

## **Evaluating the Effects of Augmented Reality on Customers' Behaviours in Building Marketing Process**

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### **Abstract**

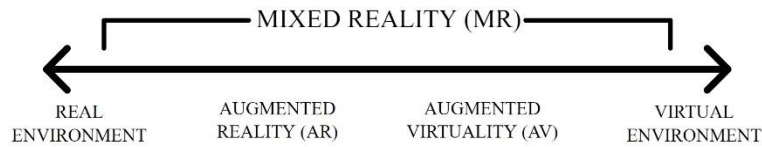
With the emerging technologies, virtual living spaces has become a part of daily life. Today, the line between the virtual and the real is getting blurry and virtuality leaves its place into a mixed environment between the real and the virtual. Technologies like augmented reality (AR) enable many possibilities in many different fields. Today AR systems are used in many different fields like; education, medicine, games and commercials and military. The use of AR in architecture is increasing every day. The architectural design is an interdisciplinary process where the architect, the client and other technical experts and engineers coexist. The AR gives opportunity to observe the architectural designs in their real environments before they are built. Thus, problems based on marketing and client expectations will be solved before the implementation. In this study, the effect of the use of AR on architectural design marketing was questioned. In the case study; 2D renderings and 3D AR models of the same design have been showed to the 50 clients which are chosen with random selection method. Regarding to survey results, the importance of the use of AR in architectural design marketing was evaluated.

**Keywords:** Architectural design, Augmented reality, Residential marketing

### **1. INTRODUCTION**

Augmented reality (AR) is defined as a technology that combines real and virtual objects, and provides simultaneous interaction between them (Azuma, 1997). AR, which forms a bridge between virtual and real world, creates an enriched sense of reality by manipulating real world perception through auxiliary hardware and software (Milgram et al., 1995). In order to be able to create this perceptual illusion, contents such as images, sounds, videos created in the computer environment must be combined in real time with the real physical environment. According to another definition of AR, which is defined as the observation of computer production data in real-world, real-time, direct or indirect, it is an interactive system that combines real and virtual objects in three dimensions in real environment (Kipper and Rampolla, 2012).

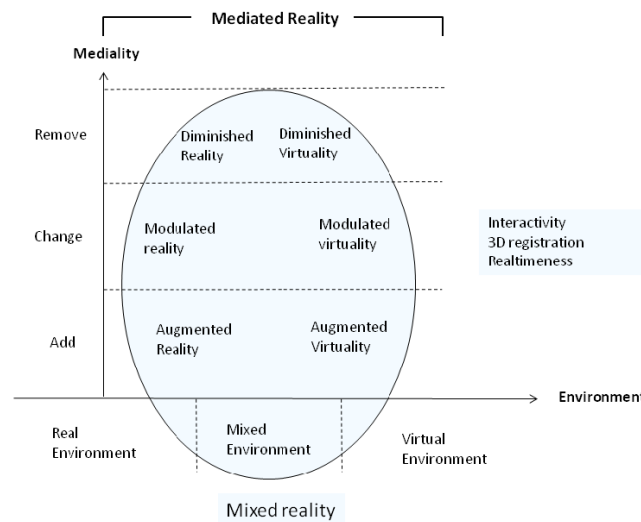
Due to the fact that they both use virtual objects and they have similar uses, it is necessary to distinguish AR with the concept of virtual reality (VR). In VR systems, objects are displayed in real time and virtual environment while in AR systems virtual objects are displayed in real environment with real objects. The reality-virtuality continuum adapted from Milgram is shown in Figure 1.



**Figure 1.** Reality-Virtuality Continuum

According to Milgram, there is a continuity between reality and virtuality. On one side of this continuum is a real world perceived by the naked eye while on the other side is a completely virtual world. The intermediate sections are regarded as mixed reality, in which real and virtual objects coexist (Milgram et al., 1995).

Siltanen (2012) has extended to the Milgram's continuum by adding new forms of reality like modulated, mediated and diminished reality. Siltanen thinks that it's possible to interact with real objects in the context of AR by removing existing objects which explains the concept of diminished reality. Figure 2 shows the reality continuum of Siltanen.



**Figure 2.** Siltanen's mediated reality taxonomy

From leading researchers in the field of AR, Azuma mentioned three important characteristics of AR systems. According to Azuma, AR is a combination of virtual and real objects, provides a real-time interaction, and virtual and real objects are used together in a 3D environment (Azuma, 1997).

