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Impact of Augmented Reality on Marketing Effectiveness

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Abstract

Augmented reality is increasingly important in their marketing strategy for companies of all sizes. The potential of AR in the marketing sector is opening doors that were previously closed off to everyone save the most well-known firms. The new method of digital marketing technology technique known as augmented reality (AR) is examined in this article. AR combines the actual world and the virtual world in wide-ranging broad targeting in "Big Idea" and augmented reality allied the entertainment of digital marketing in the entire world. The use of augmented reality in marketing has discovered a novel and engaging method to engage customers with the company brand.

Keywords: *Augmented reality, marketing strategy, Customer engagement*

Introduction

The augmented reality (AR) interactive technology is actually addressed the limitation of websites for retailers that doesn't allow consumers to see the full exposure of body information. AR marketing can shape consumer behaviour by integrating digital information or objects into individual's perceptions of the physical world to support branding, sales, and customer service delivery strategies. This study contributes to the literature by shedding light on the effectiveness of AR advertising as a marketing tool. Consumers who have immersive experiences with AR technology often share their experiences and promote the brand to members of their social networks, thereby enabling firms to benefit from unpaid brand endorsement. A popular definition of AR is: "the superposition of virtual objects (computer generated images, texts, sounds etc.) on

the real environment of the user". AR is similar to virtual reality (VR) in aiming to enhance or enrich a viewer's experience. AR is better than VR for both resellers and end users as it allows wearing sundry virtual products without being required to visit a store and try them physically. Thus AR saves transportation and shopping time for consumers. AR displays, being compact and portable, is expected to supersede desktops, laptops, tablets, and smart phone displays in near future (Owyang, 2010). In this study an attempt has been made to develop a structural model to answer various research questions concerning impact of immersive experiences of mobile AR advertising on consumers' purchase intentions. The preliminary study with a young consumer sample confirms that immersive experiences can lead to AR satisfaction and increase both purchase intentions and shared social experience via viral marketing. The main study investigates the theoretical mechanisms with a broader sample and extends the structural model to determine whether the authentic experience of mobile AR app advertising influences new brand experience, which in turn influences consumer behaviour. The results are discussed with regard to the effects of AR mobile app marketing on consumer responses and which factors (e.g., consumer experiences) drive the effectiveness of promotional advertising messages in AR.

First Augmented Reality system was developed by Ivan Sutherland (Sutherland, 1965). Ever since Augmented Reality system was developed by Ivan Sutherland (Sutherland, 1965) there have been much research done on its benefits and application.

Augmented reality has opened in new vistas in marketing for attracting and engaging the consumers as it is now possible to experience AR with almost any web browser by using their smart phone camera or tablet. AR can also be used for heightening appeal of sales presentations and proposals. AR combines virtual objects and can provide users with sub immersive feeling by facilitating interactions to occur between the real and virtual worlds (Uematsu and Saito, 2008). Grasset et al (2012) opined that smart phones have the essential hardware system needed for AR e.g. camera, graphics, GPS etc. AR expansion has boosted e-commerce volume as today's consumers are willing to go for the brand new experience of utilizing AR in their specific fields.

Literature Review

The concept of AR is a combination of real and virtual environments, which is achieved by putting virtual elements into the user's world (Cawood and Fiala, 2007). Prior research has shown that AR engages users in real time (Baus and Bouchard, 2014; Azuma, 1997). AR and virtual reality (VR)

