“The Impact of interactivity and Telepresence on Purchasing Intentions in the Egyptian furniture industry”

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Abstract:
This study focuses on the phenomenon of augmented reality and its use in the media and advertising. The purpose of this research is to provide a theoretical foundation for augmented reality technology, its place in the context of media studies, and information on its practical application in advertising. The first part contains the definitions of augmented reality and related terms, such as virtual reality, augmented display technology, specialised software, and portable or mobile computers. For this purpose, the researchers focus on how the media characteristics of augmented reality, telepresence, and interactivity impact the emotional and cognitive dimensions of the consumer’s experience during search and evaluation. An empirical study combining an observational experiment and an interview was conducted, examining augmented reality applications like the Houzz Catalog app. Results indicate that telepresence and
interactivity do positively influence both the emotional and cognitive dimensions of the experience. The results will also serve as the basis for the summary of characteristic procedures and trends in the field of advertising campaigns.

1. Introduction

Marketers' attempts to discover new innovative ways of reaching consumers are of more prominent importance with regard to retaining consumers. Interactivity and immersion, components absent from conventional promotion, suggest the capability of expanding promotional tools far ahead of what traditional promotion is capable of achieving (Miles, 2007; Li & Leckenby, 2007). Interactivity and immersion can support a natural way to contract with product assessment through the representation of 3D interface properties, and when combined with a real environment, will actualize a significantly greater series of potential results and applications (Schlosser, 2003). Augmented reality (AR) is being developed as an interactive instrument in the context of marketing with an improved set of uses in retail with the improvement of mobile smart phone applications. Furthermore, with the energetic development of the market, the consumer has a desire to express his emotions, talk about his experience, and provide feedback about the service or product that he used or bought as a part of constant interactive and collaborative communication. Digital advertising has given consumers the opportunity to design dual-directional interactions.
with a broader range of customers (Kondo and Nakahara, 2007; Newell and Merier 2007).

Augmented reality (AR) is able to cover the physical world environment with virtual images, features, and information that have the ability to interact with the physical world environment in real time and to provide extra new opportunities for gratified delivery to customers. AR, consequently, is capable of modifying customer activities that contain information and product searches (Javornik, 2016). As the usage of AR has improved in the last few years, a need has been identified to better understand its applicability in customer psychology. This research intends to support a vision of intention to purchase in the light of AR Ads by using technology.

Such an augmented layer increases customers’ views of the physical world environment, interacts with them in an active way, and changes them from passive receivers of information to active seekers of information, therefore creating a digital movement in advertising (Elkins, 2013). Previous researchers believed that AR advertising wasn’t only providing access to products but also producing a complete experience for consumers (Gabbard, Edward, 2005; Rambli, 2012). Without an adequate, well-designed assessment framework and used data, marketers can’t make the decisions on what to include in AR Ads campaigns and, consequently, can scarcely succeed in AR Ads.

In this situation, the aim of this research is to conduct a mixed
method of both qualitative and quantitative data to evaluate AR’s value as an advertising tool.

A new concept of digital advertising, specifically AR, has recently been applied in the advertisement industry due to the demand for attracting, adding new value to the consumer experience, and creating strong commitment with consumers. Since AR supports an immersive world environment, consumers have the opportunity to be involved directly in the communication process and with the service or product itself. (Luo et al., 2011).

Woods (2009) explains that an AR advertisement has the ability to place the product in the hands of the customers (Woods, 2009), and this lets the customers faithfully interact with the advertisement as a function of a commitment marketing strategy. Generally, by basically using their mobile devices as view inventors, customers can see the world with additional content as two-dimensional or three-dimensional objects. (Al-Modwahi, Lashkari, and Parhizkar, 2012).

Interactivity, telepresence, emotional experience, cognitive experience, and social experience will be investigated in this study, and their impact on purchase intention (PIN) in augmented reality will be presented. In addition, all constructs will be examined for traditional advertisement types to make a comparison with AR advertisements in terms of the purchase intention of the viewers. Advertisers and marketers can provide a new customer experience through virtual information with the
help of AR-based technology, assisting the customer in making a purchase decision. AR is a combination of digital objects and real-world environments in order to combine the digital objects with the real environment.