The usage areas of AR are increasing day by day. It can be said that the potentials of AR are high especially for the sectors that perform service production with numerical values. One of them is the construction sector. Nowadays, the construction sector is the "locomotive" sector, which has large contributions to the development of the countries with both the employment created and the contributions it provides to the economic vitality. In such a sector, especially the marketing process has great importance. The sustainability of the construction sector is directly related to the supply-demand relationship. It's likely for AR to make significant contributions to the construction sector especially during the marketing process. The marketing stage in the construction sector not only includes the post-production process, but also the design phase. With this feature, marketing action covers a wide range of time, including design, production and post-production processes. It is also important to make existing customer potential sustainable during the marketing phase. Using AR technology, it is possible to enable potential customers to be involved in the system and to direct design. In this way, it will become possible for construction companies to meet customer expectations and to produce buildings made with correct parameters on the market. By providing detailed

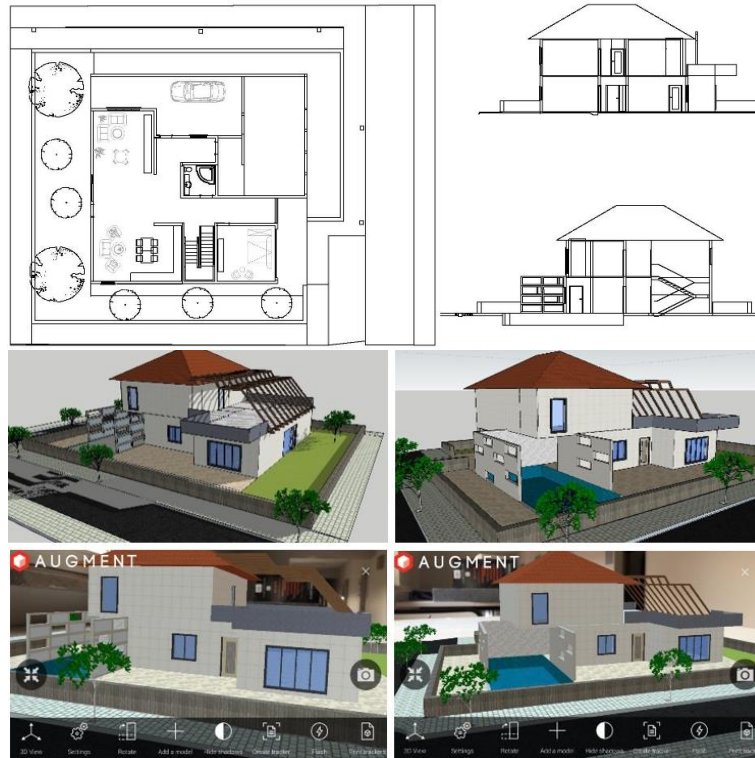
information about the buildings with the AR to the customers in the design stage, it is possible to produce both the buildings that meet the expectations of the customers and healthy marketing environments that will meet the sales expectations of the construction companies.

In the construction sector, firms are in intense competition both domestically and abroad. Companies that aim to increase their income in the construction sector and try to be permanent, attach importance to new techniques that can be developed especially during the marketing phase. With the adoption of AR technology, it is possible to accelerate the decision-making process of customers and to develop successful marketing techniques by offering interactive media content about the buildings to the customers just before the beginning of the construction process.

With the new spatial experiences and possibilities provided by AR, it becomes possible for customers who are potential users of the productions to perceive the structures better and make more accurate choices. It is thought that the use of AR in the building marketing process will be beneficial for both construction companies and potential customers. In this study, AR applications were used as a tool in the construction marketing process. It has been investigated the effects AR applications to the decision-making stages of the potential users in the design process of the buildings. It was aimed to draw attention to the importance of the link between project management and AR, the development of technological fictions that will be made in order to re-organize the marketing phase in project management, the effective use of AR in marketing and its importance in architecture. It is hoped that this research will be the basis for further work on this area.

