

Consumer Involvement in Augmented Reality Applications in the Context of Phygital Marketing Communications

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ABSTRACT

Augmented reality (AR) refers to the integration of the real world with digital information. This article studies the relationship between consumer involvement in AR applications, in the context of phygital marketing communications, and consumer purchasing decision involvement. Online surveys were conducted with 420 retail customers using the purposeful sampling method, a non-probability sampling type. In the analysis of the data, descriptive statistics, correlation analysis and multiple linear regression analysis were performed using a statistical package program. We found that there is a moderate and significant relationship between the “perception towards the brand” independent variable, which is a sub-dimension of consumer involvement in AR applications, and the purchasing decision involvement dependent variable ($r = 0.538$; $P = 0$). On the other hand, we found no significant relationship between the “hedonic value” independent variable, also a sub-dimension of consumer involvement in AR applications, and the purchasing decision involvement dependent variable ($P > 0.05$).

Keywords: Phygital marketing, Augmented reality, Consumer involvement, Purchasing decision involvement.

INTRODUCTION

Today, brand managers are trying to adapt more to changing consumer demands. Communication technologies play a central role in such an endeavor. Applications such as artificial intelligence, virtual reality (VR), and augmented reality (AR) sit within the framework of a new marketing approach and are critically

important for entering business-to-business and business-to-customer markets (Moravcikova & Kliestikova, 2017).

By combining physical (the product itself, its packaging, advertising messages, printed materials, loyalty cards, etc.) and digital (social media, brand communities, websites, e-mails, etc.) worlds, phygital (physical + digital) marketing has the potential to turn consumers into loyal customers. In this way, brands can have a proactive and original structure. Thanks to the combination of physical and digital communication, brands can organize more creative campaigns and increase their contact points and levels of contact (Odabaşı, 2019). Phygital marketing can be seen as focusing on experience over final product purchase intention and scholars emphasize how in-store phygital marketing attracts customer attention (Vel et al., 2015).

One phygital marketing application, AR, aims to integrate digital information layers into the physical world. The aim is to blend a person's perception of the real world with digital content produced by computer software. This technology can be used with a wide variety of devices, from smart glasses to smartphones. Layers of AR layers can be sensory (audio, optical, aural or haptic) or data-based (Farshid et al., 2018). AR applications that allow users to generate data about the real world instead of merely providing data to the user naturally increases consumer involvement.

Consumer involvement is personal in part because it is subjective and consumers attach importance to things (in this case, products, brands, advertising messages, etc.). On the other hand, consumer involvement is also a mental state variable in that it shows consumers' reactions to stimuli. In addition, involvement affects the consumer's depth of information processing. The intensity of cognitive effort spent and the degree of elaboration of the message depend on the level of consumer involvement (Ulus, 2016). Therefore, it can be said that one of the important areas affected by the developments in the digital transformation era is consumer involvement. Consumer involvement, which is both a personal characteristic and a mental state variable, is among the areas that should be most sensitive to transformation and change in society. Given this, this article investigates whether there is a meaningful relationship between the variables of "hedonic value" and "perception towards the brand" – as sub-dimensions of consumer involvement – towards AR applications and purchase decision.

LITERATURE REVIEW

PHYGITAL MARKETING AND AR APPLICATIONS

Marketing continues to change and transform rapidly. The marketing process, which started with a product and sales-oriented 'Marketing 1.0' approach, has now evolved into a 'Marketing 4.0' approach that focuses on consumer self-realization. (Recently, the marketing 5.0 approach, which emphasizes the use of big data in connection with marketing 4.0, is being mentioned.) In Marketing 4.0, consumers are digitally integrated, enabling the emergence of phygital marketing (Odabaşı, 2019). A similar transformation has been experienced with industrialization. That is to say, the Industry 1.0 approach, which started with the replacement of labor by machines,

has now evolved into the Industry 5.0 approach, which allows people to be together with different technologies. There are important similarities here: at the point where both processes come from, there is the interaction of the virtual world and the real world. These developments led to the emergence of phygital marketing.