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differs in the fact that the former AR puts virtual elements into the users' worlds whereas the latter transports users inside virtual worlds (Cawood and Fiala, 2007; Cho and Schwarz, 2012). Therefore, AR technology allows users to bring virtual elements into their world by manipulating the objects and interacting with them (Azuma et al., 2001; Hilty et al., 2020). In the online/mobile shopping environment, AR technology increases consumers' satisfaction and consequently enhances purchase intention (Dacko, 2017). In this regard, AR is an advantageous tool in e-commerce (Revetria et al., 2019; Yim, Chu, and Sauer, 2017). After the terminology of AR was introduced in the 1990s (Thomas & David, 1992), the early stage of AR research mainly focused on the training and education area for instance, use of AR in combat simulations in the army (Whang et al, 2021; Feiner, MacIntyre, and Seligman, 1993) or ways to complement conventional education (Stewart-Smith, 2012). Of late, use of AR has expanded to retail (Brengman, Willems, and Van Kerrebroeck, 2017), games (Kogan et al., 2017; Morschheuser et al., 2017), healthcare (Khor et al., 2016; Leone, Schiavone, Appio, and Chiao, 2020), and the beauty industry (Andrade, Rainatto, Paschoal, da Silva, and Renovato, 2019; Yim, Chu, and Sauer, 2017). Regarding the AR literature, previous research in marketing has mainly focused on the media characteristics of AR (Javornik, 2016; Poushneh and Vasquez-Parraga, 2017; Yim, Chu, and Sauer, 2017), and consumer experience with AR (Hilken et al., 2018; Poushneh and Vasquez-Parraga, 2017). Prior research on AR has explained that interactivity, vividness, and richer product presentation formats are general media characteristics of AR (Hilken et al., 2018; Javornik, 2016; Parise, Guinan, & Kafka, 2016). In online/mobile shopping, AR offers consumer experiences with highly interactive and vivid contextual information using virtual try-on tools (Yim, Chu, and Sauer, 2017). For instance, Nike provides the 'AR coloring book' to consumers, which allows them to virtually wear, design, and customize products by themselves. The American sunglass maker Goodr reported a 32% increase in conversion rates after allowing consumers to virtually wear products through their AR try-on service (Williams, Garcia, and Ortega, 2020). Therefore, with immediate interaction, AR enhances the consumer experience by providing highly vivid, connected, and engaging experiences in the digital environment (Hilken et al., 2018). 2.3. Telepresence theory and AR Telepresence theory proposes that a medium's structure affects consumers' sense of telepresence and medium usage (Steuer, 1992). In particular, Steuer (1992) identifies telepresence as marker of consumer engagement characterized by vividness and interactivity (Chen and Tsai, 2012; Fortin and Dholakia, 2005; Otondo, Van Scotter, Allen, and Palvia, 2008; Steuer, 1992). Vividness refers to the "ability of a technology to produce a sensorially rich mediated environment" (Steuer, 1992, p. 80). It can also be defined as "the degree to which consumers perceive that a product

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presentation is two-way, controllable, and responsive to input" (McLean and Wilson, 2019). Prior literature established the connection between AR and telepresence (Hilty et al., 2020; Kim and Hyun, 2016). Therefore, considering the characteristics of AR, telepresence theory is adequate in explaining AR. For instance, AR gives consumers more control regarding exposure to information (i.e., interactivity) and offers more abundant sensory input via video and motion (i.e., vividness) than traditional formats (Coyle and Thorson, 2001; Jiang and Benbasat, 2007). Advent of new media technologies has facilitated active consumer engagement in value creation and delivery (Esmark, Noble, Bell, and Griffith, 2016). Previous research found that when consumers decide to engage in a certain product or situation, they feel a greater responsibility for the situation, which leads to higher satisfaction (Hui and Bateson, 1991). However, in this study, participants already received different product options (i.e., decisional control), so they had no chance to decide on the purchase. Therefore, this study only considers behavioral control and cognitive control as possible mediators between an AR experience and purchase intention.

Objectives

The main objective of this research is

- To assess the impact of augmented reality experiences in the field of marketing and advertising.
- To integrate the findings above and suggest possible managerial implications based on the findings.

Research Methodology

This Study empirically investigates how the presence of AR experience affects consumers' purchase intention, Behavioral control, & Cognitive control. Hypotheses are formed to test the relationship between dependent and independent variables. Participants with prior mobile shopping experience were selected and asked them to share their experience. This study collected data from both the male and female participants. After eliminating incomplete responses, a total of 12 responses were analyzed. The age of the participants ranged from 13 to 47 years. It is because AR is considered a major digital market trend in the industry.