## **2. MATERIAL AND METHOD**

In this study, where the effects of AR on building marketing process were tried to be measured, case study has great importance. A questionnaire consisting of 10 questions was prepared to be directed to the participants in the case study. Before the survey was launched, participants were given information about promoting AR technology and presentations were made for the same purpose. After that, presentations of the same building were made both by AR application and other expression tools such as 3D modellings and architectural technical drawings. 3D model of a predetermined housing project for the case research was produced in the Trimble Sketchup (2017 version) and the android version of the software called Augment was used as the AR application. The choice of 3D modeling program was determined by the ease of use and the rapid production of 3D models. The AR application used during the case study (Augment) can easily run in different platforms (android/ios/windows) and hardwares such as smart glasses, mobile phones and tablet computers which makes it a suitable choice for the research. The most determinative feature of the AR software was the provided academical licence that enables full features of the application. In the same time, the AR application works seamlessly with the Sketchup 3D modelling software which makes it a decent choice. In this way, 3D models of the project whose technical drawings were made by the authors before, produced easily and integrated to the AR application smoothly. After that, 3D models presented to the attendants of the case study in different hardwares like handheld smart devices (tablets and smartphones) and head mounted cardboard displays. Technical drawings, 3D models and the AR application images are presented in the Figure 3 and the AR experiences of the participants in Figure 4. The interiors of the building used in the case study were also modelled seperately and experienced in the AR environment by the participants for a detailed spatial understanding (Figure 5).



**Figure 3.** Technical drawings, 3D model and the AR app images of the project (up to down)



**Figure 4.** AR experiences of the potential customers with tablet pc and HMD (cardboard)



**Figure 5.** Interior details through AR application interface

After the experience of the 3D models related to the project in the augmented reality environment, a questionnaire was applied to the participants of the case study. In the prepared questionnaire, questions were asked to identify the person who answers the questionnaire, to measure the knowledge of the about AR, to learn the opinions after the



presentation about the AR and to measure the effects of the AR on participant's choices about the building purchases. Fifty respondents were randomly selected who are potential customers on the residential marketing. Statistical calculations have been made in Microsoft Excel. These calculations are expressed graphically in order to provide easy understanding of the resulting data.

The survey was applied within the Kayseri province borders in Turkey where the growth in the construction sector is so fast. Attention has been paid to the especially those in low and middle income groups who have invested or are considering investing in housing. Thus, the role of AR in specific income groups, especially in housing purchases/sales, has been tried to be evaluated clearly.

### 3. AUGMENTED REALITY: A BRIEF HISTORY

AR technology first emerged in the 1950s with the idea of Morton Heilig, a famous cinematographer who was also recognized as one of the founders of virtual reality, to build a cinematic simulator that could address all senses. Heilig patented a prototype in 1962 called "Future Cinema" and gave the name "Sensorama" (Figure 6). Heilig's system, which he designed as a motorcycle simulator, included touches and smells, as well as visual and auditory items (Kipper and Rampolla, 2012).

The Sword of Damocles, produced by Ivan Sutherland and his student Bob Sproull in 1968, is regarded as the first head mounted system of AR and VR (Figure 7). Sutherland's system was very primitive in terms of user interface and realism and consisted of graphical simple wireframe lines (Kipper and Rampolla, 2012).

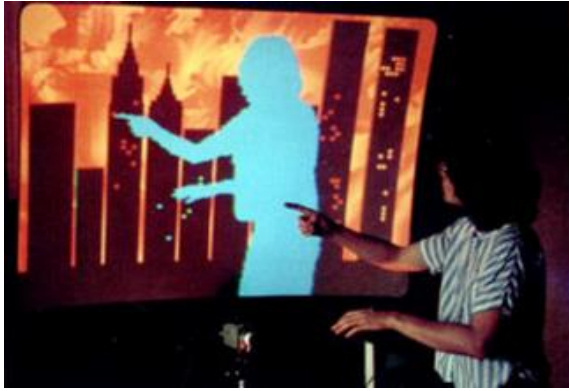


Figure 6. Sensorama



Figure 7. The Sword of Damocles

In 1975, the Videoplace system created by Myron Krueger who is known as the pioneer of VR, is regarded as the first AR system that provides simultaneous interaction between virtual objects and users. Krueger intended to create an AR system that does not require external equipment such as electronic glasses or gloves in the Videoplace system, but which surrounds the user and responds to his movements (Kipper and Rampolla, 2012) (Figure 8). Although the origin of AR was based on the 1950s, this concept has coined by Tom Caudell, who worked as a technician in the Boeing company in the 1990s. Tom Caudell has developed a head mounted display system that uses AR technology to route the workers during the installation of electrical cables (Kipper and Rampolla, 2012) (Figure 9).

