

Article

Mobile Augmented Reality in Electronic Commerce: Investigating User Perception and Purchase Intent Amongst Educated Young Adults

Tegegne Tesfaye Haile ¹  and Mincheol Kang ^{2,*}

¹ College of Economics and Business Administration, The University of Suwon, Hwaseong-si, Gyeonggi-do 18323, Korea; haile@suwon.ac.kr

² Department of e-Business, School of Business, Ajou University, Woncheon-dong, Yeongtong-gu, Suwon 16499, Korea

* Correspondence: mckang@ajou.ac.kr

Received: 15 October 2020; Accepted: 28 October 2020; Published: 4 November 2020



Abstract: Even though the presence and use of mobile augmented reality (MAR) technology has become increasingly popular in the field of marketing and advertising in recent years, it has largely been neglected in the study of consumer behavior research. This paper utilizes a single-group posttest-only quasi-experimental design to investigate how the feature of mobile augmented reality application influences consumers' attitude and purchasing intention as explained by the dimensions of persuasion (i.e., consumers' cognitive, affective, and conative dimensions). Structural Equation Modeling (SEM) with SPSS and AMOS is used to analyze the psychometric survey data collected from 179 participants. The results supported the prediction that MAR application's real-time interactivity and entertainment increase cognition and affection, respectively; while irritation with MAR application decreases affection. The unsupported hypothesis, which predicted a positive relationship between informativeness and cognition, came as a surprise. The overall result of the study demonstrates the positive influence of MAR application in enhancing consumers' purchasing intention. Finally, implications and future research directions are discussed.

Keywords: mobile augmented reality; MAR; dimensions of persuasion; purchasing intention

1. Introduction

It is practically difficult to experience a solitary day in a cutting-edge economy without being loaded with advertising campaigns from businesses trying to promote their products or services. Whether we are surfing the Internet, posting on Facebook, reading a magazine, or watching television, firms try to convince us to buy their products. The money invested in these promotions is substantially high. The spending takes many forms, including ads on websites, social media, television, radio, billboards, newspapers, magazines, or using virtual and/or augmented reality applications. According to ABI research [1], the total market for augmented reality is projected to reach approximately USD 100 billion by 2020.

The utilization and proliferation of tablets, smartphones, and mobile devices have created the chance for marketers to use them as a top media to advertise their products. eMarketer [2] reported that out of 3.47 billion individuals utilizing the Internet consistently in 2017, 2.73 billion of them use their mobile phones as their essential gadget for Internet access. This number is anticipated to increase and reach roughly 8 billion by the year 2025 [3]. Smartphones were first characterized by having less processing power, slow internet speed, and small screen, which has limited their growing use for M-commerce. However, with recent technological advancements, smartphones with high processing

power, high speed, and wider screens have been invented. Thus, now smartphones are ideal devices to use for M-commerce. It is expected that in 2021, 72.9% of all retail electronic commerce will be generated via M-commerce, which is up from 58.9% in 2017 [4]. To take advantage of these consumer trends and expand their market place, businesses are giving more attention to using smartphones as a weapon to showcase and promote their products and increase their sales volume. Alongside the rapid proliferation and use of smartphones, a new breed of augmented reality (AR) has entered the marketplace. Being a new trending technology, augmented reality is sometimes mixed up with virtual reality [5]. Both augmented and virtual reality are part of mixed reality (Figure 1), which refers to the assimilation of the real and virtual worlds where physical and virtual objects complement and interact with each other [5]. Despite their relationship, augmented reality and virtual reality have different features. While virtual reality completely immerses users in a synthetic environment, augmented reality enables users to feel their surrounding environment by augmenting the real environment by using virtual objects that are synchronized to their exact location [5]. Augmented reality supplements the real world by adding digital information [6] rather than creating an entirely artificial environment.

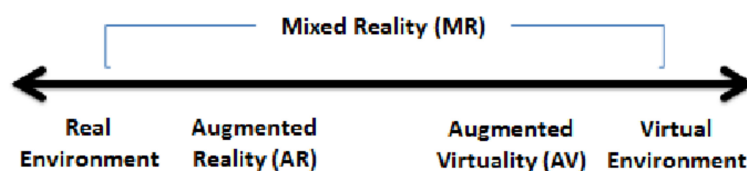


Figure 1. Reality-Virtuality continuum adapted from Milgram and Kishino [5].

Mobile augmented reality (MAR) has emerged as an innovative technology that allows easy information access and entertains by integrating 3D virtual objects into a 3D real environment in real-time [6]. MAR has mostly been applied in entertainment and game industries such as Pokémon Go, but it is no longer limited to game applications. Following AR pushes with ARKit by Apple and Core by Google, MAR's potential application in advertising is an interesting issue today [7]. The total market for MAR in 2018 was around USD 11.14 billion and it is anticipated to reach USD 79.77 billion by the year 2022, growing at a Compound Annual Growth Rate (CAGR) of 69.85% between 2016 to 2022 [8]. Statista [4] has reported that, with high adoption, the economic contribution of virtual and augmented reality will reach USD 29.5 billion in 2020. The use of MAR applications has become a part of our everyday mobile experiences [9].

Marketers are using MAR applications to connect with their consumers in a new and exciting way, although its adoption is in its infant stage. Marketing campaigns use MAR applications as a way of targeting a particular demographic to increase sales or promote new products. MAR enables customers to use their smartphones and experience products realistically before making purchasing decisions. Compared to traditional media such as television, radio, newspapers, and billboards, the MAR environment provides users with a high level of presence—a more perceptual, and psychological immersion [10]. This hugely affects the profundity of processing enabling users to process information more effectively, more implicitly, and heuristically, which in turn enhances brand attitudes and favorable purchasing intentions [11]. While the relative advantages and disadvantages of traditional advertising mediums are well researched and known, little proof is accessible to direct decisions among an inexorably huge range of new advances, such as MAR now being accessible for marketers [12]. Even though few studies were conducted in the area of MAR-based advertisements [12–14], most of them focused on MAR's technical capabilities. Few other studies were also conducted examining MAR as a tool for experiential marketing [12,15–17], but thus far there is limited literature about the impact of MAR on consumers' behavior. Therefore, investigating the features of this new and powerful weapon used in advertising and examining consumers' feelings, perceptions, and readiness to use MAR applications is very essential. Cognitive fit theory is adopted to explain the media characteristics

of MAR and their impact on consumers' attitudes while action theory of persuasion is used to explain the role of the three dimensions of persuasion.

To this end, this study has three important specific purposes: (1) exploring the media characteristics of MAR application and their impact on consumers' purchasing intention, (2) explaining how the dimensions of persuasion (i.e., cognition and affection) mediate the relationship between MAR and purchasing intention, (3) testing a set of hypotheses originated from the conceptualization to further enhance the knowledge of MAR and consumers' attitude towards it.

2. Theoretical Background and Hypothesis Development

Consumers are loaded daily with print, radio, TV, internet, and mobile advertising by marketers promoting their products hoping to boost their sales and win out over their rivals. As competition became very fierce in business-to-consumer (B2C) electronic commerce, businesses started adopting high-tech technologies to advertise their products better and attract more customers.

People, more than any other time in history, are on-the-go carrying technology with them. In particular, the younger generation feels unenthusiastic to go to a specific place to do something that they could have done virtually from anywhere. One way to achieve their desire of being virtually anywhere and still accomplish something valuable is through mobile augmented reality (MAR) technology. MAR technology has the capability to be sited in an uncommon and unexpected location and used by people anywhere and everywhere [18]. Henceforth, there came a very strong trend among people to use MAR applications that can be used anytime, anywhere. Therefore, simply explained, MAR is an AR technology that people can take and use wherever they go. In this study's context, MAR technology refers to consumers using smartphones or handheld mobile devices to interact with objects that reside in the real-world where the objects are enhanced by digital content virtually displayed over the Internet. With the help of GPS, cameras, and motion sensors, together with good Internet connectivity, MAR enables users to view virtual information superimposed over the real-world perception [12]. To this end, MAR applications have become an innovative, interactive, and entertaining form of marketing and advertising.

2.1. MAR Applications in Marketing and Advertising

Today, the choice of a marketing strategy is being inherently shaped by technological possibilities. While the marketing needs and visions drove the technological developments, the evolving technological advancements have also given marketers the access and options for reaching out and interacting with their customers, which previously was simply unimaginable. Marketers and advertisers are forced to find innovative ways to connect with consumers, as engaging their potential customers with a product or service gets harder. Thus, marketers became capable of designing several different ways to reach out and relate with their customers.

Taking advantage of the full capabilities of mobile devices, augmented reality marketing (ARM) has become a very popular strategy in marketing [19]. ARM has the ability to "put the product in the hand of the users" [20], enabling them to interact with the brand [21] and "try-on" products virtually before purchase [22]. ARM has helped marketers boost brand awareness and create a positive brand perception with consumers. The interactivity, which is far more immersive than any traditional and virtual reality applications, has increased the emotional connection of the consumers with the brand. The study by Olsson et al. [23] has shown that consumers associate AR applications with several cognitive (e.g., knowledge, awareness) and emotional (e.g., pleasant and stimulating experiences) benefits.

2.2. Theory of Cognitive Fit and MAR Applications Media Characteristics

The theory of cognitive fit suggests that information technology actualizes a positive outcome when its application matches what the user does [24]. When users have the perception that the

technology's characteristics match with their tasks, they believe that the given technology will help them to effectively achieve their goals [25].

Similar to most of the prior research in advertising applications, this study has also adopted factors from Ducoffe's [26] model of advertising. Ducoffe's [26] model examines three important predictors of advertising value, i.e., informativeness, entertainment, and irritation. These three factors were the starting point for explaining how consumers assess the value of advertising. Instead of descriptive reactions to individual items, which happen to be the same with Ducoffe's [26] advertising model, this study is focused on the direction and significance of the relationships among the constructs with the new and innovative advertising media, MAR. MAR is an interactive system that combines real and virtual elements aligned in three dimensions in real-time [6,27]. MAR improves user's awareness and interaction with the real world by providing more information from virtual objects which are otherwise not discovered by our senses [28]. The use of MAR in marketing and advertising has opened several ways through which firms can easily interact with their customers and create a much better brand experience [12]. Several prior studies have added more factors such as credibility, brand, interactivity, reputation, and so on, and tested their significance in affecting consumers' attitude towards advertising [29–33]. Since this study's focus is on testing the effectiveness of the MAR applications, real-time interactivity of the application would be a more important feature at engaging consumers as compared to brand, credibility, or reputation which are concerned more about the company than the application itself. MAR advances the customer experience in marketing campaigns by enabling customers to interact with the company and its products in a real-time. Therefore, this study, in addition to informativeness, entertainment, and irritation, has also used real-time interactivity as media characteristics that influence consumers' response to MAR applications. The improvements to the naming and operational definition of the variable, methodology used, and some demographic variables will provide a greater level of accuracy to the research [34].

