starting the actual data collection, a pilot focus group will also be conducted, in order to gain prompting, probing and accuracy experience and to discover any potential "blind spots" in the creation of the methodology tools. The number of focus groups which will be used for this research will be four (a reasonable number for the relative small scale of the research), divided as following: two focus groups consisting only of male participants and two focus groups consisting only of female participants. This separation between genders is the result of the nature of this research. Because the subject of this study is not only related to marketing but also to technology (AR), the researcher wants to avoid a discussion monopolized by men who historically speaking are more attracted to technology than women. This structure of focus groups is only designed to create a more complete view of the topic and is not intended to assess gender specific answers. However, if the analysis will show such an important difference, one of the recommendations for further research will be to look deeper at the way in which different genders perceive AR experiential marketing communications. Each group will have five or six members, a size which is neither too small and easy to dominate by one member nor

too large and characterized by boredom and frustration. The sample chosen for the study will consist of young English and international Bournemouth University students aged 18-30 years because this age group is usually targeted by AR applications and mixed nationalities for a better understanding of the AR experiential marketing effects across different cultures and to inform future research directions. At the end of each focus group the discussion will be transcribed and coded – the first step in creating categories, patterns and concepts. Some ideas may emerge after each focus group which will be tested as the research process progresses. The findings will not only be compared between focus groups but also with the literature related to experiential marketing; peer checking and member checking will also be used in order to avoid overlooking important elements.

Literature Review

Because of a scarcity of academic literature and research studies on AR experiential marketing, this literature review will start by focusing on the little research and small number of papers concerned with experiential marketing in general which build the rationale and the components of this research study. As a result of the DBR approach, the majority of the findings resulting from AR research and evaluation presented in this review pertain to the actual design of the units and how these designs are aligned with both theoretical constructs and unique AR affordances. Although the majority of the findings focus on design, we begin the review with unique affordances and limitations AR currently presents to educators, as well as the most frequently reported learner outcomes as found in the literature at this stage in AR's development.

Augmented Reality (AR) is a merger of reality and virtual objects in a real environment that runs in actual time and interactive to immerse in realistic experience. Basically, AR was created and developed by Ivan Sutherland in 1960 to be adopted for health applications, engine maintenance and information systems. However, since the rise of the consumption of smartphones and digital devices, AR technology has been extended to several new functions such as advertising, gaming, tourism and education. There are various ways to experience AR technology through devices such as head-mounted display, laptops, smartphones, tablets and most recently is the use of smart glasses. AR is also known to have two categories which are marker-based and markerless AR. For based-markers AR, it requires an image labelled specifically to locate 3D object positions on real-world images while marker-less AR using a combination of compass and location (GPS) and electronic devices by pointing to a position in the physical world for transmitting information in 3D. The technology can provide users with information that is relevantly significant and pleasurable. Interacting with different environments through AR could provide a novel and vast experiences. The interest of the developers and companies in using AR has significantly increased due to the ubiquitous adoption of smartphones and other mobile devices. Consequently, AR is shifting from the laboratory into consumer markets.

Hypothesis

We present a real-time model-based line tracking approach with adaptive learning of image edge features that can handle partial occlusion and illumination changes. A CAD (VRML) model of the object to track is needed. First, the visible edges of the model with respect to the camera pose estimate are sorted out by a visibility test performed on standard graphics hardware. For every sample point of every projected visible 3D model line a search for gradient maxima in the image is then carried out in a direction perpendicular to that line. Multiple hypotheses of these maxima are considered as putative matches. The camera pose is updated by minimizing the distances between the projection of all sample points of the visible 3D model lines and the most likely matches found in the image. The state of every edge's visual

properties is updated after each successful camera pose estimation. We evaluated the algorithm and showed the improvements compared to other tracking approaches.