The concept of phygital is often referred to as part of the omnichannel customer experience, a multi-channel approach to selling products or services that aims to turn online, phone and in-store purchases into a seamless customer experience (Moravcikova & Kliestikova, 2017). The concept of phygital marketing was introduced in June 2007 by the President of the American Association of Advertising Agencies, based on the idea that physical and digital media can be used together in marketing activities. Phygital, a portmanteau, is now used frequently and its popularity is increasing (Odabaşı, 2019).

AR is the overlaying via digital technology of data (images, sounds, videos, etc.) on the physical world, to be sensed by people (Altunışık, 2015). The most important feature of AR is the interactive and simultaneous sharing of a common digitally created theme. Thanks to these features, AR combines the real and virtual world simultaneously and can interact with consumers in three dimensions (Azuma, 1997). From this point of view, AR can also be defined as a computer-simulated interactive technology that overlays a projected 3-D visualization of products on the user's view of the real world (Yim & Park, 2019).

Although studies on phygital marketing have increased slightly in recent years, the number of studies is still not high. They usually focus on the following areas: phygital marketing and retail industry relations (Chastel et al., 2019; David, 2017; Duhan & Singh, 2019; Purcarea, 2018), phygital shopping experience (Anuradha et al., 2020; Banik, 2021; Belghiti et al., 2017), phygital fashion experiences (Armstrong & Rutter, 2017; Mechan, 2020; Pangarkar et al., 2022), brand building using phygital marketing (Arabelen, 2023; Hyun et al., 2022; Moravcikova & Kliestikova, 2017), phygital tourist experiences (Akmermer, 2022; Ballina et al., 2019; Neuburger et al. 2018), phygital marketing advantages (Johnson & Barlow, 2021; Maggu, 2021), phygital customer experience (Banik & Gao, 2023; Batat, 2022; Batat, 2023; Klaus, 2021), and innovative phygital technologies in customer relations (Del Vecchio et al., 2023). Kumar et al. (2023) carried out a meta-analysis of AR marketing articles, showing that AR significantly affects the hedonic and utilitarian values of consumers through its augmentation and interactivity. They also claim that AR augmentation significantly affects behavioral intentions, but AR interaction does not significantly affect behavioral intention.

Phygital marketing communications can use several technological infrastructures. Therefore, although it is possible to talk about many applications depending on the technological infrastructure used, these applications can be evaluated under three main headings. These are QR codes, VR/AR applications, and mapping technologies (Farshid et al., 2018). Since the subject of this study is the effect of AR applications on consumer involvement, only AR applications are mentioned. However, there are sometimes conceptual confusions between AR and similar concepts. Rauschnabel et al. (2022) emphasize this and proposed a framework for the concepts of AR and VR, as well as mixed reality and extended reality. Although the concept of AR dates back to the 1950s, it is generally accepted that it was reintroduced effectively by Tom Caudell and David Mizell in 1990 (as

cited in Rauschnabel et al., 2022), defined as a combination of digital information presented in real time and the real world. However, other definitions of AR also exist (Flavián et al., 2019; Peddie, 2017; Von der Au et al., 2023). Taking into account commonalities between these definitions, AR can be defined as the integration of a virtual context with the user's real world perception through the application of digital technologies.

AR applications are considered to be strategic advantages for companies (Altunışık, 2015). AR applications make a significant contribution to the convenience of consumers' lives. For example, with AR smart glasses or phones, a supermarket shopper can identify food on shelves that comply with dietary restrictions (e.g., gluten-free, non-genetically modified, nut-free). Similarly, AR can help a shopper find the products they seek, make suggestions for supplementary products, and determine the total number of items in the shopping cart. Another way to add data on top of the real world is to use AR applications such as Google Translate for simultaneous voice and text translation at international meetings (Russell, 2015).

AR applications also offer the following possibilities: BMW company technicians use AR applications in their repair and maintenance services to determine which parts are defective and how they can be replaced thanks to AR glasses. In another example, by using AR glasses, products that need to be stored can be recognized by markers on them, the cells to be placed can be determined and a stock record can be created instantly (Altunışık, 2015). In addition, thanks to AR applications, it is possible to observe how cosmetics may appear on one's face, and how a furniture set will appear in a room. In short, AR applications, which are still under development and accepted as innovative, will likely become standard in the near future.