Informativeness and real-time interactivity of MAR applications enhances consumers' cognition, while irritation and entertainment have a negative and positive effect on consumers' affection, respectively. When consumers are presented with valuable information that is interactive and engaging, their cognition increases [35]. As entertaining media enhance their affection; consumers dislike the media when it is irritating [26].

Figure 2 below presents the research model illustrating media characteristics of MAR applications and their influence on consumers' purchasing intention mediated by the dimensions of persuasion.

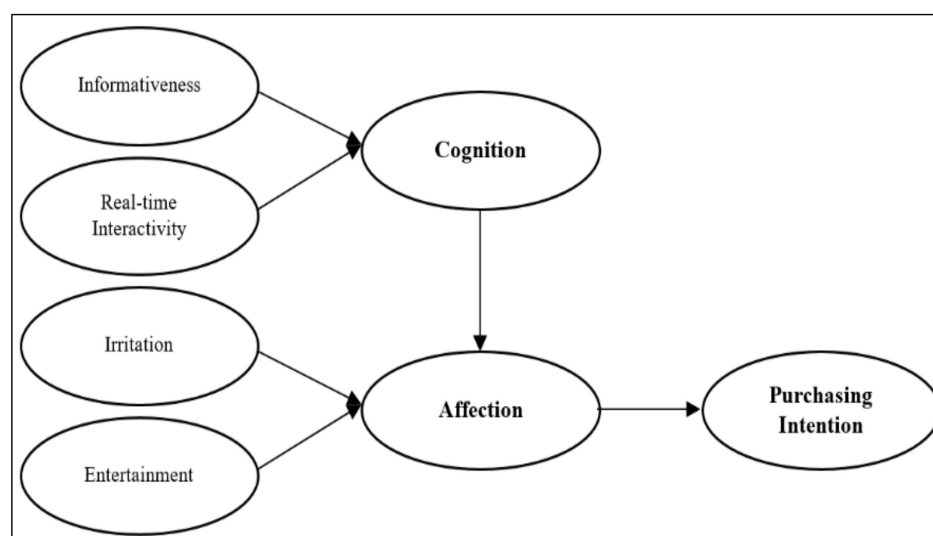


Figure 2. Research model.

2.2.1. Informativeness

There exists a consensus among consumers about the need to be informed about product features before making a purchasing decision [26]. They believe that the first reason to approve advertising is its ability to supply relevant information [36]. Andrews [28] indicated that consumers realize the inherent economic benefits of advertising when it showcases an accurate picture of products. Ducoffe [37], in his mall-intercept survey, has found a significant and positive correlation of 0.65 between informativeness and advertising value. Informativeness is defined as “the degree to which consumers can receive resourceful and helpful information on the Internet” [38]. Consumers are satisfied with their purchases when they know their decisions were made after being provided with the necessary information about the features of the products. Gao and Koufaris [39] defined informativeness as the ingredient in advertising that satisfies consumer’s wants and is a chance for marketers to present alternative products and services by providing a bulk of information. MAR applications, enabling consumers to observe and try-on products using their smartphones just as they do in a retail store, have emerged as a novel way of advertising [40]. For instance; IKEA Place, a MAR application developed by IKEA to advertise their furniture products, basically gives buyers a precise look at the furniture’s size, style, and functionality in their home, instead of wondering how well and if it might fit in their homes.

MAR provides a high quality and volume of realistic content in a mediated environment, through which advertising campaigns can be effortlessly addressed to customers. MAR applications incorporate a high effect sound with a video that is more interactive [41]. A rich media interface provided by MAR applications, incorporating text, sound, and video, is identified as having a high sensory depth and breadth focused on informing consumers about product attributes [10,42]. Consumer learning is enhanced through a high-quality presentation of information [32,43]. Thus, this quality and volume of content transmitted through MAR applications increase the awareness of consumers about the products being advertised [35].

Hypothesis 1 (H1). *Informativeness of MAR applications increases consumers’ cognition*

2.2.2. Real-Time Interactivity

Mobile advertising, as most of the modern advertising media, suffers from problems of insufficient content and inconvenience. Consumers are often poorly informed about the attributes, appearance, price, etc. of products they would like to buy. Empirical evidence suggests that most advertisements provide less direct information [44]. Furthermore, the placement of advertisements does not allow consumers to test or try-on products they would like to buy.

The rapid development of the Internet and high proliferation and use of mobile devices has shifted the marketing focus from individual transaction to long-term customer relationships [12]. This has required changes in marketing tactics to place more emphasis on engaging customers using MAR applications as an experiential marketing tool [45]. Traditionally, interactions were primarily made face-to-face, through postal exchanges, or telephone conversations. The technological capabilities of MAR have opened a vast potential for diverse online interactions with customers. Unlike traditional advertising, which is mainly a one-way communication, MAR applications allow interaction between marketers and consumers on a large scale [46].

The interaction through the mediated environment is perceived to be “interactive” when there is a real-time exchange of responses [40]. The users can also decide on the timing, content, and sequence of communication. Steuer [42] simply referred to interactivity as “the extent to which users can participate in modifying the form and content of a mediated environment in real-time”. Interactivity is realized when immediate feedback is provided to the users that a mediated environment is modified based on their input [47]. Even though some argue that interactivity can divert the user’s attention from the ad message [48], it is demonstrated that interactive ads have increased consumers’ engagement and involvement [49]. The interactivity, i.e., the opportunity to communicate bi-directionally, enables consumers to customize the information [49].

The use of MAR applications has helped marketers to engage with consumers in a new and innovative way. MAR applications, such as IKEA Place, enable users to share their 'place' with social network applications, such as WhatsApp, KakaTalk, Facebook, Instagram, and so on. The user can share information (i.e., like pictures of the products they would like to buy) with their friends and can receive their friends' opinions about the products. MAR also makes it very simple for the user to transfer to the company's website and view details about the product. The users can also directly process payment and buy the product being directed from the MAR applications page to the company's website. MAR enables a high real-time interaction and increases awareness about products before making a purchasing decision.

Hypothesis 2 (H2). *Real-time interactivity of MAR applications increases consumers' cognition.*

2.2.3. Irritation

Several studies have shown that when product-related information is irrelevant, consumers' belief is systematically weakened and they no longer trust that the intended product will deliver the anticipated benefit [26,35,50]. Irrelevant information leads to a higher level of irritation [50]. Irritation is defined as "advertising with unwanted outcomes that result in reduced advertising effectiveness and value" by Ducoffe [37]. The failure of marketers to understand the technology from consumers' perspective and poor optimization are some of the reasons why consumers become confused and irritated with the advertising [51,52]. Consumers' annoyance or irritation generally leads to a decrease in advertising effectiveness [36]. One of the older augmentation technologies, i.e., QRH (quick response (QR) code hypermedia), has the potential to improve consumer-brand interaction, but its ineffective utilization has resulted in a poor marketing campaign [53–55]. When the techniques employed by the advertising are annoying, insult their intelligence, or are overly misleading, consumers will perceive it as undesirable and irritating [26]. This undesirable experience affects consumers' affection for advertising [37]. As entertaining and fun advertisement enhances affection, irritating media decreases affection towards the media [26]. The current study focuses on the fact that MAR applications in advertising requires users to practice and get used to the features of the application before they can easily manipulate and enjoy all the functionalities. Some users might find it irritating to scan their surroundings and find an appropriate spot for the application to work properly.

Hypothesis 3 (H3). *Increase in irritation of MAR applications decreases consumers' affection.*

2.2.4. Entertainment

Entertainment is "the ability to fulfill an audience's needs for escapism, diversion, aesthetic enjoyment, or emotional enjoyment" [26]. Being one of the significant predictors of advertising value, entertainment helps to attract and keep consumers' attention and increases their experience with advertising [26]. Ducoffe's mall-intercept study has confirmed that there is a significant positive correlation of 0.48 between entertainment and advertising value multiple-item measures.

MAR applications are perceived to be very exciting, fun, convenient, and particularly time-saving for shopping [15]. Consumers view MAR as a novel experience that is fun and entertaining while making their shopping experience less complicated. MAR made all this possible because of its ambient characteristics. Phillips Research [56] defined ambient intelligence as "the presence of a digital environment that is sensitive, adaptive, and responsive to the presence of people". Ambient technologies are relied upon to have features of being responsive, transparent, ubiquitous, and intelligent. Ambient intelligent advertising can be sited in uncommon and unexpected locations often with unusual methods or execution [18]. The ambient qualities of MAR allow consumers to try-on products anywhere they like while having fun with it. Entertaining services that bring a good mood to consumers can enhance their loyalty and attitude towards the advertising and even to the brand [57].

Consumers' need for tasteful satisfaction and passionate discharge is enhanced when the advertising is entertaining [26]. The entertainment in MAR applications is achieved during consumers' interaction with the advertisement [18]; unlike most current advertisements who "hold at least one form of content (e.g., humor, fun stories, or upbeat music) to entertain the customer" [58]. Fun, excitement, and joy with the interaction in advertising positively affects consumers' attitudes toward advertising. Such advertising delivered charmingly attracts consumers' attention to appreciate and accept the advertisement. There is an emotional gratification that consumers experience even with no intention of buying the advertised product [58].

Hypothesis 4 (H4). *Entertainment of MAR applications increases consumers' affection.*

2.3. Persuasion and Related Theories

Marketers, daily, make a lot of attempts to persuade their consumers about the products or services they offer. They spend millions of dollars on advertising to introduce their new or existing products. Persuasion may manifest itself in different ways, such as in message-based television advertising, in virtual reality experience, or augmented reality advertising. How persuasion operates determines the persuasion knowledge developed by people [59,60] and the extent of persuasion depends on several factors involved in the endeavor of the advertiser to address what the audience is looking for.

A vast literature exists on the topic of persuasion [61–63]. However, the majority of it considered persuasion as a means of attitudinal or opinion change [64,65]. Other studies have treated persuasion as the behavioral change rather than attitudinal change [66]. This study treats persuasion as a process that brings an attitudinal change.

2.3.1. What Is Persuasion?

Even if there is still no universally accepted definition of either "persuasion" or "argumentation" [62], the two phenomena are highly related. Persuasion is sometimes confused with argumentation. In sorting out the relationship between persuasion and argumentation, O'Keefe [62] has suggested recognizing the difference in communicative purposes, means, and being careful about the features of the communicative ends and means and their relationships. Ketcham [67] defined argumentation as "the art of persuading others to think or act in a definite way. It includes all writing and speaking which is persuasive in form." He stated that "the objective of argumentation is not only to persuade others to accept our opinion and beliefs concerning any disputed matter but also to encourage them to follow our opinions and beliefs." Thus, argumentation is meant to have an effect on both mental states and behavior. Persuasion's discourse, on the other hand, is affecting the will and induces action [62]. Eagly and Chaiken [68] defined persuasion as "a form of communication in which the communicator tries to affect his audiences' judgments, attitudes, beliefs or actions through using rational arguments or information." [68]. Thus, persuasion combines an argument and evoking of emotions to achieve its purpose [69]. O'Keefe [62], one of the prominent authors in persuasion literature, defined persuasion as "a successful intentional effort at influencing another's mental state through communication in a circumstance in which the persuadee has some measure of freedom." O'Keefe has emphasized a "change in mental state," and views attitude as central to all persuasive efforts. The definition of persuasion adopted in this study is in line with the definition given by O'Keefe [62] that the argumentation in persuasion is not only to affect the mental states but also to affect the attitude and arouse action.