Research Methodology

Data Collection

Secondary Data

We used contextual interviews to collect primary data as it allowed us to interview and observe the participants while they also interacted with the ARM applications. Contextual interviews are found to be a method especially suitable when the full understanding of a topic involves other people or as in our case, processes that must be observed to be fully understood. Hence, contextual data collection is advantageous if the aim is to see the usage of a service or device in a more real-life context as well as learn about the benefits, possibilities, and potential barriers experienced by the user. To get a more thorough view of consumers' perception of ARM in the context of HIPs, it was of relevance to let the participants interact with the technology so that they could discuss their hands-on experience and develop an attitude towards it, rather than solely base their answers on beliefs and intentions. The contextual design means we combined semi-structured interviews with observations. Hence, we received the participants' perceptions of ARM via profound discussions while also having the opportunity to collect real-time data and spontaneous comments via observations of the participants interacting with ARM applications. The semi-structured interviews imply a deeper exploration of respondents' thoughts, allowing for new ideas to be recognized throughout the interviews. It is also suitable in qualitative research as it helps answer the questions' "how" and "why". To meet the aim of this study and follow the interpretive design, open-ended questions were used as it allowed follow up questions that enabled fostering the exploration of the relevant topic and receiving more detailed information. Also, probed and laddering were used, which is a technique where one asks follow-up questions such as "why" and "how" to help the interviewee explain and build upon their responses. In turn, one gains a deeper understanding of the interviewees' perceptions. This is important when adopting a social construction philosophy, as it aims to understand the meanings the participants ascribe. The observational data collection enabled us to open up additional ways to obtain qualitative data by observing interactions while also exploring why reactions or activities pursued in a certain way. Hence, the observations enabled us to gain a nuanced understanding of the participants' direct feelings, attitudes, and thoughts also under active usage. Data collection through observations can undertake several approaches that differ in how the role of the observer is performed. In this study, we as observers remained detached from the activities performed by the informants. However, our role as observers as well as the purpose of the study was clearly stated to the informants, and where suitable, we participated by asking for clarifications or questions as informants expressed specific valuable information. This allowed us to be focused on our role as observers in relevance to the study's purpose, while also interacting with the informants and having conversations around relevant insights as these occurred. This approach of observation is referred to as observer as participant observation, indicating that we as the researchers observed the activities without taking part in these, but all concerned parties were informed about the researchers' role and purpose. Hence, this approach lacked emotional involvement from us as we did not share the real experience with the informants, however, enabled us to be focused on our purpose and minimize the risk of us being caught by our emotions. However, limitations with the method exist. When conducting qualitative interviews, the study's result is dependent on the reliance on respondents' accuracy. Their emotional strains, the ability to understand the studied phenomenon, as well as, the capability of expressing their thoughts when being asked to respond right away, impact the result. To reduce these limitations, we ensured to have enough time planned to not create a stressful environment, but instead encourage time for reflection, questions, and explanations.

Data Analysis

Through a thematic analysis, being when one identifies, analyzes, and demonstrates various themes within data important for the study's purpose. Thereafter, one uses these themes to address the research questions. It is a flexible and straightforward technique to derive conclusions, moreover, a suitable approach to qualitative research, which further supports this choice. The thematic analysis consists of six steps. The first step is to become familiar with the data. We did this by transcribing the contextual interviews immediately after they were held, which gave a good overview of the data. Thereafter, the transcripts were read thoroughly by both authors. We noted down initial codes across the entire data set by writing comments in the margins of the transcripts related to the research questions to remain focused on the study's purpose. In step three, we identified the initial themes by clustering codes that were similar or showed connections into categories and subcategories. In the fourth step, we reviewed the themes once again. Here, themes that were initially separated into two or three eventually became bulked into one. To illustrate this, we for example identified ARM is perceived to help the consumer receive either "positive confirmation" or "negative confirmation" to a purchase decision. These codes became the subcategory "confirming the decision" before it together with the subcategory "assisting the decision" became the theme "complementing tool". This reveals the fifth step of defining and naming themes. The four final themes were derived from all interviews, but to varying degrees and from different perspectives. Figure 2 visually presents the steps taken in the thematic analysis.

Findings

After presenting the empirical findings in Chapter 4, the extracted themes were analyzed and explained to answer the research questions. The analysis was conducted by reviewing the study's results and the literature presented in the Frame of Reference. Similarities and differences between our findings and extant literature were identified and compared, acting as the basis for the discussion. Some findings were confirmed by previous researchers, whereas also new findings were brought to light adding to current knowledge. Hence, by contrasting and reversing the data from different perspectives, the analysis reached a final conclusion fulfilling the study's purpose to help bridge the identified gap in literature on how ARM is perceived by consumers in the novel context of HIP.

Conclusion

The fragmented nature of academic and applied research on AR and VR has arisen as consequence of the interdisciplinary nature of the subject and the different academic domains of research, ranging from technology, to marketing and management contexts. Based on a critical review and synthesis of the chronological development of key debates on AR and VR research and retail applications, it becomes possible to frame a future research agenda. Possible directions to better realise the potential of AR and VR in the retail context are outlined below. Research indicates a need to develop more efficient and enhanced consumer-friendly shopping interfaces for the successful adoption and implementation of AR and VR in online retailing. Here, a shared understanding, and cooperation, between different disciplines (including Marketing, Retailing, Human-Computer Interaction, etc.) is key to designing effective virtual shopping environments. Collaboration between AR and VR technology providers and retailers also emerges as an important factor. Joining forces and skills to develop marketing and retailing strategies that effectively enrich and enhance consumers' shopping experience by comparing views, sharing insights and knowledge of consumers' characteristics towards acceptance of technology, dealing with barriers and requirements for implementation, needed innovations, market trends, etc. will be important. Conversely, some critics have claimed that although VR is helping enhance the in-store experience, there is a risk that it becomes more a tool for gaining consumers' attention than a viable in-store solution. Thus, it will only be adopted by a limited number of retailers particularly as the technology is costly and time-consuming to implement