Studies on AR and consumer interaction have mostly been carried out in the following areas: the attractiveness of AR applications for consumers (Grzegorzczuk et al., 2019; Scholz & Smith, 2016), the effect of AR applications on consumer behavior (De Amorim et al., 2022; Hassan et al., 2018; Lavoye et al., 2021; Mocanu, 2016; Smink et al., 2022), segmenting consumer attitudes towards AR (Romano et al., 2022), consumer AR systems (Azuma, 2019; Stoyanova et al., 2013), AR ads and consumer engagement (Han et al., 2022; Martin, 2019; Saleem et al., 2022), mobile AR adoption in a consumer context (Aw et al., 2023; Chen et al., 2022; Paulo et al., 2018), use of AR in consumer marketing (Wedel et al., 2020), use of AR during the COVID-19 pandemic period (Medina-Robalino et al., 2022; Riar et al., 2022), and use of AR in online retailing (Fan et al., 2020; Schmidt et al., 2022).

As can be seen, most of the research in this area has focused on consumer evaluations of AR content and neglected the physical context in which AR content is consumed. Von der Au et al. (2023) saw this gap and showed that the physical context in which AR is consumed affects the overall AR experience. As a result, AR experiences are neither only virtual nor only physical, but a hybrid of the two (phygital). The authors state that although it was previously accepted that the physical context of AR was beyond the control of the firm, this cannot be said to be necessarily true. In their study, they gave the example of a physical furniture store. Brick-and-mortar retailers, such as furniture or department stores, have some control over the physical environment in which a customer use AR applications. Additionally, specific AR ad campaigns can be triggered at specific settings based on

geolocation data. Social media algorithms are advanced enough to know when an individual is at home or at work, and this information can be used in AR applications.

Another study pointing out the importance of physical context in AR applications is Rauschnabel et al. (2022). The authors stated that new AR devices contain more specialized hardware (e.g., depth sensors, eye tracking, see-through/retinal displays, etc.) which allow for new forms of human-computer interfaces (e.g., controllers, hand and finger tracking, voice commands, retinal control, and brain computer interfaces). The authors also noted that newer AR devices provide a higher level of embodiment by moving the technology closer to the human body. According to them, more established approaches use ubiquitous technologies that are characterized by wide market penetration (e.g., smartphones or a laptop computer).

CONSUMER INVOLVEMENT

Today, marketers have started to use the virtual world to interact with consumers and increase engagement. The average interaction time with brand advertising, which is only 12 seconds in traditional online advertising, is up to 10 minutes in the virtual world (Vel et al., 2015). Although “involvement” is a concept frequently used in the literature, there is no consensus on its definition. According to Krugman (1965), the first person to introduce involvement into marketing literature in a serious way, involvement is the bridge, link, or number of personal references that the consumer consciously establishes between his own life and the stimulus within the time period of a minute. Later, Johnson & Eagly (1989) defined involvement as a motivational situation caused by a relationship between an activated attitude and self-concept. The marketing concept of involvement was originally most often considered in the context of persuasive communication. The different definitions affected the way the concept was applied to scales. The “Enduring Involvement Scale” created by Higie & Feick (1989) is an important scale in the field and uses subtitles of “hedonic value” and “perception towards the brand”.

When involvement is evaluated on the basis of product groups, significant differences between product groups were observed. For example, the level of involvement in technological products is much higher than in other product groups. In a study conducted by Coşkun (2018), participants were asked questions about purchasing decisions for different product groups in order to measure the level of consumer involvement. With these questions, the involvement levels of participants in the product groups were determined. As a result of the study, it has been determined that the product groups with the highest level of involvement are mobile phones, real estate and computers, while the product groups with the lowest level of involvement are cola, pasta and shopping malls.

THE RELATIONSHIP OF AR APPLICATIONS AND CONSUMER INVOLVEMENT

Empirical studies conducted within the scope of AR applications have shown that the following factors are effective in achieving acceptance of AR tools by consumers: functional benefits, ease of use, individual differences, brand attitudes and social norms, etc. For this reason, research on the use of AR technologies are conducted in different fields. Experts and academics have primarily dealt with the issue of consumer acceptance of AR devices or applications (Liao, 2019). For example, Zaichkowsky (1986) examined studies in the literature on consumer involvement, determining that consumer involvement stems from personal characteristics, object characteristics and/or situational characteristics. Apart from consumer acceptance, other important studies on AR and consumer interaction include those showing the effect of AR applications on consumers' attitudes and behaviors.