2. Research Problems and Questions
As a result of the dynamic changes in the market, the traditional marketing strategy and advertising mechanisms don’t have new innovative digital ways that are able to generate product interest, increase customers’ memory, inspire the customers' buying decision (Hidden Creative, 2011), and overlay a further layer containing digital contents to the physical space while at the same time permitting interaction with the digital elements as if they belonged to the real environment (Salo & Olsson, 2011). Therefore, the current study will investigate the influence of the inspiration of new innovative digital ways in the advertising mechanism to stimulate mental imagery that will increase customers’ purchasing intention.

The growth in the total of internet customers, in common with the growth levels of literateness, has meant a continuous modification for marketers and advertisers in the technological age, with consumers going away from conventional media (Pandey & Singh, 2014).

1. According to the customers’ opinion, what features are important to enhance the overall customer experience while integrating AR into advertisements?
2. What is the mediating role of customer experience in the relationship between AR ads and purchasing intention? And what are the perceptive impacts of AR Ads on customers’ psychology and intention to purchase?

3. What are the moderating dimensions of age and education in the connection between AR ads and Purchasing Intention?

Accordingly, the following sub-objectives were formulated:

1. To examine the mediating role of consumer experience on the impact of augmenting reality advertising on purchasing intention and to understand the type of experience that is related to this media characteristic in terms of emotional, cognitive, and social responses.

2. To reveal how augmented reality advertising influences the examination and assessment manners of customers in making the decision.

3. To present a novel method of intellectual inquiry into digital sensory marketing. This new method focuses on the usage of digital technologies in an internet context and is grounded on theories taken directly from the emergent field of sensory marketing.

4. To identify the effect of different technologies of AR Ads on consumer experience and to understand the distinctive media characteristics of AR and the corresponding consumer perception or the "psychological correlate of media characteristic" (Sundar et al., 2015).
3-Literature Review
Augmented Reality advertisements are more interactive than any other type of advertisement; AR advertisements also assist the viewer in retaining product information for a longer period of time. Eaton (2009) stated that AR advertising won’t be capable of replacing traditional 2D advertising methods, but AR technology will play an important role in improving effective advertising and marketing strategies. Snapchat Ads allow the creative to speak for itself, while the consumer feels as if they have been entertained by an experience that is not only unique to them, but also one that they can share with all of their friends. Simulated experience in partial-absorbing environments, such as those supported by AR, may also aid in positive psychological and emotional conditions within customers (Li, Biocca, and Daugherty, 2001), which can increase research and education (Hoffman, Novak, and Yung 2000) and positively influence attitudes toward the product. The ability of AR to support the customer from many different viewing positions and 3D characteristics obviously suggests significantly more possibilities for the transfer of full of information senses than conventional methods of advertisement through the internet. The characteristics of Augmented Reality device systems can be further understood from three classical and widely used criteria for AR systems (Azuma, 1997):
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- Combine Virtual and Real with 2-Registered in 3D and 3-Interactive in Real Time

Marker-less AR Systems uses a combination of an electronic device's accelerometer, compass, and location data (GPS) to determine its position in the physical world, which way it is pointing, and on which axis the device is operating. This technological approach has given rise to "mobile augmented reality," denoting use of the technology with devices such as smartphones and tablets (Dhiraj Amin and Sharvari Govilkar, 2015).

Consumer experience covers each aspect of a company’s offering, including the product and service, the quality of consumer care, packaging, advertising, ease of use, and reliability (Anaman et al. 2008). Drawing from the literature (Colleagues and Gentile 2007), they identified 3 components of customer experience: emotional, cognitive, and social components.

According to the embody cognitive theory, every intellectual procedure is based on physical situations and specifically on the mind's sensual modality process system (Barsalou 2008). Therefore, all customer experience is grounded on the combination of sensual contributions that influence the latter's behaviour and judgement (Krishna 2012). Consequently, by appealing to the customers' intellects more efficiently, strategies of sensual marketing can possibly influence the process of decision making in the stock (Krishna 2012; see Spence et al. 2014; and Krishna 2017; Spence 2012). The impact of sensual
marketing through the virtual shop when interacting with the surroundings has been restricted to the screen of a computer. The construct of "purchasing intentions" is broadly used in advertising research to realise the views of customers and forecast product sales or services. As said by previous studies, the perceived importance of attention, demands, and needs has a robust effect on the intent of customers to buy correlated products. (Zaichkowsky, 1985). Several studies have found that concepts such as enjoyment, effectiveness, and ease of use have a strong influence on customer purchase intentions, and because these concepts are most commonly seen in collaborative advertising, such as VR and AR joined advertisements, it can also be stated that technology-executed advertising results in a stronger willingness to buy. (Li, Biocca, and Daugherty, 2002).