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Participants were instructed to read a scenario (e.g., “You have decided to purchase a product”) and imagine that they were choosing a product from one of the known brands most preferred by young consumers. Participants were asked to search for information about the given options and to choose one. After choosing one product, participants were randomly assigned to one of two conditions:

(1) A condition with AR experience and (2) a condition without AR experience.

Participants under the AR experience condition were asked to fill out a questionnaire that measured behavioral control, cognitive control, and purchase intention. Meanwhile, participants who did not experience AR, were provided static pictures of the product, and were asked to directly fill out questionnaires. To reduce time bias, we controlled the total time spent to be equal in both conditions.

All items were rated on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). The coefficient alphas (Cronbach’s α) for the three measures show high internal consistency (behavioral control: $\alpha = 0.901$; cognitive control: $\alpha = 0.897$; purchase intention: $\alpha = 0.873$).

Analysis & Findings

Table 1

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Component Matrix					
	Component				
	1	2	3	4	5
AR1	**.633**	-.466	.097	.361	.440
AR2	**.625**	-.393	.188	.162	-.085
AR3	**.612**	-.200	.445	.478	-.088
AR4	**.661**	-.176	-.002	-.170	.051
BC1	.440	**.681**	.020	.175	.361
BC2	-.085	**.653**	-.494	.210	.162
BC3	-.088	**.692**	.079	-.563	.478
BC4	.051	**.651**	.019	.440	.478
CC1	-.170	-.243	**.615**	-.085	.100
CC2	.175	.004	**.555**	-.088	.361
CC3	.210	.361	**.521**	.051	.162
CC4	-.563	.162	**.516**	-.170	.478
PI1	.358	.478	.175	.478	**.684**
PI2	-.261	.100	.210	.100	**.630**
PI3	-.024	.382	-.563	.478	**.569**
PI4	.071	.039	.478	-.170	**.671**
PI5	.288	-.313	.100	.175	**.695**
Extraction Method: Principal Component Analysis. a. 5 components extracted BC: Behavioral Control, CC: Cognitive Control , PI: & Purchase Intention					

Table 2

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Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
AR		4.00	18.00	9.4016	2.51402
BC		4.00	16.00	8.8228	2.34144
CC		6.00	28.00	15.1102	3.66638
PI		4.00	20.00	9.4966	2.61902
Valid N (listwise)					

Table 2 shows the descriptive result of the purchase intentions of consumers towards selected luxury fashion products. It shows that mean of purchase intentions 9.4016 with maximum and minimum values respectively 18 and 4, standard deviation is 2.51402 which is less than mean. Customer perception shows mean value of 15.1102, the maximum value is 28 and minimum value is 6 with standard deviation 3.66638 which is again less than mean. The variable brand trust with a mean value 8.8228 and standard deviation 2.34144 shows its maximum value 16 and minimum value 4 which is less than mean value etc.

A multivariate analysis of variance (MANCOVA) with product involvement and brand awareness as covariates was conducted to test the effectiveness of AR on the controls and purchase intention using IBM SPSS 21.

All four multivariate difference measures were significant ($p < 0.01$). The results indicate that consumers' AR experience has a significant main effect on purchase intention ($F = 118.18$, $p < 0.01$), behavioral control ($F = 110.736$, $p < 0.01$), and cognitive control ($F = 117.152$, $p < 0.01$). That is, participants who are exposed to AR show higher purchase intention ($M = 6.029$), behavioral control ($M = 5.707$), and cognitive control ($M = 5.029$) than those who are not exposed to AR experiences ($M = 2.890$, $M = 3.773$, and $M = 3.193$, respectively), therefore, hypotheses are supported.