Park & Yoo (2020) studied South Korean female consumers who purchase cosmetic products via a mobile application with AR functionality and found that the controllability and playfulness dimensions of perceived interactivity affected mental imagery. This affected consumers' attitudes and behavioral intentions towards the product. A literature review on the effect of interactive technologies and media features on consumer behavior for the period 2008-2014 was carried out by Javornik (2016b). According to the author, most AR applications have an interactive character. In addition, AR interaction is predominantly related to the machine and space. The augmentation feature of AR applications differentiates it from other interactive technologies in that it has the ability to overlay physical environments with virtual elements. In another example, Rauschnabel et al. (2019) claim consumer inspiration has a mediating effect on the relationship between the benefits consumers derive from AR and changes in brand attitude.

Research has also suggested that marketers should consider evaluating mobile AR apps based on their inspirational potential. Zanger et al. (2022) investigated how affective responses drive brand attitudes and intentions in AR marketing. The results indicate that AR marketing entails more positive short, medium, and long-term outcomes than non-AR marketing. The results also showed that AR increases immediate purchase intention as it improves levels of enjoyment, inspiration, and attitude to the brand. Applications using AR increase word of mouth marketing intention. The final conclusion from their study is that AR can also lead to valuable long-term relationships between consumers and brands, with increasing levels of brand attitude.

Beşer (2019) concluded that advertisements using AR affect the advertising perceptions of consumers. Research participants stated that they think advertisements using AR will gain more importance in future marketing. In a study conducted by Yang et al. (2020) on Chinese consumers, it was concluded that consumers' curiosity and interest in advertisements (when measured by a physiological measure using eye tracking) were determinant in their positive attitude towards AR advertisements. Consumers' touch needs for products can also be effective on purchasing attitudes and behaviors. Gatter et al. (2022) observed that consumers with a high need for touch tend to rate AR content better than those with

a low need for touch. This result shows that AR content could have the potential to substitute for physical in-store experiences. The study also notes that consumers with a high need for touch experience more hedonic benefits compared to consumers with a low need for touch.

Consumers' personalities and socio-cultural structures can also be effective in the adoption of AR devices or applications. Some studies in this area have clearly demonstrated this effect. For example, a study by Rauschnabel et al. (2015) using the Google Glass application showed that open and emotionally stable consumers tend to be more aware of Google Glass. According to the study, consumers who perceive the high functional benefits and social compliance potential of smart glasses are more likely to adopt such wearable devices. Another study observed that online consumers with high cognitive innovativeness were more interested in the usability, aesthetics and service excellence offered by AR-based interaction technology, but those with low cognitive innovativeness focused on gaming and the ease of use offered by it (Huang & Liao, 2015). A similar study concluded that adoption of smart glasses by high-tech innovative consumers is quite high (Rauschnabel & Ro, 2016).

In addition to the adoption of AR applications, the effect of these practices on consumer satisfaction levels is another important part of the studies in this field. In this context, the performance and comfort perceptions of consumers belonging to AR applications and whether they enjoy these applications or not are the basis of such studies (Liao, 2019). In a study conducted by Harborth & Pape (2017) on 683 Pokemon Go players in Germany, it was concluded that the strongest predictor of behavioral intention was hedonic motivation, that is, the fun and pleasure of playing games. In the study conducted by Rese et al. (2017), it was concluded that the effect of the TAM model (technology acceptance model) with AR applications on consumers was satisfactory, however, the response to different types of AR applications showed differences. For this reason, it was emphasized that AR applications should be carried out in this direction, taking into account the hedonic (enjoyment, pleasure, fun) and utilitarian (information) aspects.