**Theoretical Framework**
The research Model of this study is a comprehensive theoretical model that composed of a set of correlated variables, that illustrate a methodical sight of the problem in investigation.
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(Theoretical Framework)

4 Hypotheses Development
In order to investigate the study enquiry, there is need to query if AR is able increase Power of the willingness to buy than a conventional, less immersive product performance on the internet. to realize the impact of AR executed advertising on consumer’s willingness to buy, some specific constructs will be chosen. By using the theory of Innovation and TAM model as reference, research proposed model was planned and hypotheses were designed. Consequently, the research assumes that the
purchaseing intention will be affected positively or not by AR as an virtual technology improved product.

4.1 Augmented Reality Advertising

some studies indicated that perceived interactivity indirectly influenced purchase intention via attitude towards the website (Changal, 2005; Jee & Lee, 2002; Karson & Fisher, 2005), other studies indicated that the impact of perceived interactivity onto online purchase intention was transferred through trust and product evaluation (Chen et al., 2005). Thus, the following hypothesis proposes that:

**H1: Interactivity significantly positively effects on purchasing intention.**

The emotional impact of interactivity

The Impact of Augmented Reality Applications on Consumer Search and Evaluation Behavior

Hyun & O’Keefe (2012) revealed in their study that the feeling of immersion increased the more users were able to interact with visual- and auditory-based mediums such as AR. In turn, the more immersed consumers get in the experience, the more pleasurable they perceive the experience (Huang, 2015).

Based on these findings, we assume that interactivity has a positive impact on the emotional dimension of the consumer’s experience. Thus, the following hypothesis proposes that:
H1a: The impact of Interactivity on purchasing intention is mediated by emotional Experience.

The cognitive impact of interactivity
Gerrig and Prentice (1996) argued that direct manipulation on a website resembles consumers' responses to events occurring in the actual world, thus engendering immersion in the virtual world. Furthermore, an interactive website enables consumers to become involved, pay attention to information on the website, use cognitive efforts for information processing, and finally experience mental imagery that will positively lead to attitude formation and behavioral intentions (Beuckels and Hudders, 2016; Kiss and Esch, 2006; Wu, 2019).

In conclusion, interactivity can be argued to increase explorative behavior and facilitate information processing during evaluation. Consequently, we assume that interactivity has a positive impact on the cognitive dimension of the consumer’s experience, and therefore the following hypothesis proposes that:

H1b: The impact of Interactivity on purchasing intention is mediated by cognitive Experience.

H2: Telepresence significantly positively affects the Purchase Intention.

H2a: Telepresence has a positive influence on the emotional experience.

H2b: Telepresence has a positive influence on the cognitive experience.
5- Measurement Scales:
The below table illustrates the measurements related to study constructs which have been used in the literature.

<table>
<thead>
<tr>
<th>N</th>
<th>Author/Year</th>
<th>Variable</th>
<th>Scale Items</th>
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| 1  | Tsikriktsis, 2002; van der Heijden, 2003 | Interactivity | Seven point likert scale questions are used ranging from 1= strongly disagree, to 7= strongly agree statements.  
1. The AR Ads allows you to interact with it to receive tailored information about product.  
2. The AR Ads has interaction features, which help you to come to a decision in the selection of product.  
3. You are able to interact with the AR Ads in order to get information tailored to my specific needs.  
4. The degree of interaction with the AR Ads is sufficient. |
| 2  | Fiore et al. (2005a)          | Telepresence | Seven point likert scale questions are used ranging from 1= strongly disagree, to 7= strongly agree statements.  
1. The AR advertising enables you to find information about the product as if you are in a physical store.  
2. You can evaluate the product in the AR advertising as you do in the physical store.  
3. The AR advertising depiction of the product makes you feel like you are looking at it in a physical store. |
| 3  | Bagdare and Jain, (2013)      | Emotional Experience | Seven point likert scale questions are used ranging from 1= strongly disagree, to 7= strongly agree statements.  
1. The experience of seeing the AR Ads are unique.  
2. The experience of seeing the AR Ads are wonderful  
3. The experience of seeing the AR Ads is memorable. |
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| 4 | McLean et al., (2018) | Cognitive Experience | Seven point likert scale questions are used ranging from 1= strongly disagree, to 7= strongly agree statements.  
1- You are satisfied with the experience of seeing the AR Ads.  
2- Seeing the AR Ads meets your expectations.  
3- Seeing the AR Ads meets your needs. |
|---|---|---|---|
| 5 | Schwartz (2011) | Purchase Intention | Seven point likert scale questions are used ranging from 1= strongly disagree, to 7= strongly agree statements. 
How do you agree with the following statements:  
1- You believe you have enough information to make a purchase decision.  
2- If you were to make a purchase decision you would feel confident doing that decision.  
3- You feel that the AR Ads try-on helped you to decide to buy a product. |