2.3.2. Theories of Persuasion

Given the prominence of persuasion in advertising, it is obvious that the theories of persuasion have a central role in discussing the effects of advertising. There are several theories of persuasion established and adopted in the field of advertising. The Theory of Reasoned Action (TRA) is one of the theories that suggest an individual's decision to engage in a certain behavior is based on their

expectation of the outcome [70]. The Elaboration Likelihood Model (ELM) is another persuasion theory shown to be a robust model for foreseeing the effects of advertising and marketing messages on the attitude and behavior of customers. Developed by Cacioppo and Petty [71], ELM studies the basic dimension of information processing and attitude change is the depth or amount of information processing. Even though there are considerable data on the persuasion process proposed by ELM, there is insufficient data on the elements of persuasion in the advertising context [69,72]. The other persuasion theory called the Persuasion Knowledge Model (PKM) posits that people are very aware of the persuasion tactics of advertising and how advertising works. An alternative approach to understanding the persuasion process is an Action Theory of Persuasion (ATP) [73] which places more attention on an action rather than only the attitude change. ATP seems to apply to all forms of persuasion, such as mass media advertising to interpersonal exchanges between salesperson and prospect, lawyer and jury, parent and child, etc. ATP proposes that persuasion is an attempt by the persuader to influence the actions of the ‘persuadee’. This outlook is similar to the usage of the term “persuasion” as defined by O’Keefe [62]. The ultimate goal of advertising is to precipitate action (i.e., purchase).

MAR applications are interactive and provide prepurchase product inspection on smartphones. Marketers utilize MAR’s features to influence consumers’ feelings about their products. Advertisements, irrespective of their content and techniques they use, share a common objective of persuading target consumers to accept a specific product, service, or idea [74]. Advertising is any type of communication intended to influence consumer thoughts, feelings, and actions [75]. Hence, advertising is all about these three dimensions of persuasion. The cognitive dimension (i.e., knowing) addresses the consumer thoughts, the affective dimension (i.e., feeling) addresses the consumer feeling, and the conative dimension (i.e., acting or doing) addresses the consumers’ actions [75]. The persuasion process’s success depends on a whole variety of factors that include cognitive, affective, and motivational components [69]. Thus, this study has adopted these dimensions of persuasion to examine the effectiveness of the MAR applications. The potential impact of MAR applications on persuading customers can be better explained with the Action Theory of Persuasion and these three dimensions of persuasion.

2.3.3. The Dimensions of Persuasion

Many studies were conducted in different contexts, adapting and extending the research tradition established by Lavidge and Steiner [76] which has examined consumer learning from cognitive, affective, and conative dimensions [35]. Effective consumer learning could be ascertained from these three dimensions [35]. In the same way, several other techniques to measure the effectiveness of advertising are examined adopting the same domains [35,77]. Hence, this study has also adopted these dimensions to evaluate the effectiveness of MAR applications in affecting consumers’ purchasing intention. Nevertheless, the logical question that could be asked is “in what order do these dimensions of persuasion occur?” Although the relative order in which the three dimensions should occur is not yet fully clarified, hierarchical models of effects have suggested that the dimensions follow a sequential order beginning with cognition, followed by affection, and ending with conation. In practice, first, a given message is cognitively comprehended by consumers, then a positive, neutral, or negative attitude is created, finally, an intention for action is developed. Smith and Swinyard [78] have proposed a different path that starts from cognition then conation and finally, affection, basing their argument for products that are less-complicated and easily sampled. Following such disagreements regarding the sequence, Macinnis and Jaworski [79] proposed an integrated framework that includes antecedents to learning, information processing, and their consequences. The integrated framework separates information processing from its consequences, which asserts information processing occurs following the exposure to stimuli that invoke cognitive, affective, and conative responses. In this study, the impact of MAR applications on purchasing intention is examined through the cognitive, affective, and conative dimensions of persuasion [80–83] as explained by Macinnis and Jaworski [79].

Cognition: The cognitive dimension determines the extent to which a piece of given information or message is cognitively comprehended by consumers. The comprehension is enhanced through the rich, interactive, and engaging presentation of information [43,77]. Consumer learning refers to any process that changes a consumer's memory and behavior because of information processing [84]. MAR's informativeness allows consumers to learn about products by examining them from different angles and distances. The real-time interactivity enables consumers to successfully engage and gain more understanding about the product features. The cognitive measures determine the ability of an advertisement or other marketing stimuli to attract attention and generate product knowledge. Product knowledge could be actual or perceived knowledge [80]. The acquired knowledge then creates a positive, neutral, or negative attitude towards the products [35]. Cognition and emotion are interdependent [85]. Emotional response is the result of cognitive activity [86]. This emotional response could be positive, neutral, or negative.

Hypothesis 5 (H5). *A positive cognition due to MAR applications leads to a positive customer affection.*

Affection: The affective dimension recognizes whether the consumer's attitude is influenced by a particular stimulus or not [87]. The attitudes established or created from the advertising stimuli towards the product serve as a commonly used measure of effectiveness [87,88]. Prior studies show that people have different associations with advertising. Some consumers may like certain advertising, whereas others may feel negatively towards it and dislike it [89]. Some consumers perceive advertising as deceptive and untruthful while others find value in advertising and perceive it as a good source of valuable information [90]. MAR is fun to use and entertaining while consumer's try-on products anywhere and everywhere. When consumers find the advertising as deceptive and untruthful their interest to buy the product dies with it [37,91]. On the other hand, when consumers like advertising and find it trustworthy their willingness to buy the product increases [92].

Hypothesis 6 (H6). *A positive affection due to MAR applications leads to an increase in customers' purchasing intention.*

Conation (purchasing intention): The conative dimension represents a response behavior resulting from a marketing or advertising stimulus. It generally entails some type of behavioral intention, such as searching for additional information or making a purchase [93,94]. In the study of advertising effectiveness, purchasing intention is most widely used as a conative measure [35,95,96]. The model used in this study suggests that consumer's purchasing intention is the function of all three dimensions of persuasion. Consumers do not purchase a product only because it is easy for them to process the purchasing details, or because they liked or are entertained with the advertising, or because they are well informed about the product. The cumulative effect of knowledge, affection, and conation contributes to making a purchasing decision. However, this study also believes that the dominant motive among the three dimensions might determine the attitude of the customer. Several prior related studies were examined in the effort to build this study's research model. Table 1 below presents a summary of a few of the related research referenced in this study.

Table 1. Prior related literature.

Authors (Year)	Research Title	Method (Theory) and Findings
Ducoffe [37]	"How Consumers Assess the Value of Advertising."	Introducing a new construct called advertising value this paper has tested its conceptual model employing a mall intercept survey and an experimental study to examine the portion of the model focusing on the influence of informativeness and entertainment on advertising value.
Ducoffe [26]	"Advertising value and advertising on the web."	Following his paper in 1995, Ducoffe [26] has used a survey to assess web advertising's value to consumers. This paper has once again confirmed the validity of the proposed relationship between advertising value and three independent variables informativeness, entertainment, and irritation.
Funkhouser and Parker [66]	"An action-based theory of persuasion in marketing."	This paper furthers the theory of persuasion and its application in marketing. It suggests that persuasion brings about a behavioral rather than attitudinal change. The paper also explains fundamental conceptual issues in persuasion by comparing the Action Theory of Persuasion (ATP) with other theories of persuasion.
Li, Daugherty, and Biocca [32]	"Impact of 3-D Advertising on Product Knowledge, Brand Attitude, and Purchase Intention: The Mediating Role of Presence."	This paper conducted two studies using laboratory experiment exploring the properties of 3-D advertising and its impact on consumers purchasing intention. It also explains the mediation role of presence in formulating virtual experience. The theory of cognitive fit is adopted by this study.
Suh and Lee [35]	"The effects of virtual reality on consumer learning: an empirical investigation."	The effect of virtual reality (VR) interfaces on consumer learning in terms of cognitive, affective, and conative dimensions is examined. The result reported that the overall consumer's learning increases when using VR interfaces. The learning is high with virtually high experiential (VHE) products than virtually low experiential (VLE) products.
O'keefe [62].	"Conviction, Persuasion, and Argumentation: Untangling the Ends and Means of Influence."	The relationship and difference between argumentation and persuasion are clearly explained in this paper. The end of influencing attitudes and that of influencing behavior is used as one of the distinguishing features.
Yaoyuneyong, Foster, Johnson, and Johnson [12]	"Augmented Reality Marketing: Consumer Preferences and Attitudes Toward Hypermedia Print Ads."	A mixed research design was used to compare traditional print ad (i.e., text and images only) to two kinds of augmented reality marketing (ARM) ads, i.e., code hypermedia (QRH) and AR hypermedia (ARH), to identify which ad format would consumers prefer, and which format will result in better consumer attitudes.
Javornik [10]	"'It's an illusion, but it looks real!' Consumer affective, cognitive and behavioral responses to augmented reality applications."	Using a revised conceptualization of Theory of Interactive Media Effects (TIME), two augmented reality (AR) applications and resulting consumer responses to their media characteristics are examined. The two experimental studies confirmed that perceived augmentation represented a fitting concept for understanding consumer responses to AR features.

Cognition and affection mediate the relationship between the media characteristics of MAR and purchasing intention. When the knowledge acquired about the product increases, it creates either a positive, neutral, or negative attitude towards the product [35]. Although each cognitive and affective dimensions were studied separately and given a considerable weight to serve as antecedents of advertising value, a significant number of opinion suggests both cognitive and affective dimensions could be used together as antecedents of advertising value [37]. While cognition mediates informativeness and real-time interactivity with affection, affection mediates irritation, entertainment, and cognition with purchasing intention.

Hypothesis 7 (H7). *Cognition mediates the relationship between informativeness and affection.*

Hypothesis 8 (H8). *Cognition mediates the relationship between real-time interactivity and affection.*

Hypothesis 9 (H9). *Affection mediates the relationship between irritation and purchasing intention.*

Hypothesis 10 (H10). *Affection mediates the relationship between entertainment and purchasing intention.*

Hypothesis 11 (H11). *Affection mediates the relationship between cognition and purchasing intention.*

3. Research Methodology

This study aimed to investigate consumers purchasing intention by examining their reactions to the MAR applications' media characteristics. A single-group posttest-only quasi-experimental design [97] was used to test the research model. The psychometric survey was conducted in a laboratory setting where participants were shown a MAR application, IKEA Place, developed to showcase IKEA furniture and then filled a questionnaire following the treatment to measure the impact of the MAR application on the dependent variable purchasing intention. The procedure is explained in detail in the 'Procedure' subsection below. As there are so many different types of advertising, there are also different approaches to analyzing them. Copy testing is the broad category where most of the prevalent advertising researches fall in [98]. The dimension of persuasion was used as one of the ways of explaining the variety of methods in copy testing research. The three dimensions, which are appropriate to copy testing research, are cognitive, affective, and conative dimensions [75].