An important factor in the acceptance of AR by consumers is the technology used in this field and the quality of the content created. Studies in this field clearly support this judgment. For example, in the study conducted by McLean & Wilson (2019), it was concluded that the AR features and the technology used in the research positively affect brand participation, contribute to brand interaction, and application experience positively affects consumers in brand preference. Fan et al. (2020) claim that two AR features (environmental embedding and simulated physical control) reduce the cognitive load of consumers, increase cognitive fluency and improve attitudes towards the relevant product. Another study showed that AR-based ads were more effective in increasing participants' interest and generating greater flow experience levels than traditional ads (Lee & Cho, 2019). Another study conducted on museum visitors showed that dynamic visual cues lead to visitors paying more than those given dynamic verbal cues; if higher levels of virtual presence are achieved with environmental AR applications, the positive effect on consumers is more pronounced (He et al., 2018). Javornik (2016a) similarly emphasized that consumers perceive visual AR applications more intensely.

Consumers who benefit from AR applications are likely to benefit from AR applications again in the future. Positive attitudes towards AR applications are

increasing, and in some cases, people may even develop innovative ideas about these applications. Bilici & Özdemir (2020) claim that the optimism dimension, which is one of the technological readiness factors of consumers, has a significant and positive effect on consumers' intention to use AR technologies. On the other hand, the innovation dimension, which is one of the other technological readiness factors, does not have a significant effect on the intention of consumers to use AR technologies.

Another study showed that AR provides effective communication benefits, generating greater innovation, immersion, enjoyment, and usability compared to web-based product offerings. These benefits of AR applications have caused customers to adapt to the environment and develop positive attitudes towards purchase intention (Yim et al., 2017). Recent developments in mobile AR devices and applications have made work in this field more exciting (Liao, 2019). One study claimed the quality of AR tools is also important for consumers to enjoy the AR application, and that the goodness and user-friendliness of an AR application is an important factor in its adoption by consumers (Scholz & Duffy, 2018).

A small number of studies show negative results regarding the perception and adoption of AR. For example, Olsson & Salo (2011) touched on a different area of AR applications in their study and found that AR applications are generally accepted by consumers, but there may be many negative evaluations for AR applications. Some of these complaints are the pragmatic uselessness and technical unreliability of AR applications in daily life, excessive, limited and irrelevant content, etc.

Nevertheless, there is growing momentum in AR and its study. The main reason for this is that consumers are interested and AR has become a competitive element for companies. New practices in this area support this judgment. On the other hand, it is observed that academics focus on different aspects of the AR phenomenon due to differences in perspectives. Although this is an important and positive development, realizing these studies with a collective understanding will provide much greater contributions to AR applications. In addition, AR applications should be seen as a complement to technological applications, not as a substitute for branding (Rouse et al., 2015).

METHODOLOGY

POPULATION AND SAMPLING

The aim of this study is to determine the relationship between consumer involvement in AR applications, in the context of phygital marketing communication, and the effect level of its relationship with purchasing decision involvement. Accordingly, retail consumers were targeted for survey in this study. However, it is difficult to reach all retail consumers within the scope of the research. Data collection was conducted online between the 15 February - 4 March 2021 using the purposeful sampling method, which is one of the non-probabilistic sampling methods. Within the scope of the research, questionnaire forms filled out by 427 participants were collected. Seven questionnaire forms contained incomplete or erroneous data, so 420 questionnaires were valid for analysis.

DATA COLLECTION METHOD AND TOOLS

The quantitative survey technique was used to obtain primary data for analysis. The questionnaire form used in the research consisted of two parts. The first part utilized the enduring involvement scale built by Higie & Feick (1989) and the second used the purchase decision involvement scale adapted from the studies of Mittal (1989) and Kandemir et al. (2013). Both scales were anonymized and used within the scope of AR applications of brands. The second part of the questionnaire consisted of questions to determine the demographic characteristics of participants.

The research questionnaire was prepared in the Turkish language. There were a total of 19 questions. The initial 14 consisted of statements prepared according to the Likert scale constructed within the scope of the research model after detailed literature review. The scales used in studies published in the relevant national and international literature were used while creating the attitude expressions in the questionnaire. In addition, in this study, scale expressions were constructed over AR applications. All of the expressions in the scales scaled according to a 5-point Likert scale.