6 -Research Methodology:  
The study is categorized as a multimethod quantitative research, since the scholar will use a mixture techniques of quantitative method to collect data – the similar questionnaires for the experimental and control group. The term multimethod depicted the syntheses that more than one data collection method will be used with connected analysis approaches (Teddlie & Tashakkori, 2003). the purpose of developing the knowledge within the field of research, a questionnaire is an appropriate approach (Saunders et al., 2007). Moreover, (Curwin and Slater 2007), the quantitative research supports more precise outcomes than qualitative, since it includes responses of a large sample size.
The target population of this study includes all homogenous population of The Egyptian young people that share a common set of attributes (Malhotra & Birks, 2007) and belong to Gen Y or Millennials, is the newest generation, born between 1980 to 1990. The Sampling unit is individual aged between 18 to 40 years old. Subsequently, this is an indefinite population where there is no sampling frame; accordingly, a non-probability sample was used. They are currently between 20 and 40 years old). (Metafacts, 2016; Owyang, 2010).

The sample size should be large enough, as The researcher aims to analyze quantitative data using statistical methods Malhotra and Birks (2007). A self-administered questionnaire was distributed to 480 participants. Of all distributed forms, only 395 questionnaires were received -195 for the control group and the rest 200 for the experimental group and considered valid, with non-probability sampling technique considered, as the questionnaire was convenience distributed.

6.1 Data Collection
The primary and secondary data will be used. This joint procedure for data collection will establish a base for research that will be more reliable (Saunders et al., 2007). First, the secondary data will be used in this study. These data will be established by prior researches, and it will be included raw data (Saunders et al.,2007; Malhotra & Birks, 2007). The researcher will adopt the secondary data before to discover the prior relevant research to the topic of study, review of
literature will be proceeding in order to create knowledge and specially the study model. The secondary data will be primarily gathered from knowledge Bank of Egypt (KBE), Google Scholar service and other scientific research engines. Second, primary data is considered as data that is originated by the researcher with the aim to address the research question. Primary data was collected from the research participants through individual semi-structured interviews with the consideration of ethics of using people as a source of data (Booth et al. 2003).

6.1.1 Experimental Setup

In order to test the effects of utilizing augmented reality Advertisement on Purchasing Intention in the Egyptian Context, this study will measure the constructs that are necessary to test the hypotheses specified in the theoretical model. The reason to select experimentation technique because it is the main method of causal research (Winer, 1999). And an experiment aims to examine causal linkages, if any change in one independent variable will change in the dependent variable (Hakim, 2000). To examine the causality between constructs of AR Ads and purchase intention, two groups will be established and participants will be assigned (Saunders et al., 2007). After collecting data from both groups, the dependent variable (purchase intention) of both groups in the post-test will be compared (Kothari, 2004 ;Creswell, 2009). The influence of the dependent variable (Purchasing Intention) on both groups will be viewed before the treatment (pretest).
Later, the treatment will be executed on experimental group only, after treatment comment of dependent variable will be made on both groups to investigate the influence of the manipulation of independent variable (AR Ads) on dependent variable (Purchasing Intention). The Two experimental studies will be designed to disclose the general efficiency of AR Ads an exploratory manner and, more specifically, how AR-based Advertisement will be compared with Advertisement without AR in influencing consumer evaluations.