Table 3

MANCOVA Results		
Mean	**F-value**	**p-value**

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Purchase Intention			
AR experience:	6.029	118.18	0.000***
Non-AR experience:	2.890		
Behavioral Control			
AR experience:	5.707	110.736	0.000***
Non-AR experience:	3.773		
Cognitive Control			
AR experience:	5.029	117.152	0.000***
Non-AR experience:	3.193		
***P < 0.01**			

As has been explained earlier in case studies, it may be suggested that AR can bring about better marketing communication and brand interactivity connection. Also from the survey carried out in this research, it can be admitted that augmented reality is an effective tool for planning interactive and innovative marketing campaigns. It has been observed that through business process innovation AR can put complex and expensive products in the hands of potentials costumers at zero cost.

The current study has attempted to examine the key mediators that heighten consumers' patronage behavior through AR experience. Study demonstrates that consumers feel it is easier to understand and predict the performance of a product when they have AR experience while online or mobile shopping, which fosters higher purchase intention. Study validates by measuring the features of AR indicating that cognitive control is the key mediator in the relationship between AR experience and purchase intention. This study shows that AR experience has significant effect on purchase intention when consumers receive positive feedback from peers. That is, positive messages from peers can help with predicting performance and understanding a product and thus play a role similar to AR experiences. Therefore, if a firm cannot afford to develop AR services in online and mobile shopping, providing positive messages might significantly enhance cognitive control and consequently increase purchase intention. This study has both practical and theoretical implications. With online and mobile shopping on the rise, understanding how AR technology which offers effective and interactive virtual visual information in real time, triggers consumers' purchase intentions is vital for both marketers and researchers. The results add to literature on AR

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by shedding light on impact of Augmented Reality on consumer behavior. The focus of previous studies have on investigating the positive effects of AR experiences in diverse fields, such as education, games, tourism etc. (Chung et al., 2015; Liou et al., 2017; Kogan et al., 2017; Morschheuser et al., 2017). This study is the first attempt to identify the mechanism of how AR experience plays out in the decision-making process. With the rapid development of mobile technologies, consumers' power and autonomy should be considered in exploring the effects of new technologies and media on consumers' responses. This study verifies the usefulness of consumers' control constructs in investigating various marketing technologies, such as AR, VR, AI, etc. In digital transformation, consumers' understanding and autonomy in online and mobile shopping is the key to triggering consumer purchase decisions. The results of the study indicate that AR experience improves consumers' cognitive control making it easier for them to make purchase decisions in online and mobile shopping.

Limitations

Product quality may be an important moderator of the effects of AR experiences, and future studies should address this issue. Finally, in finding the boundary conditions, we only considered information from, and communication with, peers (in-group). However, in practice, consumers interact and communicate with various channels. Therefore, future studies could consider communication with others (out-group) or with firms (e.g., official information on a homepage, product counselor, or chatbots).

Conclusions

Findings also provide important implications for marketers and service providers on how to utilize AR technologies in online and mobile shopping. First, our findings suggest that AR experience increases consumer control and engagement. Therefore, firms need to consider creating a strategic plan for using AR technology as a marketing channel that can encourage consumer engagement and control. Second, this study found hidden mechanisms between AR experiences in online and mobile shopping and consumers' patronage behaviors (i.e., cognitive control). The current study suggests that firms should actively understand how to manage consumer cognitive control. AR experience is particularly useful under situations that require higher levels of consumer control. Although the effect of AR experience on purchase intention is significant, not all firms can afford to develop AR services since it requires huge costs and efforts. The results of the study show that when consumers encounter positive feedback from their peers at the moment of purchase, it

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increases their cognitive control and stimulates purchase intention. Therefore, marketers and service providers will be able to utilize positive messages for consumers who want to purchase the product they have chosen. This study focuses on the utility of technology to improve marketing communication with an eye to building better relation between consumer and brands. The findings of the research imply that augmented reality is the future with the brands presenting consumers the opportunity to take advantage of virtual experience about the product features at zero cost. Besides, AR helps organizations gain competitive edge over their business rivals much quicker.

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