3.1. Participants

A convenience sample of a majority of undergraduate and a few postgraduate students enrolled at Ajou University and The University of Suwon in South Korea were used as a participant in this study. A coupon for coffee (Hot/Ice Americano, Espresso, and Choco) was offered as an incentive. Even though the generalizability of student samples is debatable, students, as compared to other demographics, are generally considered more technology literate and confident and are more likely to be early adopters [99]. Hence, students were an appropriate number of participants in this study. Most of the students were from different backgrounds and different countries. As shown in Table 2 below, a total of 188 students (44.4% female; 55.6% male) participated in the experiment and completed the experimental survey. A large number of participants, about 86.3%, were from Asia. Most of them, about 90.7%, held a bachelor's degree. While 98.3% of the participants say they became interested in the product because of the MAR application, 66.8% of them decided to use this type of application in the future. Only 35.1% of the participants experienced similar types of applications for various reasons in the past and 79.3% of the participants mentioned that the MAR application was relevant to their needs. Meanwhile, the mean age of the participants was 23.82.

Table 2. Participants' demographics.

Measure	Value	Frequency (%)
Age	19–23	54.9%
	24–28	34.6%
	29–33	4.9%
	Over 33	5.5%
Ethnicity	African	2.2%
	American	1.1%
	Hispanic	0.5%
	Asian	86.3%
	Other	9.9%
Gender	Male	55.6%
	Female	44.4%
Education	Bachelor	90.7%
	Master and above	9.3%

3.2. Stimulus

A well-known Swedish furniture company called IKEA has developed a MAR application called IKEA Place to advertise its furniture products. The app was launched in the U.S. on 19 September 2017, coinciding with Apple's iOS 11. It is one of the first apps to use Apple's ARKit tech [100]. For so many years, the furniture company IKEA, just like other retailers, has relied on customers visiting its physical stores to sell furniture. However, now with the help of augmented reality technology, the company is hoping a smartphone will drive sales letting the customers preview how furniture looks on their smartphone before they buy them. IKEA Place helps to place the company's furniture products wherever the customer envisions it in their homes. Using IKEA Place, shoppers can view 3-D rendering, with a 98% size accuracy, from different angles of over 2000 products before they decide on the ones they want to buy [101]. IKEA Place also allows shoppers to take pictures of the furniture they like and share it with their loved ones using any social media. Once they make up their mind to buy the product, the app can direct the shoppers to the IKEA website to complete purchases.

3.3. Procedure

A total of 4 colleagues, with almost the same knowledge about MAR applications, participated as facilitators in this quasi-experiment. The facilitators were assigned to 2 carefully designed and well-furnished laboratory rooms to experiment with. They took all the necessary precautions not to influence the participants' involvement with the experiment. First, the participants were introduced with what IKEA company does. Second, the participants were trained for 5 min about what mobile augmented reality is and how to use the features of IKEA Place (i.e., MAR application developed by IKEA Furniture Company for an advertising campaign) with an iPhone 7 given to them by the facilitators. Included in the training was a 1-min video of an introduction about IKEA Place. To ensure identical training, the facilitators followed the same steps to train the participants. The facilitators were very careful not to compare and/or mention the advantages of MAR over TV advertising or any traditional advertising media. Once the participants fully understood how to use the features of the MAR application, IKEA Place, they were asked to freely navigate and try-on any furniture from the listed 2000 for about 5 min. Making sure the participants were familiar with the application and could use the application by themselves, they were assigned to 1 of the 2 rooms according to their order of arrivals. The 2 rooms were purposefully designed to resemble a home-like furniture arrangement. Of course, the facilitators tried to focus on using the 4 important features of the application IKEA Place as shown in Figure 3: (1) choosing and placing a furniture or any IKEA product from the categories, (2) checking the purchase detail information about the product, (3) taking a picture of the 3D display and sharing it with their friends using any social media and (4) finally, if the customer likes the product, how they can add the product to their shopping cart or buy the product directly. It was noticed that most of the students were interested in trying-on a chair and a small table. This may have been

related to the fact that a majority of them could only afford to buy those types of products. Finally, the participants were taken to a separate room where they could sit comfortably and complete the psychometric survey. On the front page of the questionnaire, a consent for participation was supplied, which remarked it is voluntary, no personal information such as name or email is required, and the information provided will be kept confidential. While participants completed the questionnaires, the facilitators were on standby to assist them with their inquiries. Most of the questionnaires in this study were about the participants' experience with the MAR application. Soon after the completion of the survey questionnaire, the participants were thanked by the researchers and given a coupon for coffee as an incentive.

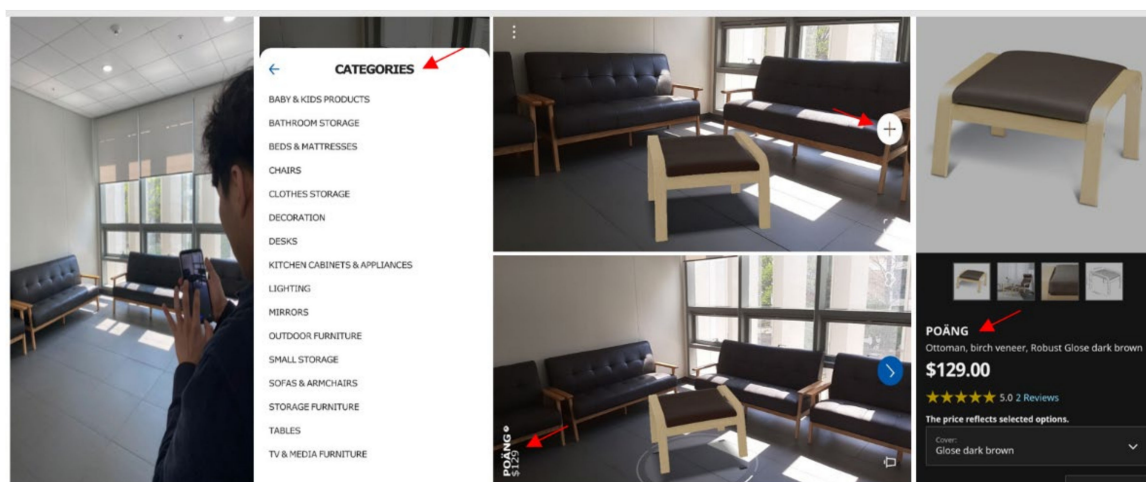


Figure 3. IKEA's MAR application (IKEA Place).

3.4. Pilot Study

To avoid the misunderstanding that might occur because of ambiguous words in the questionnaire [102], a pilot test before the actual experiment was conducted. A group of 15 respondents (classmates) selected from the Graduate School of Business lab at Ajou University were shown how MAR works using IKEA Place App. After a short demonstration of “how to use the MAR application, IKEA Place”, the respondents were given the preliminary questionnaire to complete. The respondents raised several questions including some misspelling, incorrect grammar, and confusing words. Since the questionnaire was prepared both in English and in the Korean language, the Korean version raised several questions and was initially corrected by a part-time assistant who was Korean and had a very good working knowledge of MAR. Then, the translation was refined by a researcher who had a professional working proficiency in the English language. To address the validity of the measurement items, the Korean version was back-translated into English. Comparing the original English version with the back-translated version we made sure they were very similar. Then, the questionnaires were distributed as per the preference of the participants, either in English or in Korean. Because of the possible difference in participants learning curve, the questionnaires collected from the pilot study were not included in the subsequent experiment [102].

3.5. Measurement Items

Prior well-known scales were adopted to measure the outcome variables with a 7-point Likert scale. Informativeness, entertainment, and irritation were defined and measured by adopting items from Ducoffe [37] and Ducoffe [26]. Items to measure real-time interactivity were adopted from Steuer [42] and Klein [47]. In addition, both the operational definitions and items to measure cognition, affection, and conation (i.e., purchasing intention) were adopted from Arnould, Price, and Zinkhan [84], Zanot [89], and Fiore, Kim, and Lee [103], respectively. Table 3 below summarizes the operational definitions and measurement items.

Table 3. Constructs and operational definition.

Variables	Operational Definitions	Measurement Items	References
Informativeness	Informativeness is defined as “the degree to which consumers can receive resourceful and helpful information on the Internet” by Ducoffe [37]	<ol style="list-style-type: none"> 1. MAR supplies relevant information. 2. MAR provides timely information. 3. MAR supplies complete information. 	Ducoffe [37]
Real-time Interactivity	<p>“Real-time interactivity refers to the degree to which users can manipulate the form and content of the mediated environment in real-time” [42].</p> <p>“Interactivity is achieved when users are provided with immediate feedback through their perceptions that a mediated environment is modified based on their input” [47].</p>	<ol style="list-style-type: none"> 1. MAR provides frequent exchange. 2. MAR offers me a vivid communication experience. 3. MAR facilitates two-way communication. 4. MAR involves many entities - other people, the company, the message in the ad, etc. 	Steuer [42] and Klein [47]
Irritation	Irritation is defined as “advertising with unwanted outcomes that result in reduced advertising effectiveness and value” [26].	<ol style="list-style-type: none"> 1. MAR insults people’s intelligence. 2. MAR is annoying. 3. MAR is deceptive. 	Ducoffe [26]
Entertainment	Entertainment is defined as “the ability to fulfill an audience’s needs for escapism, diversion, aesthetic enjoyment, or emotional enjoyment” [26].	<ol style="list-style-type: none"> 1. MAR is exciting. 2. MAR is interesting. 3. MAR is entertaining. 	Ducoffe [26]
Cognition	“Consumer learning refers to any process that changes a consumer’s memory and behavior as a result of information processing” [84].	<ol style="list-style-type: none"> 1. MAR provides a high degree of learning. 2. MAR is convincing. 3. MAR is sensual. 4. MAR is vigorous. 	Arnould, Price, and Zinkhan [84]
Affection	“Zanot [89] suggested some customers liked advertising, whereas others felt negatively toward and disliked it.”	<ol style="list-style-type: none"> 1. MAR is easy to get along. 2. MAR is appealing. 3. MAR is attractive. 	Zanot [89]
Purchasing Intention	“The intention to purchase the (augmented) product” [103].	<ol style="list-style-type: none"> 1. MAR motivated me to buy the product/service. 2. MAR is relevant to my needs. 3. I became interested in the product/service because of MAR. 	Fiore, Kim, and Lee [103]

4. Results

The individual responses from the psychometric survey about the impact of MAR applications on consumers' purchasing intention were collected and analyzed using a total of seven latent variables. The psychometric survey data was evaluated using SPSS 23 and Amos 23. The predictive model was examined using Structural Equation Modeling (SEM), following the two-step approach suggested by Anderson and Gerbing [104]. The validity of the measurement model was examined in Confirmatory Factor Analysis (CFA). CFA was based on the covariance matrix and used maximum likelihood estimation as implemented in AMOS 23. Then, the structural model validity was observed by the goodness of fit indices and the results of the hypothesis testing were reported. Descriptive statistics, correlations, and reliabilities were conducted with SPSS 23.