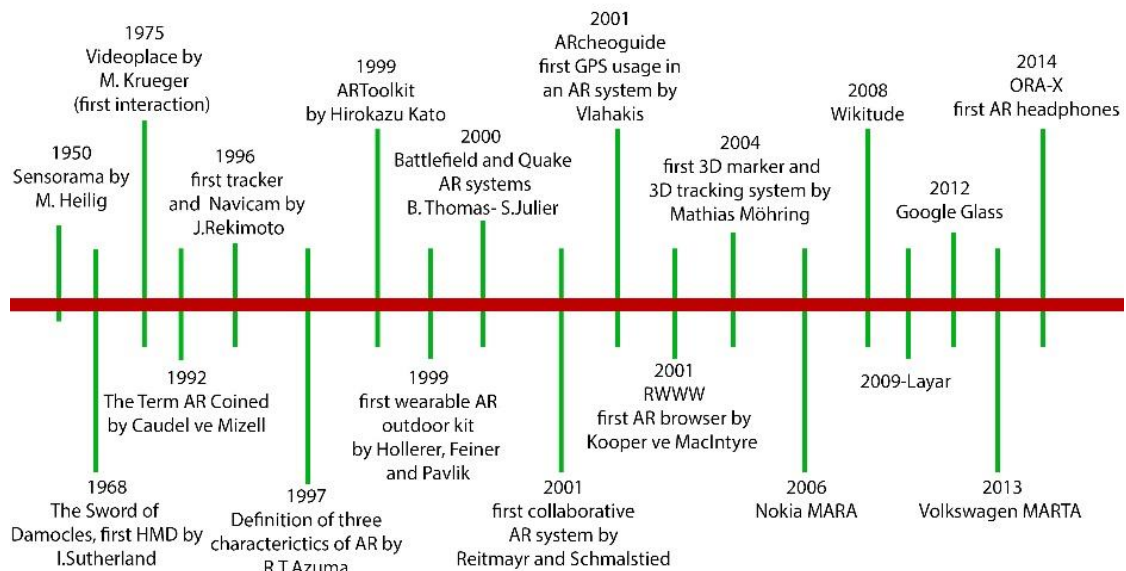


**Figure 8.** Videoplace system



**Figure 9.** AR system used on Boeing

After the main developments mentioned above, there has been a lot more developments in the field of AR technology especially in the last few years (Akdağ, 2017) (Figure 10).

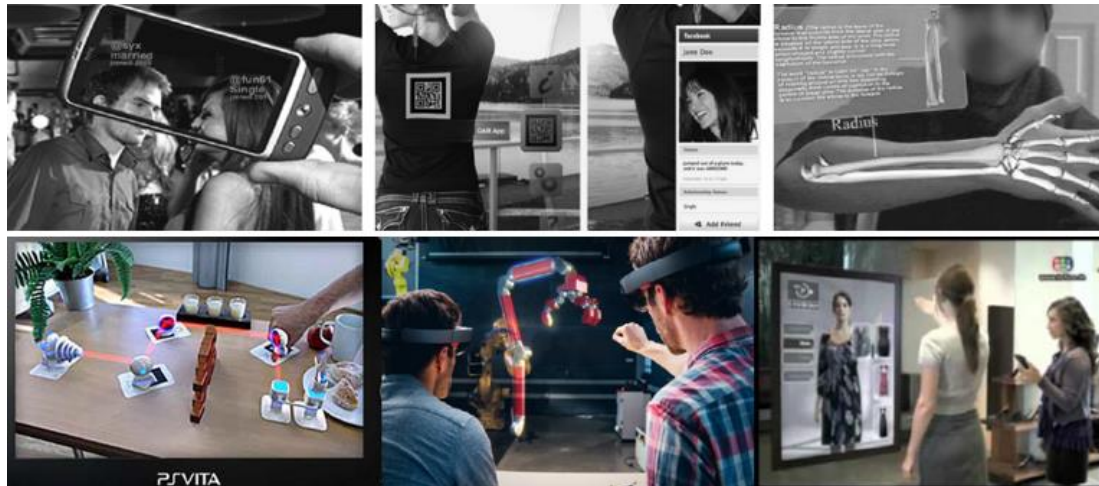


**Figure 10.** Timeline of augmented reality

### 3.1 Application Fields of Augmented Reality

AR is a technology that has the potential to be practically applied to almost every aspect of daily life. In this context, it can be said that unlimited combinations can be produced in the classification of AR depending on its application areas. Many different methods can be used to classify AR systems into classes. Classification in the scope of the study was made according to the usage areas of the AR applications. For example, some applications serve mainly entertainment content, while some AR applications are used on artistic or commercial content platforms. Sports, games-mobile applications and entertainment, education, health and medicine, business and commerce, areas of art and design are examples where AR applications are used (Furht, 2011).