-Participants
The research is of a conclusive nature, and thus, probability sampling would have been the most favourable option as it allows the researchers to make statistical assumptions about the entire target population. However, this option could not be applicable since it requires the possession of a sampling frame over the whole population, which we were not able to obtain (Malhotra & Birks, 2007). Therefore, we chose the second possible method, non-probability sampling, which is also known as deliberate sampling. This type of sampling relies on the personal judgement of the researcher rather than on chance (Kothari, 2004; Saunders et al., 2007). to execute non-probability sampling.

Procedure
The offline self-administered questionnaires will be collected through a data collection marketing team. The team consists of four collectors, who are working in (GAMMA Company)
marketing company. They were selected as they are working in marketing company and they are familiar with the research topic. They were trained by the researcher by explaining to them the research objectives, and by informing them how to find and approach respondents, ensuring to them that they shouldn’t interfere with the respondents’ answers. Finally, there work was checked during the data collection process.

After a brief explanation of the functions we did not interfere with the experiment and The researcher let the participants interact with the Houzz furniture APP freely. Using the augmented reality application, users can visualize several pieces of furniture items by using the camera of a smart device measures the room in comparison to the actual size of the paper catalogue inside their homes. Following, customers are able to see the products in real size and with true colours to aid them with making a purchase decision (Stinson, 2013). This was done in order to eliminate any sort of observer effect, which might drive participants to alter their behavior and therefore potentially affecting the collection of the data (Saunders, 2011). Thus, the experimental group was asked to test out the AR experience on a tablet with products of their choice to get insights how the interactive technology works. Finally, they were advised to visualize and experience the preselected piece of furniture. Participants were instructed to use the app as long as desired to have a complete understanding of the capabilities offered by the
app. In general, each experiment lasted between 8 to 10 minutes at the end of which a questionnaire was asked to be completed. As a part of survey, in the beginning of questionnaire, respondents of group 1 (experimental group) will be offered to experience augmented reality application (Houzz furniture APP). As an example of furniture application is used. In the furniture application represent catalogues with the function of augmented reality applied in handheld devices and used to provide consumers with the additional information about products (which are respectively furniture in our research). After using the furniture application, participants will be then asked to fill out the questioner based on the used content and their feelings, thoughts and expectations about it.

Secondly, participants of group 2 (control group) will be offered to watch video Ad without using augmented reality application. As examples of furniture Ad is used. In video Ad represent catalogues with information about products (which are respectively furniture in our research). After watching the videos Ad, participants will be then asked to fill out the questioner based on the watched content and their feelings, thoughts and expectations about it. Finally, there work will be checked during the data collection process.

7 Discussion, Implications, Future Research
The results suggest that an engaging AR application does not have to necessarily be just a fun gimmick, but can actually
influence the users’ purchase intention and possibly convert them into buying customers. Based on the findings, the researcher are eligible to explain possible factors leading to the aforementioned increase of purchase intention. The higher entertainment of the augmented experience directly influence the purchase intentions of users. This thesis provides the evidence of an effect between AR applications and customer’s purchase intention. As already concluded, the most significant factors leading to purchase intention are informativeness, entertainment conveyed by the augmented experience. The experimentally collected data showed that the participants perceived the AR application as easy to use as the traditional online e-commerce website. Therefore, it can be assumed that Generation Y is already prepared to adopt AR technology on their smart devices. Moreover, besides the ease of use, and usefulness are predictors of the intention to use the technology (Kim & Forsythe, 2008). Another implication we would like to point out is that informativeness of the product seems to be an important predictor of purchase intention with regards to augmented reality. So far, the AR applications can contribute to the customer assessment of the size and style of a product, confidence when making a purchase decision, and thus improve their shopping process.

The outcome of the study has to be comprehended while considering the limitations. Critique can be drawn to the chosen method with the laboratory experiment and convenience sampling, which was
conducted on the expense of further generalizability to real-life settings and to other population groups beyond Generation Y. Moreover, since the technology adoption and smart devices ownership differ among countries, the limitation could be not considering the cultural effects and country of origin of the participants (Didero et al., 2008; Lee, Trimi, & Kim, 2013; Rainie & Poushter; 2014). The findings are limited to one particular product category, namely home furniture (e.g., bed, table, sofa). Future research could, therefore, compare how emotional responses toward AR advertising might differentiate across different products and how this is tied to consumer behavior.

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