4.1. Measurement Model

In the measurement model, the four most important assumptions in Structural Equation Modeling (SEM) such as multivariate normality, multicollinearity, sample size, and positive definiteness are examined. There was no need to worry about univariate normality since this study used a Likert scale from 1 to 7 for most of its data which is rarely normal. First, multivariate normality was checked using the Mahalanobis distance in SPSS. Receiving the Mahalanobis distance of the data, which was 76.370, and computing the Mahalanobis distance critical of 49.73, nine (9) outliers were identified. Then, those outliers were excluded during the analysis from the sample. Second, multicollinearity was observed using the two collinearity diagnostic factors, i.e., Tolerance and Variance Inflation Factor values. All values for Tolerance were greater than 0.01 and all Variance Inflation Factor (VIF) values were also less than 10 which confirms the multicollinearity of the data was also not violated. Additionally, most of the data had a linear relationship. By adding the loess line, no sharp angle was seen which also assured that the data did not violate the assumption of linearity and homoscedasticity. The variance of any one of the measured variables was not greater than 10 times more than any other variable. Thus, variance assumption was also not violated by the data. Third, the SEM sample size calculator (<https://www.analyticscalculators.com/>) recommended a minimum of 170 sample size, but the study used a total of 179 participants (i.e., 188 minus 9 outliers). Hence, the third assumption is satisfied. Finally, the determinant from testing Exploratory Factor Analysis (EFA) i.e., 1.409×10^{-5} , which is not equal to zero, showed that the data did not violate the assumption of positive definiteness. Therefore, all four assumptions were adequately addressed.

In the model specification Exploratory Factor Analysis (EFA), individual construct reliability, and complexity were tested. Apart from the determinant, Kaiser-Meyer-Olkin test (KMO) and extraction results in EFA are observed. The KMO equal to 0.755 confirmed that the sample size was enough; moreover, the Bartlett's test (BTS) was significant which means at least two of the variables are strongly correlated and that factor analysis could be done. All the extractions were quite high and Eigenvalues also confirm that there were seven constructs.

Cronbach's Alpha value was used to assess the individual construct reliability of each scale (Informativeness (INF) $M = 2.31$, $SD = 0.64$, $Sk = -0.52$; Entertainment (ENT) $M = 2.64$, $SD = 0.49$, $Sk = -1.15$; Irritation (IR) $M = -1.48$, $SD = 0.97$, $Sk = 0.68$; Real-time Interactivity (RI) $M = 2.08$, $SD = 1.05$, $Sk = -0.71$; Cognition (CG) $M = 2.08$, $SD = 1.01$, $Sk = -0.68$; Affection (AF) $M = 1.97$, $SD = 0.80$, $Sk = -0.62$; Purchasing Intention $M = 1.74$, $SD = 0.69$, $Sk = -1.37$). As shown in Table 4 below, all constructs have displayed an acceptable level of Cronbach's alpha value (INF = 0.816, ENT = 0.752, IR = 0.729, RI = 0.880, CG = 0.860, AF = 0.773, and PI = 0.789). Furthermore, by identifying the exogenous and endogenous variables to compute the complexity, the model is over-identified with a degree of freedom 213.

Table 4. Reliability, validity, and factor loadings.

Construct	Reliability	Convergent Validity		Factor Loadings	
	Cronbach's Alpha	Composite Reliability (CR)	AVE	Items	Rotated Component Matrix
Informativeness	0.816	0.820	0.605	INF1	0.793
				INF2	0.825
				INF3	0.864
Entertainment	0.752	0.823	0.619	ENT1	0.743
				ENT2	0.888
				ENT3	0.886
Irritation	0.729	0.735	0.481	IR1	0.785
				IR2	0.813
				IR3	0.804
Real-time Interactivity	0.880	0.895	0.681	RI1	0.781
				RI2	0.863
				RI3	0.894
				RI4	0.843
Cognition	0.860	0.863	0.615	CG1	0.790
				CG2	0.741
				CG3	0.886
				CG4	0.892
Affection	0.773	0.789	0.561	AF1	0.817
				AF2	0.846
				AF3	0.619
Purchasing Intention	0.789	0.800	0.575	PI1	0.847
				PI2	0.834
				PI3	0.775

By computing the factor loadings between the construct and each of the items, the model is unitized. All individual constructs are also constrained. The internal consistency and identified factor structure are tested to see if the items in-fact load up under the constructs using Confirmatory Factor Analysis (CFA). Table 4 below presents the Average Variance Extracted (AVE), Composite Reliability (CR), and the factor loadings for each item.

The CR and AVE values are computed from the standardized regression weights of the items of the constrained model. CR for all the constructs satisfied the minimum requirement of $CR > 0.7$, but the AVE for IR happened to be less than the minimum requirement of $AVE > 0.5$. Although IR's AVE is less than 0.5, its convergent validity is still acceptable because Fornell and Larcker [105] asserted that if AVE is less than 0.5 but composite reliability is higher than 0.6, the convergent validity of the construct is still adequate. Therefore, the overall convergent validity of the model is significant. Lastly, comparing the AVEs of the paired constructs with their squared correlations [105], it is found that all factor correlations achieved the minimum requirement. Thus, the discriminant validity of the model is significantly verified. Furthermore, since the overall validity of the model is confirmed with no major problem, the nomological validity of the model is adequately established. The correlation among the constructs revealed in Table 5 below shows that, as expected, the correlation between cognition and affection and between affection and purchasing intention is significant and in the expected direction as

follows: cognition, 0.220; and affection, 0.353. Except for real-time interactivity, the correlation between informativeness and cognition and the correlation between irritation, entertainment, and affection is in the expected direction, though they were found to be insignificant.

Table 5. Correlation matrix.

	Purchasing Intention	Affection	Cognition	Informativeness	Real-Time Interactivity	Irritation	Entertainment
Purchasing Intention	1						
Affection	0.353 **	1					
Cognition	0.137	0.220 **	1				
Informativeness	0.210 **	0.315 **	0.043	1			
Real-time Interactivity	0.178 *	0.308 **	−0.145	0.303 **	1		
Irritation	−0.115	−0.138	−0.085	−0.095	0.057	1	
Entertainment	0.027	0.122	0.088	−0.050	−0.116	0.021	1

N (sample Size) = 179, * $p < 0.05$; ** $p < 0.01$ (two-tailed).

4.2. Structural Model

The structural model to explore the causal relationships among the variables was examined using AMOS 23. Identifying the unit loadings of the constructs, the model fit was analyzed employing Bentler and Bonett's [106] recommendation that the fit indices for an adequate model should be 0.9 or above. After creating a correlation between real-time interactivity and affection and between few error terms, according to the suggestion from the modification indices, the model finally achieved four of the five, except for NFI, model fit criterion sufficiently (CMIN = 1.069 with $p = 0.0233$, GFI = 0.902, CFI = 0.992, NFI = 0.885, RMSEA = 0.020). Overall, the measurement model can be considered a Good Fit. Table 6 below presents the summary of the fit indices of the model together with suggested values.

Table 6. Model fit indices.

Absolute					
χ^2/df	GFI	RMSEA	RMR	SRMR	AGFI
1.069 ($p = 0.233$)	0.902	0.020	0.060	0.000	0.873
< 5	≥ 0.9	≤ 0.10	≤ 0.10	≤ 0.08	≥ 0.50
Incremental			Parsimony		
CFI	NNFI	IFI	PGFI	PNFI	
0.992	0.885	0.992	0.696	0.745	
≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.50	≥ 0.50	

Proceeding with the structural model analysis, the significance of the proposed hypotheses is tested. From the proposed hypothesis by this study, only one of them, H1, was not supported. Except for the relationship between informativeness and cognition, which happen to be insignificant, all the other hypotheses were supported. Real-time interactivity significantly influences cognition. While entertainment, cognition, and real-time interactivity had a positive significant effect on affection, irritation had a negative significant effect on affection. Although it was not hypothesized earlier in this study's model, a new relationship between real-time interactivity and affection was suggested during the model-fitting effort. Real-time interactivity retained an indirect and direct impact on affection. This is signaled by the correlation of 0.308** between real-time interactivity and affection. The path between them in the structural model is significant with the t value of 4.708. Furthermore, affection has a positive significant effect on purchasing intention. All the proposed hypotheses except for the relationship between informativeness and cognition were supported with significant values. The results are summarized in Table 7 below.

Table 7. Parameter estimates and hypothesis test.

Hypotheses		Estimate	t Value (CR)	p	Conclusion
H1	INF → CG	0.067	0.690	0.490	Not Supported
H2	RI → CG	−0.148	−2.091	0.037 *	Supported
H3	IR → AF	−0.176	−2.648	0.008 **	Supported
H4	ENT → AF	0.291	2.789	0.005 **	Supported
H5	CG → AF	0.160	2.564	0.010 *	Supported
H6	AF → PI	0.385	4.185	***	Supported

N (sample Size) = 179, * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed).

4.3. Mediation Effect Analysis

To check whether cognition is mediating the relationship between informativeness and real-time interactivity with affection and whether affection is mediating the relationship between cognition, irritation, and entertainment with purchasing intention, mediation analysis was performed, adopting the technique specified by Baron and Kenny [107]. According to Baron and Kenny [107], mediation is established when the following four criteria hold: (1) independent variable's effect on mediating variable should be significant (2) independent variable's effect on dependent variable should be significant (3a) independent and mediating variable's effect on dependent variable should be significant (3b) the coefficient of the independent variable in step 2 should be larger than that in step 3 (3c) the coefficient of mediating variable in step 3 should be significant (4a-optional) Adj. R² of Step 3 should be greater than Adj. R² of Step 2 (4b-optional), and Cohen's Effect Size should be larger than 0.02 (Small Effect Size). Following the suggested techniques, three groups of mediation analyses are conducted and summarized in Table 8 below. The mediation analysis showed that cognition is mediating the relationship between informativeness and affection, but not mediating real-time interactivity and affection. Nonetheless, since the direct relationship between informativeness and cognition showed no significance in H1, it is not practical to test the mediation effect. This type of situation happens in Baron and Kenny [107] mediation effect analysis technique as explained by Zhao et al. [108]. The coefficient of the IV in step 2 ($\beta = 0.308^{***}$) is not larger than its coefficient in step 3 ($\beta = 0.347^{***}$). The newly explored relationship between real-time interactivity and affection also shows that affection, rather than cognition, is the mediator between real-time interactivity and purchasing intention. The other nonmediation is found between entertainment and purchasing intention because the direct and indirect effect of entertainment on affection and purchasing intention happens to be insignificant. Due to its insignificant indirect effect, affection is also not mediating the relationship between irritation and purchasing intention.

Table 8. Mediation.