LIMITATIONS OF THE RESEARCH

The purposeful sampling method was used in the study due to time constraints and the difficulty of sampling access. The research data were obtained from retailers with experience in AR applications. In this context, the generalizability and external validity of the research results are limited. Another limitation of the research is the correlation between AR methods and the consumer involvement components. Other phygital marketing methods were not included in the scope of the research. Another limitation of this research is that this study was conducted over AR, a phygital marketing application, and that scale expressions were anonymized for AR applications. In addition, the results of the research are limited to its data, which was collected at a particular moment in time: between 15 February - 4 March 2021.

DETERMINING TEST STATISTICS AND EDITING DATA

The data collected as a result of the research were analyzed using a statistical package program. After the data entry was completed, the statistical tests to be used in data analysis were determined. As a result of the kurtosis and skewness test performed on the research data, it was determined that the data were between -1.5 and +1.5 and the data showed a normal distribution (Tabachnick & Fidell, 2007). In this context, in order to evaluate the data obtained as a result of the research, firstly descriptive statistics were presented, then factor analysis, correlation analysis and multiple linear regression analysis were performed.

RESULTS

The research data were analyzed within the determined systematic framework and the results obtained are presented below.

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

This section uses tables to list the socio-demographic variables determining the participants' profiles.

Table 1

Socio-demographic characteristics of research participants.

Demographic Variables	Value	Frequency	Percent	Demographic Variables	Value	Frequency	Percent
Gender	Male	204	48.6	Marital Status	Single	257	61.2
	Female	216	51.4		Married	163	38.8
	Total	420	100		Total	420	100
Age	18-24	89	21.2	Education Level	Primary School	56	13.3
	25-31	148	35.2		High School	71	16.9
	32-38	99	23.6		Associate degree	80	19.0
	39-45	40	9.5		Bachelor's degree	154	36.7
	46+	44	10.5		Master's degree	59	14.0
	Total	420	100		Total	420	100
Occupation	Civil Servant	66	15.7	Monthly Income	< 3,000 TL	101	24.0
	Self-employed	48	11.4		3,001-4,500 TL	133	31.7
	Employee	75	17.9		4,501-6,000 TL	119	28.3
	Private Sector Employees	51	12.1		6,001 TL +	67	16.0
	Student	123	29.3		Total	420	100
	Other	57	13.6				
	Total	420	100				

Table 1 shows a research participant profile distribution in harmony with the realities of life. The number of female and male participants is close to each other, the level of general education is high and the majority of participants are still students, etc. This study is on AR applications and it is known that such innovative applications attract the most attention from young people.

FACTOR ANALYSIS OF CONSUMER INVOLVEMENT FOR AR APPLICATIONS AND PURCHASING DECISION INVOLVEMENT SCALE

Factor analysis was conducted to find out how many sub-dimensions the “Consumer Involvement for AR Applications and Purchasing Decision Involvement Scale” perceived. The suitability of the data for factor analysis was tested with KMO and Barlett tests.

Table 2

Factor structure of consumer involvement for AR applications and purchasing decision involvement scale.

	Factor	Variables	Factor Loads			Cronbach Alpha	\bar{X}	α
			1	2	3			
Consumer Involvement for AR Applications	Hedonic Value	S3 I find the AR applications of brands appealing.	0.884			0.926	3.72	1.16
		S1 I find the AR applications of brands fun.	0.884				3.70	1.29
		S2 I find the AR applications of brands interesting.	0.881				3.82	1.13
		S5 I find the AR applications of brands fascinating.	0.863				3.75	1.14
		S4 I find the AR applications of brands exciting.	0.854				3.65	1.13
	Perception Towards The Brand	S8 AR applications of brands tell consumers something about the brand.		0.839		0.909	3.16	1.02
		S9 AR applications of brands reflect the brand's image.		0.838			3.23	1.05
		S10 AR applications of brands provide me with information about the brand.		0.815			3.02	1.00
		S7 AR applications of brands are a part of their corporate image.		0.803			3.16	1.03
		S6 AR applications of brands tell me something about the brand.		0.783			3.08	1.04
Purchasing Decision Involvement	S12 AR applications differentiate the brand's product/service from other brands.			0.843	0.872	3.02	1.11	
	S13 AR applications are effective in making the right choice regarding a brand's product/service.			0.838		3.04	1.12	
	S11 I consider AR applications when purchasing a brand's product/service.			0.805		2.95	1.06	
	S14 AR applications reduce my anxiety about selection when purchasing a brand's product/service.			0.764		2.97	1.03	
Eigenvalue			5.48	3.55	1.43			
Explained Variance			27.78	25.83	21.12			
Total Explained Variance			74.741					
KMO			0.891					
Barlett			4,014.403 (sd.91; $P = 0$)					
Cronbach Alpha			0.874					