While some applications serve mainly entertainment, some AR applications can also be used on artistic or commercial content platforms. Sport events, games, mobile applications, education, health, advertising and trade sectors can be examples where AR applications are widely used (Craig, 2013). With the technological possibilities provided by AR, a lot of possibilities can be contributed to the users. Systems that can not be experienced under normal conditions can be observed and understood using AR. Figure 11 shows the use of AR in different fields.



**Figure 11.** AR usages in different fields for various purposes

One of the areas where AR finds the most use is the entertainment industry. Social media, computer games, sports activities and the entertainment sectors are examples of areas where AR is heavily used. AR technology is evaluated as a new development opportunity in the field of education with its innovations. It is possible to do things using AR that are impossible to do in everyday life. Smart books and interactive learning applications are examples of the use of AR in education. AR systems also have an increasing use in medicine and health. Advances in medicine, combined with AR technology, enable the use of real-time new techniques on patients (Kipper and Rampolla, 2012).

It is an accepted idea that AR can make daily life easier. The common feature of AR systems used in different areas is their commercial use. AR, which is increasingly used in educational, medical and entertainment areas, is also creating a new market area for commercial purposes at the same time [8]. Rapid improvements in AR technology have also led to the use of AR systems in many different areas. In parallel with the developing technology, the use of AR applications in design and art fields is becoming increasingly widespread (Kipper and Rampolla, 2012).

It is clear that the use of AR in construction sector will also become widespread for companies that want to increase their market shares and maintain their continuity. Producing the representative dynamics of the architecture discipline with a new and impressive technology like AR can speed up the process of integrating this technology into the field of building marketing.

#### **4. BUILDING MARKETING PROCESS**

The building marketing process can be considered as one of the stages of building and construction management. The term marketing can be defined as; the whole actions which provides time, place and property benefits (Yükselen, 2012). According to another definition, marketing concept includes all the actions which transfers services and products from producer to the consumer (Mucuk, 2010). Today's marketing concept covers a process starting before production activities and continuing after production (Cemalcılar, 1987). Marketing consists of a series of functions and processes aimed at generating value for potential consumers, introducing products and managing customer relationships for the benefit of the marketing organization (Yükselen, 2012).

In the marketing process, it is aimed not to sell a product but to establish a mutual and long-term relationship with the customer (Mucuk, 2010). In marketing management, it is expected that the rules of change expected to take place between the parties will be revealed. Within the scope of marketing management, it is ensured that the programs with the target audience are solved, planned, implemented and supervised in order to

gain mutual benefits (Yükselen, 2012). The marketing concept was used synonymously with the concept of sales until a close date. But marketing and sales are not the same concepts. Marketing is an activity that includes the concept of sales. While the expectation and needs of the operator are prioritized in the concept of sales, the needs of the buyer in the concept of marketing are preliminary.

In today's marketing process, competition is increasing for the producers and preferences are increasing for the consumers depending on the increasing diversity. Today, the building production process is in direct interaction with many sub-sectors and service production units. Building production and marketing sector can be considered as a crucial economic area due to its contributions to the economic development, wealth level and employment. The construction sector is seen as the locomotive of the country's economy in terms of value it adds to the economy and employment. Today, the concept of construction is not only seen as the building of the physical environment, but whole actions of maintenance, repair and operation which contributes to the organization (Yavuz, 2008). In today's intense competition environment in the construction sector, firms operating in this area tend to place great importance on marketing activities in order to get a share from the market.

The need for shelter has been one of the most basic needs of mankind throughout history. The basic concept of housing is defined as a long-lived physical space in which people meet their needs for accommodation and feel safe. The building marketing process covers activities that meet the consumer's structural requirements by carrying out planning, research, implementation, control and evaluation studies in order to realize the aims of the people and enterprises in the field of construction, and real estate (Tek, 1999).

As in all other sectors, the methods being used in the building marketing process are changing and updating according to technological, technical and political developments. With the increase of competition in the field and the development of potential customers' consciousness, it has become inevitable to replace the traditional marketing techniques with current and new techniques.