Mediation	Step 1 Direct Effect (IV → MV)	Step 2 Indirect Effect (IV → DV)	Step 3 IV, MV → DV		Step 4 (Optional) Adj R ²		Result
			Coeff. of IV	Coeff. of MV	Adj. R ² of Step 2	Adj. R ² of Step 3	
H8 RI → CG → AF	−0.145 +	0.308 ***	0.347 ***	0.271 ***	0.090	0.157	Not Mediating
H9 IR → AF → PI	−0.138 +	−0.115	−0.068	0.344 ***	0.008	0.119	Not Mediating
H10 ENT → AF → PI	0.122	0.027	−0.016	0.355 ***	−0.005	0.115	Not Mediating
H11 CG → AF → PI	0.220 **	0.137 +	0.062	0.355 ***	0.013	0.118	Fully Mediating

N (sample Size) = 179, + $p < 0.10$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed). The beta coefficients are standardized.

5. Discussion and Conclusions

The objective of this study is to examine whether the hypothesized features of MAR applications and their relationship with persuasion dimensions leading towards purchasing intention would be supported by the data. Except for informativeness, the relationship of real-time interactivity, entertainment, and irritation with cognition and affection persuasion dimensions is supported by the data. The VR interface's real-time interactivity's relationship with cognition tested by Suh and Lee [35] has shown the same result. This offers further support for the validity of this study, though making a direct comparison would not be advisable given the difference in characteristics of the advertising mediums and incomparability of the samples utilized.

There is a consensus among consumers about the role of advertising being informative of the product features to make a purchasing decision. Advertising's major role is informing users [109]. This study has hypothesized that informativeness and cognition will have a positive relationship. The informativeness of MAR applications in advertising is expected to enhance learning or awareness of consumers about the products being advertised. If advertising is rich with media and provides consumers with all the necessary details about products, it is assumed, because of their goal-seeking behavior, consumers will get what they want from the advertising which will then help them finally respond the way they do. Surprisingly, the result of the analysis shows that informativeness does not positively influence cognition. In fact, against the common long-standing belief that advertising should be informative, some literature from advertising, mass communication, and economists uncover that this social value of advertising has been diminishing (p. 328, [110]). While the defenders say the reason firms use advertising is to inform customers about their products, critics argue that a firm's advertising is actually diverting the attention of customers from social goals [73] and manipulating their tastes [111]. Much of advertising is becoming psychological rather than informational, although some consider it as tactic employed by advertisers. The theory of advertising, for instance, "Advertising as a signal" of quality by Kihlstrom and Riordan [112] has suggested that the content of advertising is irrelevant (p. 330, [110]).

According to Kihlstrom and Riordan [112], advertising shows no direct realistic information about products, but may indirectly signal quality. Marketers and advertisers have given more emphasis to "how" the advertising is conveyed to consumers than "what" is being communicated. The way the content is told matters more than the content itself. The marketers try to convey a message of quality of product to consumers through their advertising expenditure. For instance, a furniture company signs a contract with a celebrity spending a huge amount of money for an ad that only shows how the celebrity is seated comfortably enjoying their products. The advertising does not care much about what the product is made of or how it is going to fit in their house. Yet, consumers are interested to buy the product not because they have adequate information about the product but only because it was advertised by a known famous celebrity who is paid a huge amount of money. Consumers convince themselves that the company invested big money because the product is of good quality. Suh and Lee [35] have also found that advertising using virtual reality interfaces does not improve knowledge for VLE (virtually low experiential) products. It is evident that augmented reality has the ability to provide entertainment, promotional, experiential, and relational values [15,22,38,113], but some marketers have overly focused on the medium that they forget the message [114]. Hence, the insignificant influence of informativeness on cognition could be because the advertising trend is not focused on its informational role. Furthermore, even though the mediation role of cognition between real-time interactivity and affection is not supported, the direct effect of real-time interactivity and cognition is supported and significant with $p < 0.05$. From this result, it is presumed that consumers give much more value and attention to how they are told (being informed) about the products. This is implicated through the result that real-time interactivity has a positive influence on cognition.

When consumers are irritated or annoyed while interacting with the advertising, they dislike the advertisement. Data from the survey show a significant and negative correlation of -0.138 and -0.115 between multiple items of irritation and affection and purchasing intention, respectively.

The dislike or lack of affection finally affects the consumers' purchasing intention. On the other hand, the entertainment with MAR, which enables consumers to view products and their utility being positioned in unusual places, causes their interaction to be entertaining and fun. When advertising is pleasant and likable it is believed to have a positive influence on brand attitude [87,115]. Even though the correlation happens to be small between entertainment and affection (0.112), the direct effect shows significant support with $p < 0.01$. Thus, entertainment increases the affection of consumers toward MAR. The affection (or liking), which is achieved through increasing the knowledge of consumers about the products, has increased the chance that the consumers will finally purchase the products. The assumed positive relationship between affection with the advertisement and purchasing intention has been also supported.

The result of the mediation effect of affection between cognition and purchasing intention has also assured the fact that knowledge (or learning) and experience of a product's utility is not directly related to consumers purchasing intention. This is tested by directly relating cognition and purchasing intention and finding that cognition does not positively affect purchasing intention or there is no direct positive relationship. This result complements the argument forwarded above by Kihlstrom and Riordan [112] that considers advertising as a signal of quality. Thus, it has asserted the long-debated issue that it is not "what" is conveyed about the product rather "how" it is conveyed that helps to grasp consumers' attention to fall for the product and make the decision to purchase it [112]. Affection has also shown not to mediate the relationship between irritation and purchasing intention. Additionally, the mediation role of affection between entertainment and purchasing intention is not supported. This indicates that consumers need more than just entertainment to make a purchasing decision. According to Mackenzie and Lutz [87], the distinction between the two dimensions, i.e., cognition and affection can be considered as antecedents to a general attitudinal response. During the quasi-experiment, this study has also witnessed that the more the participants interact with the advertising and learn how to manipulate it, the more they become interested to explore and know more about the products being advertised. In addition, those interactions were very entertaining and the participants appeared to be in a happy mood. Therefore, this study believes that, had the product information been provided only verbally, it would have resulted in lower interest to acquire further product information and hence lowered the motivation to purchase the product. Hence, this study has inferred that real-time interactivity and entertainment would help address the content awareness about the product and these two important features should be carefully designed not to irritate or annoy consumers. Furthermore, these features are there to enhance consumers' knowledge about the product while having fun and enjoying their experience with the advertising which will finally help them to make an informed decision.

5.1. Practical and Theoretical Implications

This study holds implications for both research and practice. MAR has emerged as a technology that made an innovative and entertaining way of information acquisition possible by superimposing an extra layer of virtual information on top of the perception of the real world in real-time. Understanding the perception of users about MAR is important for marketers since these perceptions affect consumers' attitudes towards advertising.

This study has provided useful insight for marketers and advertisers using MAR applications interfaces for advertising purposes. As the findings suggest, advertisers and marketers should devise appropriate ways to inform their consumers about their products. They should place much more emphasis on the way product messages are conveyed to their consumers. MAR is more powerful than traditional advertising media. It allows consumers to interact with the products in a multimedia environment. Advertisers, by creating a fascinating augmented reality shopping experience, can enhance the value of the information being presented about their products, engage consumers in real-time, and ultimately establish a competitive advantage. The risk associated with product return and logistical expense is greatly minimized. This study has undertaken a quasi-experiment in a new

area of advertising experience. Therefore, replications and/or extensions of this study are required to confirm the results and to fully recognize the effect of MAR.

There are very few studies in assessing MAR applications' effectiveness in advertising. Furthermore, only a few focused on the reaction of consumers towards MAR applications. This study adds to the literature of advertising the new and exciting features of MAR that could even cause it to be the best tool as an advertising media. This study has shown that in advertising the way information is transmitted is more important than the content of the information itself. This was shown in our unsupported hypothesis that predicted informativeness increases cognition.

This study has introduced the mediating role of affection between cognition and purchasing intention. As shown in Table 8, the mediation role of affection was strongly supported. This could support the argument about the precedence of cognition to affection and then conation dimension.

5.2. Limitations and Further Research Issues

Although this study had several contributions to advertising and marketing research, it also has some limitations that need to be addressed by future researchers. In total, three major limitations are worth mentioning. First, the generalizability of the results is limited since the collected student data from a convenience sample may not be representative of all users. Being the major group with high literacy in computers and the Internet and being close to recent technological advancements, this study believes that a student sample can adequately address the presumed theoretical exercise [32]. However, extending the results to draw practical implication and interpretation must be done with caution. Additional tests of the model using larger and random samples with a proportional number of participants from different demographics should be done by future studies. The objective of this study is to examine the features of MAR applications and their influence on a purchasing decision explained by the dimensions of persuasion (i.e., cognition, affection, and conation). However, this study could also help users with the prior knowledge of MAR technology and its advantages and disadvantages to make an informed inference in comparing MAR with other existing advertising techniques. Second, the quasi-experiment was conducted using one selected MAR application developed by IKEA Company. This MAR application is called IKEA Place. There are currently many MAR applications developed by different companies for products with different characteristics. The IKEA Place application is developed to advertise IKEA's furniture products. Since the advertising is developed for furniture products, the findings of this study could only apply to VHE (virtually high experiential) products. Essentially, the strength of persistence of the effects of virtual reality interfaces is less for VLE (virtually low experiential) products [35]. Thus, the results of this study might not be generalized as it deals with a single MAR application for a specific product type. Future studies, which use different MAR applications for different products, are necessary to generalize the results. Some of the important features of MAR, for example immersion, are not included in the measurement items to test the proposed model. Hence, studies in the future should test the impact of the unique features which are not included in this study.

Author Contributions: Conceptualization, T.T.H. and M.K.; methodology, T.T.H. and M.K.; software, T.T.H.; validation, M.K.; formal analysis, T.T.H.; investigation, T.T.H. and M.K.; resources, M.K.; data curation, T.T.H.; writing—original draft preparation, T.T.H.; writing—review & editing, T.T.H. and M.K.; visualization, T.T.H.; supervision, M.K.; funding acquisition, M.K. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by the Ajou University research fund.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. ABIResearch Developers to Invest \$2.5 Billion in Augmented Reality in 2018. Look for Enterprise to Drive Smart Glasses. Available online: <https://www.abiresearch.com/press/developers-to-invest-25-billion-in-augmented-reality> (accessed on 15 July 2017).