while its return on investment may be minimal. Consequently, this is more likely to be a special technology for a small number of experience-driven retailers. Further research on how these phenomena are evolving and including different disciplines is needed to gain a fuller understanding. Regarding consumers' acceptance of these advanced technologies, in 2016 Facebook founder Mark Zuckerberg predicted that future VR headsets would look like a normal pair of glasses. This could potentially increase uptake by a broader range of shoppers by making them more socially acceptable (e.g. discrete and subtle), useful, easy and natural to interact with, and even fashionably acceptable. As for the near future, mobile technology offers a strong potential to be an important driver for consumer adoption of VR. Although consumers may currently be reluctant to purchase a VR headset, having the facility to view VR experiences and interact with products through their mobile devices will lower the barriers to adoption because they are already familiar and comfortable with the technology involved. However, AR and VR advocates have acknowledged different challenges. From a security and privacy perspective, AR systems, although very advanced, at the same time do not protect the user's privacy, thus allowing others to access or see information. This can be an advantage, as users do not need to wear or carry any extra viewing device, thus making the technology more acceptable; however, it represents a problem concerning privacy and security of information. AR and VR technologies are constantly evolving to enhance online retailing; however, further research is needed to assess consumers' evolving acceptance and usage of these technologies, examining whether perceived barriers concerning privacy, acceptability and price accessibility are likely to be overcome and the important managerial implications deriving from such insights. Overall, this review offers a number of contributions. It provides a detailed and critical review and synthesis of the chronological developments in AR and VR research and their application in a retail context. It also synthesises and examines important and current debates on the subject across different domains. Consequently, it signposts a clearer framework for locating future research inquiry and it highlights a research agenda that could provide the catalyst for this process.

Bibliography

- Cristian Gallardo (&), Sandy P. Rodríguez(&), Irma E. Chango(&), Washington X. Quevedo(&), Jaime Santana(&), Aldrin G. Acosta(&), Julio C. Tapia(&), and Víctor H. Andaluz https://www.researchgate.net/publication/326371346_Augmented_Reality_as_a_New_Marketing_Strategy
- Anjali daisy https://www.researchgate.net/publication/339111372_Relationship_Marketing_Through_Virtual_Reality_and_Augmented_Reality
- Agrawal, A.J. (2018). 13 reasons augmented reality hasn't achieved widespread adoption. TNW. <https://thenextweb.com/news/3-reasons-augmented-reality-hasnt-achieved-widespreadadoption>
- Alimamy, S., & Al-Imamy, S. (2021). Customer perceived value through quality augmented reality experiences in retail: The mediating effect of customer attitudes. *Journal of Marketing Communications*, 28(4), 428-447. <https://doi.org/10.1080/13527266.2021.1897648>
- Alimamy, S., & Gnoth, J. (2022). I want it my way! the effect of perceptions of personalization through augmented reality and online shopping on customer intentions to co-create value. *Computers in Human Behavior*, 128, 107105. <https://doi.org/10.1016/j.chb.2021.107105>
- Anney, V. N. (2014). Ensuring the Quality of the Findings of Qualitative Research: Looking at Trustworthiness Criteria. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, 5(2), 272-281.
- Arghashi, V., & Yuksel, C. A. (2022). Interactivity, Inspiration, and Perceived Usefulness! How retailers' AR-apps improve consumer engagement through flow. *Journal of Retailing and Consumer Services*, 64,

102756. <https://doi.org/10.1016/j.jretconser.2021.102756>

Azungah, T. (2018). Qualitative Research: Deductive and Inductive Approaches to Data Analysis. *Qualitative Research Journal*, 18(4), 383-400. <https://doi.org/10.1108/QRJ-D-18-00035>

Bart, Y., Stephen, A. T., & Sarvary, M. (2014). Which Products Are Best Suited to Mobile Advertising? A Field Study of Mobile Display Advertising Effects on Consumer Attitudes and Intentions. *Journal of Marketing Research.*, 51(3), 270–285. <https://doi.org/10.1509/jmr.13.0503>

Bell, E. and Bryman, A. (2007) 'The ethics of management research: An exploratory content analysis'. *British Journal of Management*, 18(1), 63–77. <https://doi.org/10.1111/j.1467-8551.2006.00487>.