The suitability of each variable for factor analysis was reviewed using the Measure Of Sampling Adequacy (MSA) method to review the anti-image correlation matrix of the variables. When the MSA values were examined, it was found that all

variables were above 0.50. Three factors obtained as a result of factor analysis explain 74.7 percent of the total variance. When the results of the Cronbach's Alpha analysis were examined, it was found that the internal consistency levels of all scales were above the critical limit of 0.60. The discriminative validity of the scales used in the study was tested by factor analysis. Factor analysis was performed for the scale expressions used in the study ($KMO = 0.891$; $P < 0.001$) and three sub-factors were obtained, in which the scale expressions exhibited a consistent association. On the other hand, when the descriptive statistics results were examined, it was determined that the expression "I find the AR applications of brands interesting" ($x = 3.82$), one of the observed variables of the hedonic value, has the highest average. In the sub-dimension perception towards the brand, it was determined that the expression "AR applications of brands reflect the brand's image" ($x = 3.23$) has the highest average. In the Purchasing Decision Involvement factor, participants agreed with the statement "AR applications are effective in making the right choice regarding a brand's product/service" ($x = 3.04$) at the highest level.

CORRELATION AND MULTIPLE LINEAR REGRESSION ANALYSIS

Within the scope of the research, the relationships between sub-dimensions of consumer involvement for AR applications and purchasing decision involvement variables were examined. Correlation analysis and multiple linear regression analysis were performed to test the hypotheses established in line with the research model. The hypotheses (H1, 1a and 1b) created to determine the relationship and levels of effect are as follows:

- H1: Sub-dimensions of "Consumer Involvement for AR Applications" are statistically significant in explaining the "Purchasing Decision Involvement" variable.
 - H1a: Hedonic Value, sub-dimensions of "Consumer Involvement for AR Applications", directly and significantly affects the "Purchasing Decision Involvement".
 - H1b: Perception towards the brand, sub-dimensions of "Consumer Involvement for AR Applications", directly and significantly affects the "Purchasing Decision Involvement".

Table 3 shows that there is a moderate and significant relationship between the perception towards the brand independent variable and the purchasing decision involvement dependent variable ($r = 0.538$; $P = 0$), but there is no significant relationship between the hedonic value independent variable and the purchasing decision involvement dependent variable ($P > 0.05$).

Table 3

Correlation analysis of the relationship between sub-dimensions of consumer involvement for AR applications and purchasing decision involvement.

		Consumer Involvement for AR Applications			Purchasing Decision Involvement
			Hedonic Value	Perception Towards The Brand	
Consumer Involvement for AR Applications	Hedonic Value	r	1		
		p			
	Perception Towards The Brand	r	0.229**	1	
		p	0		
Purchasing Decision Involvement		r	0.053	0.538**	1
		p	0.275	0	

** . The correlation is significant at the 0.01 level (2-tailed).

Table 4 shows the F statistic at 87.266 and *P* value at 0. For this reason, it can be said that the created regression model is generally meaningful. In other words, it is statistically possible to estimate the purchasing decision involvement variable with at least one of the two sub-dimensions of the consumer involvement in AR applications scale. According to the table, since the *P* value for the perception towards the brand variable is less than 0.05, it is statistically significant in explaining the purchasing decision involvement variable. Therefore, the perception towards the brand variable has a significant effect on purchasing decision involvement. On the other hand, the hedonic value variable does not have a significant effect on purchasing decision involvement. In addition, the fact that VIF values are less than ten indicates that there is no multicollinearity between variables. The R and R² values in the table show the explanatory power of the model. As a result of the regression analysis, the explanation rate of the independent variables for the purchasing decision involvement variable is found to be 29.5 percent.

Table 4

Regression coefficients of the relationship between sub-dimensions of consumer involvement for AR applications and purchasing decision involvement.