2. eMarketer Worldwide Internet and Mobile Users: eMarketer's Updated Estimates and Forecast for 2017–2021. Available online: <https://www.emarketer.com/Report/Worldwide-Internet-Mobile-Users-eMarketers-Updated-Estimates-Forecast-20172021/2002147> (accessed on 20 June 2018).
3. Miller, G. The smartphone psychology manifesto. *Perspect. Psychol. Sci.* **2012**, *7*, 221–237. [CrossRef] [PubMed]
4. Statista Global Retail e-Commerce Market Size 2014–2021. Available online: <http://www.statista.com/statistics/222128/global-e-commerce-sales-volume-forecast/> (accessed on 12 December 2019).
5. Milgram, P.; Kishino, A. Taxonomy of Mixed Reality Visual Displays. *IEICE Trans. Inf. Syst.* **1994**, E77–D12, 1321–1329.
6. Azuma, R.T. A survey of augmented reality. *Presence Teleoperators Virtual Environ.* **1997**, *6*, 355–385. [CrossRef]
7. Gibbs, S. Augmented Reality: Apple and Google's Next Battleground. Available online: <https://www.theguardian.com/technology/2017/aug/30/ar-augmented-reality-apple-google-smartphone-ikea-pokemon-go> (accessed on 2 December 2017).
8. Markets and Markets Mobile Augmented Reality Market. Available online: <https://www.marketsandmarkets.com/Market-Reports/mobile-augmented-reality-market-174800140.html> (accessed on 28 February 2017).
9. Pereira, M.N.; Otón, M.P.; Cotos, J.M.; Remoaldo, P.C. Applying an augmented reality tool to the Camino de Santiago in Portugal. In *Handbook of Research on Technological Developments for Cultural Heritage and Etourism Applications*; Rodrigues, J.M.F., Ramos, C.M.Q., Cardoso, P.J.S., Henriques, C., Eds.; IGI Global: Hershey, PA, USA, 2018; pp. 120–139.
10. Javornik, A. 'It's an illusion, but it looks real!' Consumer affective, cognitive and behavioural responses to augmented reality applications. *J. Mark. Manag.* **2016**, *32*, 987–1011. [CrossRef]
11. Riva, G.; Davide, F.; IJsselstein, W. *13 Persuasive Effects of Presence in Immersive Virtual Environments*; Ios Press: Amsterdam, The Netherlands, 2003.
12. Yaoyuneyong, G.; Foster, J.; Johnson, E.; Johnson, D. Augmented reality marketing: Consumer preferences and attitudes toward hypermedia print ads. *J. Interact. Advert.* **2016**, *16*, 16–30. [CrossRef]
13. Chehimi, F.; Coulton, P.; Edwards, R. Augmented reality 3D interactive advertisements on smartphones. In Proceedings of the International Conference on the Management of Mobile Business (ICMB 2007), Toronto, ON, Canada, 9–11 July 2007; IEEE: Piscataway, NJ, USA, 2007; p. 21.
14. Kim, Y.-G.; Kim, W.-J. Implementation of augmented reality system for smartphone advertisements. *Int. J. Multimed. Ubiquitous Eng.* **2014**, *9*, 385–392. [CrossRef]
15. Bulearca, M.; Tamarjan, D. Augmented reality: A sustainable marketing tool. *Glob. Bus. Manag. Res. Int. J.* **2010**, *2*, 237–252.
16. Flavián, C.; Ibáñez-Sánchez, S.; Orús, C. The impact of virtual, augmented and mixed reality technologies on the customer experience. *J. Bus. Res.* **2019**, *100*, 547–560. [CrossRef]
17. Ooi, J.; Yazdanifard, R. The review of the effectivity of the augmented reality experiential marketing tool in customer engagement. *Glob. J. Manag. Bus. Res.* **2015**, *15*, 13–17.
18. Luxton, S.; Drummond, L. What is this thing called 'Ambient Advertising'. In Proceedings of the ANZMAC 2000, Griffith University School of Marketing and Management, Southport, QLD, Australia, 28 November–1 December 2000; pp. 734–738.
19. Marshall, G. Augmented Reality Marketing: Utilizing Firesheep Here Innovative Research for One's Selling Requirements. Available online: <http://marketing.ezinemark.com/augmented-reality-marketing-utilizing-firesheep-here-innovative-research-for-ones-selling-requirements-7d33ec35d892.html> (accessed on 14 April 2018).
20. Woods, A. "Reality Check", Revolution. Available online: www.lexisnexis.com/hottopics/lnacademic (accessed on 4 December 2018).
21. Al-Modwahi AA, M.; Parhizkar, B.; Lashkari, A.H. Web-based AR advertising & branding for proton company. *Int. J. Comput. Sci.* **2012**, *9*, 149–158.
22. Owyang, J. Disruptive Technology-The New Reality Will be Augmented. *Cust. Relatsh. Manag. Mag.* **2010**, *23*, 32–33.
23. Olsson, T.; Lagerstam, E.; Kärkkäinen, T.; Väänänen-Vainio-Mattila, K. Expected user experience of mobile augmented reality services: A user study in the context of shopping centres. *Pers. Ubiquitous Comput.* **2013**, *17*, 287–304. [CrossRef]

24. Vessey, I. Cognitive fit: A theory-based analysis of the graphs versus tables literature. *Decis. Sci.* **1991**, *22*, 219–240. [\[CrossRef\]](#)
25. Goodhue, D.L.; Thompson, R.L. Task-technology fit and individual performance. *MIS Q.* **1995**, 213–236. [\[CrossRef\]](#)
26. Ducoffe, R.H. Advertising value and advertising on the web-Blog@ management. *J. Advert. Res.* **1996**, *36*, 21–32.
27. Krevelen, V.D.; Poelman, R. A survey of augmented reality technologies, applications and limitations. *Int. J. Virtual Real.* **2010**, *9*, 1–20. [\[CrossRef\]](#)
28. Andrews, J.C. The dimensionality of beliefs toward advertising in general. *J. Advert.* **1989**, *18*, 26–35. [\[CrossRef\]](#)
29. Campbell, M.C.; Keller, K.L. Brand familiarity and advertising repetition effects. *J. Consum. Res.* **2003**, *30*, 292–304. [\[CrossRef\]](#)
30. Ehrenberg, A.; Barnard, N.; Kennedy, R.; Bloom, H. Brand advertising as creative publicity. *J. Advert. Res.* **2002**, *42*, 7–18. [\[CrossRef\]](#)
31. Kamins, M.A.; Brand, M.J.; Hoeke, S.A.; Moe, J.C. Two-sided versus one-sided celebrity endorsements: The impact on advertising effectiveness and credibility. *J. Advert.* **1989**, *18*, 4–10. [\[CrossRef\]](#)
32. Li, H.; Daugherty, T.; Biocca, F. Impact of 3-D advertising on product knowledge, brand attitude, and purchase intention: The mediating role of presence. *J. Advert.* **2002**, *31*, 43–57. [\[CrossRef\]](#)
33. Sundar, S.S.; Kim, J. Interactivity and persuasion: Influencing attitudes with information and involvement. *J. Interact. Advert.* **2005**, *5*, 5–18. [\[CrossRef\]](#)
34. Le, T.D.; Nguyen, B.-T.H. Attitudes toward mobile advertising: A study of mobile web display and mobile app display advertising. *Asian Acad. Manag. J.* **2014**, *19*, 87.
35. Suh, K.-S.; Lee, Y.E. The effects of virtual reality on consumer learning: An empirical investigation. *Mis. Q.* **2005**, *29*, 673–697. [\[CrossRef\]](#)
36. Birmingham, R.L. *Advertising in America: The Consumer View*; The Michigan Law Review Association: Ann Arbor, MI, USA, 1969. [\[CrossRef\]](#)
37. Ducoffe, R.H. How consumers assess the value of advertising. *J. Curr. Issues Res. Advert.* **1995**, *17*, 1–18. [\[CrossRef\]](#)
38. Chou, Y.-Y.; Ho, C.-H.; Chiu, Y.-W. Customer value toward short message service: An empirical investigation. *Int. J. Organ. Innov.* **2009**, *2*, 356.
39. Gao, Y.; Koufaris, M. Perceptual antecedents of user attitude in electronic commerce. *ACM SIGMIS Database DATABASE Adv. Inf. Syst.* **2006**, *37*, 42–50. [\[CrossRef\]](#)
40. Newhagen, J.E.; Rafaeli, S. Why communication researchers should study the Internet: A dialogue. *J. Comput. Mediat. Commun.* **1996**, *1*, JCMC145.
41. Rewick, J. *E-Commerce (A Special Report): Overview—Choices, Choices: A Look at the Pros and Cons of Various Types of Web Advertising*; Dow Jones & Company Inc.: New York, NY, USA, 2001.
42. Steuer, J. Defining virtual reality: Dimensions determining telepresence. *J. Commun.* **1992**, *42*, 73–93. [\[CrossRef\]](#)
43. Kim, T.; Biocca, F. Telepresence via television: Two dimensions of telepresence may have different connections to memory and persuasion. *J. Comput. Mediat. Commun.* **1997**, *3*, JCMC325. [\[CrossRef\]](#)
44. Anderson, S.P.; Renault, R. Advertising content. *Am. Econ. Rev.* **2006**, *96*, 93–113. [\[CrossRef\]](#)
45. Russell, M. 11 Amazing Augmented Reality Ads. Available online: <https://www.businessinsider.com.au/11-amazing-augmented-reality-ads-2012-1#net-a-porter-makes-storefronts-interactive-1> (accessed on 23 February 2017).
46. Stewart, D.W. The new face of interactive advertising. *Mark. Res.* **2004**, *16*, 10–15.
47. Klein, L.R. Creating virtual product experiences: The role of telepresence. *J. Interact. Mark.* **2003**, *17*, 41–55. [\[CrossRef\]](#)
48. Bezjian-Avery, A.; Calder, B.; Iacobucci, D. New media interactive advertising vs. traditional advertising. *J. Advert. Res.* **1998**, *38*, 23–32.
49. Rosenkrans, G. The creativeness and effectiveness of online interactive rich media advertising. *J. Interact. Advert.* **2009**, *9*, 18–31. [\[CrossRef\]](#)
50. Biswas, A.; Thota, S.C. The effect of irrelevant information on consumer irritation and attitudes: The moderating role of need to evaluate. *ACR North Am. Adv.* **2004**, *31*, 577–578.

51. Marquis, R.; 3 Brands That Failed with QR Codes. iMedia Connection. Available online: <http://www.imediaconnection.com/printpage/printpage.aspx?idD32038> (accessed on 21 January 2017).
52. Shaw, G. QR Code Fails: How Marketers Are Ruining Potential Patient Engagement Tool. Fierce Mobile Healthcare. Available online: <http://www.fiercemobilehealthcare.com/story/qr-code-fails-how-marketers-are-ruining-potentialpatient-engagement-tool/2012-07-02> (accessed on 5 July 2018).
53. Kutsishin, A. Why QR Codes Don't Work. Forbes. Available online: <http://www.forbes.com/sites/ciocentral/2012/08/03/why-qr-codes-dont-work/> (accessed on 11 January 2017).
54. McIvor, K. How to Use QR Codes: A Marketer's Guide. Mobile Marketing Fail. Available online: <http://mobilemarketingfail.com/how-to-use-qr-codes-a-marketersguide/> (accessed on 22 January 2017).
55. Stratton, S.; Kramer, A. *QR Codes Kill Kittens: How to Alienate Customers, Dishearten Employees, and Drive Your Business into the Ground*; Wiley: Hoboken, NJ, USA, 2013.
56. Phillips Research Ambient Intelligence: Changing Lives for the Better. Available online: www.research.phillips.com/ (accessed on 2 February 2019).
57. Najiba, N.M.N.; Kasumab, J.; Bibic, Z.B.H. Relationship and Effect of Entertainment, Informativeness, Credibility, Personalization and Irritation of Generation Y's Attitudes towards SMS Advertising. In Proceedings of the 3rd International Conference on Business and Economics, Shah Alam, Malaysia, 21–23 September 2016.
58. Teixeira, T.; Picard, R.; El Kaliouby, R. Why, when, and how much to entertain consumers in advertisements? A web-based facial tracking field study. *Mark. Sci.* **2014**, *33*, 809–827. [CrossRef]
59. Friestad, M.; Wright, P. The persuasion knowledge model: How people cope with persuasion attempts. *J. Consum. Res.* **1994**, *21*, 1–31. [CrossRef]
60. Friestad, M.; Wright, P. Persuasion knowledge: Lay people's and researchers' beliefs about the psychology of advertising. *J. Consum. Res.* **1995**, *22*, 62–74. [CrossRef]
61. O'Keefe, D.J. *Persuasion: Theory and Research*; SAGE Publications: Thousand Oaks, CA, USA, 2002.
62. O'Keefe, D.J. Conviction, persuasion, and argumentation: Untangling the ends and means of influence. *Argumentation* **2012**, *26*, 19–32. [CrossRef]
63. Reardon, K.K. *Persuasion in Practice*; SAGE Publications: Thousand Oaks, CA, USA, 1991.
64. Hovland, C.I.; Janis, I.L.; Kelley, H.H. *Communication and Persuasion*; Yale University Press: New Haven, CT, USA, 1953.
65. Petty, R.E.; Unnava, R.H.; Strathman, A.J. Theories of Attitude Change. In *Handbook of Consumer Behavior*; Taylor & Francis Group: New York, NY, USA, 1991; pp. 241–280.
66. Funkhouser, G.R.; Parker, R. An action-based theory of persuasion in marketing. *J. Mark. Theory Pract.* **1999**, *7*, 27–40. [CrossRef]
67. Ketcham, V.A. *The Theory and Practice of Argumentation and Debate*; Macmillan: New York, NY, USA, 1914.
68. Eagly, A.H.; Chaiken, S. *The Psychology of Attitudes*; Harcourt Brace Jovanovich College Publishers: San Diego, CA, USA, 1993.
69. Tkalac, A. Specific aspects of persuasion in advertising: How attitudes towards a product change according to the elaboration likelihood model. *Akad. MM* **2001**, *8*, 45–53.
70. Ajzen, I.; Fishbein, M. Theory of reasoned action-Theory of planned behavior. *Univ. South Fla.* **1988**, *2007*, 67–98.
71. Cacioppo, J.T.; Petty, R.E. Social psychological procedures for cognitive response assessment: The thought-listing technique. In *Cognitive Assessment*; Merluzzi, T.V., Glass, C.R., Genest, M., Eds.; Guilford Press: New York, NY, USA, 1981.
72. Briñol, P.; Rucker, D.D.; Petty, R.E. Naïve theories about persuasion: Implications for information processing and consumer attitude change. *Int. J. Advert.* **2015**, *34*, 85–106. [CrossRef]
73. Galbraith, J.K. *The Affluent Society*; Houghton Mifflin Company: Boston, MA, USA, 1956.
74. Meyers-Levy, J.; Malaviya, P. Consumers' processing of persuasive advertisements: An integrative framework of persuasion theories. *J. Mark.* **1999**, *63*, 45–60.
75. Wimmer, R.D.; Dominick, J.R. *Mass Media Research: An Introduction*; Cengage Learning: Boston, MA, USA, 2010.
76. Lavidge, R.J.; Steiner, G.A. A model for predictive measurements of advertising effectiveness. *J. Mark.* **1961**, *25*, 59–62. [CrossRef]

77. Li, H.; Daugherty, T.; Biocca, F. The role of virtual experience in consumer learning. *J. Consum. Psychol.* **2003**, *13*, 395–407. [\[CrossRef\]](#)
78. Smith, R.E.; Swinyard, W.R. Information response models: An integrated approach. *J. Mark.* **1982**, *46*, 81–93. [\[CrossRef\]](#)
79. MacInnis, D.J.; Jaworski, B.J. Information processing from advertisements: Toward an integrative framework. *J. Mark.* **1989**, *53*, 1–23. [\[CrossRef\]](#)
80. Bettman, J.R.; Park, C.W. Effects of prior knowledge and experience and phase of the choice process on consumer decision processes: A protocol analysis. *J. Consum. Res.* **1980**, *7*, 234–248. [\[CrossRef\]](#)
81. Hutchinson, J.W.; Alba, J.W. Ignoring irrelevant information: Situational determinants of consumer learning. *J. Consum. Res.* **1991**, *18*, 325–345. [\[CrossRef\]](#)
82. Lutz, R.J. Changing brand attitudes through modification of cognitive structure. *J. Consum. Res.* **1975**, *1*, 49–59. [\[CrossRef\]](#)
83. Wright, P. Message-evoked thoughts: Persuasion research using thought verbalizations. *J. Consum. Res.* **1980**, *7*, 151–175. [\[CrossRef\]](#)
84. Arnould, E.J.; Price, L.; Zinkhan, G.M. *Consumers*; McGraw-Hill/Irwin: New York, NY, USA, 2004.
85. Liu, Y.; Fu, Q.; Fu, X. The interaction between cognition and emotion. *Chin. Sci. Bull.* **2009**, *54*, 4102. [\[CrossRef\]](#)
86. Lazarus, R.S. Cognition and motivation in emotion. *Am. Psychol.* **1991**, *46*, 352. [\[CrossRef\]](#)
87. MacKenzie, S.B.; Lutz, R.J. An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context. *J. Mark.* **1989**, *53*, 48–65. [\[CrossRef\]](#)
88. Fazio, R.H.; Powell, M.C.; Williams, C.J. The role of attitude accessibility in the attitude-to-behavior process. *J. Consum. Res.* **1989**, *16*, 280–288. [\[CrossRef\]](#)
89. Zanot, E.J. Public attitudes towards advertising: The American experience. *Int. J. Advert.* **1984**, *3*, 3–15. [\[CrossRef\]](#)
90. Calfee, J.E.; Ringold, D.J. The 70% majority: Enduring consumer beliefs about advertising. *J. Public Policy Mark.* **1994**, *13*, 228–238. [\[CrossRef\]](#)
91. Bloom, P.N.; Krips, J. An experiment in the economics of advertising. *J. Mark. Public Policy* **1982**, *1*, 25–42. [\[CrossRef\]](#)
92. Lemanski, J.L.; Hyung-Seok, L. Attitude certainty and resistance to persuasion: Investigating the impact of source trustworthiness in advertising. *Int. J. Bus. Soc. Sci.* **2012**, *3*, 66–75.
93. Brucks, M. The effects of product class knowledge on information search behavior. *J. Consum. Res.* **1985**, *12*, 1–16. [\[CrossRef\]](#)
94. Hoch, S.J.; Ha, Y.-W. Consumer learning: Advertising and the ambiguity of product experience. *J. Consum. Res.* **1986**, *13*, 221–233. [\[CrossRef\]](#)
95. Andrews, J.C.; Akhter, S.H.; Durvasula, S.; Muehling, D.D. The effects of advertising distinctiveness and message content involvement on cognitive and affective responses to advertising. *J. Curr. Issues Res. Advert.* **1992**, *14*, 45–58. [\[CrossRef\]](#)
96. Beerli, A.; Santana, J.D.M. Design and validation of an instrument for measuring advertising effectiveness in the printed media. *J. Curr. Issues Res. Advert.* **1999**, *21*, 11–30. [\[CrossRef\]](#)
97. Campbell, D.T.; Stanley, J.C. *Experimental and Quasi-Experimental Designs for Research*; Ravenio Books: Cambridge, UK, 2015.
98. Leckenby, J.D.; Wedding, C.N. *Advertising Management: Criteria, Analysis, and Decision Making*; Grid Incorporated: Austin, TX, USA, 1982.
99. Lee, S.Y. Examining the factors that influence early adopters' smartphone adoption: The case of college students. *Telemat. Inform.* **2014**, *31*, 308–318. [\[CrossRef\]](#)
100. Liffreing, I.; Amrani, D.; Joseph, S. How Ikea is Using Augmented Reality. Available online: <https://digiday.com/marketing/ikea-using-augmented-reality/> (accessed on 27 December 2017).
101. IKEA General News IKEA KOREA Launches IKEA Place, a Furniture-Placement App with AR Technology—IKEA. Available online: https://www.ikea.com/kr/en/about_ikea/newsitem/2017-09-29 (accessed on 3 October 2017).
102. Malhotra, N.K.; Birks, D.F. *Marketing Research: An Applied Approach*; Prentice Hall/Financial Times: Upper Saddle River, NJ, USA, 2007.

103. Fiore, A.M.; Kim, J.; Lee, H.-H. Effect of image interactivity technology on consumer responses toward the online retailer. *J. Interact. Mark.* **2005**, *19*, 38–53. [[CrossRef](#)]
104. Anderson, J.C.; Gerbing, D.W. Structural equation modeling in practice: A review and recommended two-step approach. *Psychol. Bull.* **1988**, *103*, 411. [[CrossRef](#)]
105. Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]
106. Bentler, P.M.; Bonett, D.G. Significance tests and goodness of fit in the analysis of covariance structures. *Psychol. Bull.* **1980**, *88*, 588. [[CrossRef](#)]
107. Baron, R.M.; Kenny, D.A. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Personal. Soc. Psychol.* **1986**, *51*, 1173. [[CrossRef](#)]
108. Zhao, X.; Lynch, J.G., Jr.; Chen, Q. Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *J. Consum. Res.* **2010**, *37*, 197–206. [[CrossRef](#)]
109. Rotzoll, K.; Haefner, J.E.; Sandage, C.J. Advertising and the classical liberal world view. In *Advertising in Society: Classic and Contemporary Readings on Advertising's Role in Society*; NTC Business Books: Lincolnwood, IL, USA, 1989; pp. 27–41.
110. Mankiw, N.G. *Principles of Economics*; Cengage Learning: Boston, MA, USA, 2016.
111. Boorstin, D.J.; Wright, J.; Mertes, J. The Thinner Life of Things. In *Advertising's Role in Society*; West Publishing Company: St. Paul, MN, USA, 1974.
112. Kihlstrom, R.E.; Riordan, M.H. Advertising as a Signal. *J. Political Econ.* **1984**, *92*, 427–450. [[CrossRef](#)]
113. Yuan, Y.-H.E.; Wu, C.K. Relationships among experiential marketing, experiential value, and customer satisfaction. *J. Hosp. Tour. Res.* **2008**, *32*, 387–410. [[CrossRef](#)]
114. Crooks, M. “Message: More Important Than Medium,” Daily Blogma. Available online: <http://dailyblogma.com/marketing/message-important-medium/> (accessed on 2 January 2019).
115. Shimp, T.A. Attitude toward the ad as a mediator of consumer brand choice. *J. Advert.* **1981**, *10*, 9–48. [[CrossRef](#)]

Publisher’s Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).