Dependent Variable	Independent Variables	Standardized Regression Coefficients	t-statistics	P value	Standard Error
		Beta			
Purchasing Decision Involvement	Hedonic Value	0.074	-1.753	0.08	0.038
	Perception Towards The Brand	0.555	13.147	0	0.044
R ²		0.295			
Adjusted R ²		0.292			
F Statistics		87.266 (P= 0)			

DISCUSSION

AR applications have strong potential for making unique contributions to integrated marketing programs. Instead of presenting previously collected data to the user, the AR applications allow the user to generate data about the real world, increasing customer involvement (Scholz & Smith, 2016). Although there are some exceptions, the literature on AR shows consumers are interested in it. In this study, we observe that the relationship levels between sub-dimensions of consumer involvement in AR applications and purchasing decision involvement differ. For this reason, the relationships between the sub-dimensions of consumer involvement in AR applications and purchasing decision involvement were evaluated separately.

There is no significant relationship between hedonic value, which is one of the sub-dimensions of consumer involvement for AR applications, and purchasing decision involvement ($P > 0.05$). This result is different to some of the results of previous studies. For example, Vel et al. (2015) stated that providing entertaining content for customers rather than traditional brand informative advertisements increases participation. Harborth & Pape (2017) concluded that the strongest predictor of behavioral intention for 683 Pokemon Go players in Germany was hedonic motivation, that is, fun and pleasure resulting from playing the game. Studies conducted in different regions and times, with different points of AR development, produce different results. Consumers in different regions react differently to applications with hedonic characteristics. It is also possible that in some locations, while consumers show interest in hedonic practices, this interest has not yet turned into a purchasing behavior.

Another result of this study is the moderate and significant relationship between perception towards the brand, as a sub-dimension of consumer involvement in AR applications, and purchasing decision involvement ($r = 0.538$; $P = 0$). Further, perception towards the brand has a statistically significant effect on purchasing decision involvement. When the literature is examined, the results of the interaction between AR applications and various variables in the context of phygital marketing are largely in line with the results of the second part of the present study. (There is a moderate and significant relationship between perception towards the brand and purchasing decision involvement). For example, Köse & Yengin (2018) determined that individuals easily adapted to the content of AR applications and these applications had positive effects on consumers. Another study concluded that generations X, Y and Z interacting with phygital applications in the retail sector are especially interested in phygital experiences using their smartphones (Van Tichelen, 2019). Çakın & Yaman (2020) found that consumers are excited and pleased to shop using Amazon Go, a phygital marketplace.

Ultimately, aiming to reach consumers who are interested in technology innovations and enjoy new experiences, marketers must be able to design immersive experiences that combine digital information with the social and physical world. In addition, designing communication goals, target audiences, content management strategies and user experiences that take into account the motivating factors in the purchasing process can also help. Most importantly, marketers need to focus on consumer participation and the dimensions that drive this participation, such as

affordability, sociability, and artifacts created by man. Marketers who use each of these factors and offer innovative and engaging AR applications to their customers will be in a unique position to satisfy consumers (Scholz & Smith, 2016).

In the digital transformation of the 21st century, where traditional marketing approach practices are enriched with elements of the digital and online marketing world, customers want to communicate with brands much more easily and effectively. In today's world where technology develops day by day, a phygital approach can bring a new experience to all sectors, especially retail, medicine, aviation, and education (Soloviova & Danilovb, 2020). It is important for brands to follow different channels with AR applications and offer unique experiences and personalized services to their customers. The biggest contribution of this study is the determination that the perception towards the brand variable, which is one of the sub-dimensions of consumer involvement for AR applications, has a statistically significant effect on purchasing decision involvement. This result shows that companies should attach importance to strategic brand management because perception towards the brand continues to be an important element in consumers' purchasing behavior. On the other hand, the fact that hedonic value, one of the sub-dimensions of consumer involvement in AR applications, does not have a significant effect on consumers' purchasing behavior, is another important result. In future studies, the interaction of a mapping technology variable, one of the phygital marketing applications, with different variables such as customer satisfaction, customer loyalty, brand equity perception, service quality perception, etc. could be investigated, for different periods and in different locations.

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