#### **4.1 AR Applications In Architecture And Building Marketing**

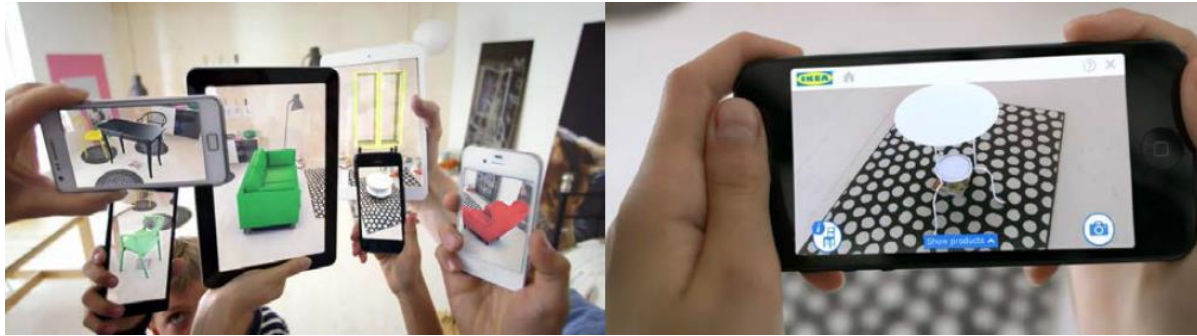
Depending on the rapid improvements on the AR technology there has been a remarkable increase in the AR applications in architecture and building marketing fields. Some examples which are relevant to the topic are presented below.

##### **Ikea AR App**

The Swedish furniture company Ikea has developed an application that can be used in interiors. In the app running on Android and IOS platforms, users are able to experience furnitures in the catalog in their home before buying. Through the application developed by Ikea in 2014, users can see the furnitures in the catalog at the desired point of the room in real time with the marker placed on the ground (Figure 12). In this system where more than ninety Ikea models are used, Ikea's own catalog can be used as a marker. When attempting to change the orientation or location of the furniture, it is necessary to rotate or move the catalog on the floor. The furnitures in Ikea's AR application are in one-to-one exact dimensions and can not be scaled. In this way, it can be seen exactly how they will seem in the space. This new system that uses AR technology can help to the interior designers and architects to make better and more accurate decisions in interior designs. In addition to observing the furniture in the interiors, products can be viewed as 3D from the smartphone screens on the catalog, thanks to the default graphics on the catalog pages at the same time. It is stated that this new application also changed the customers' shopping behaviors and reduced the return of the products and at the same time customers changed the way of looking at the brand. With this application, it is thought that the way of communication with the brand's



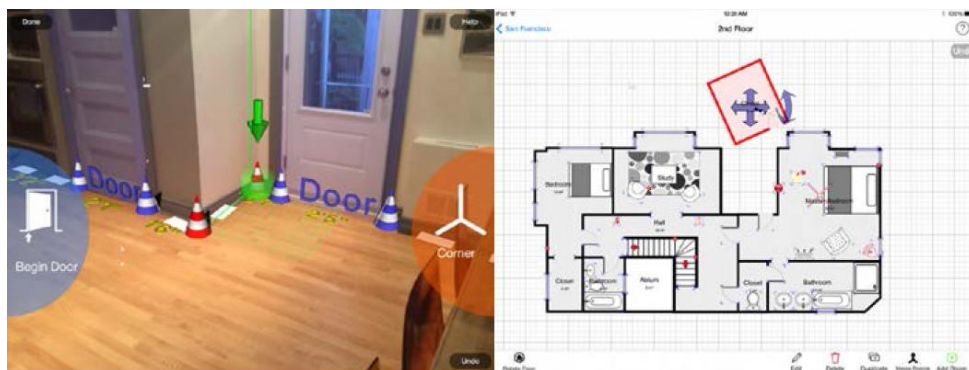
customers also changed. It is stated that customers generally find the application beneficial to practice.



**Figure 12.** Ikea's AR application for interiors

### **Magic Plan**

With the Magic Plan application developed by Sensopia, plans can be produced by taking the measurements of the places. In the application using the cameras of intelligent devices, the corner points of the rooms are marked on the camera and a line is drawn to the next corner coordinate, and when all the corner points of the room are defined, the application automatically joins the points and forms the plan of the interior space (Figure 13). When the measurement and plan drawings of all the places in the building are completed, the application is managed by the user and all the spaces are connected. Through the app, drawings of spaces can be produced in a practical way and measurements can be given. The application utilizes a gridal zoning process to create these plans. Architectural elements such as doors and windows can be added to the room drawings if desired with the application. The application draws a straight line between the two points, which is also visible from the camera of the device, while marking the points the user specifies to produce the drawings. In this way, users can check whether the drawn lines overlap with the wall lines and more accurate plans can be produced. Through the application, it is possible to take the drawings of the structures planned to be renovated in a practical way, or to document the current state of the structures to be restored. In this context, the application can be useful for architects and restorers.

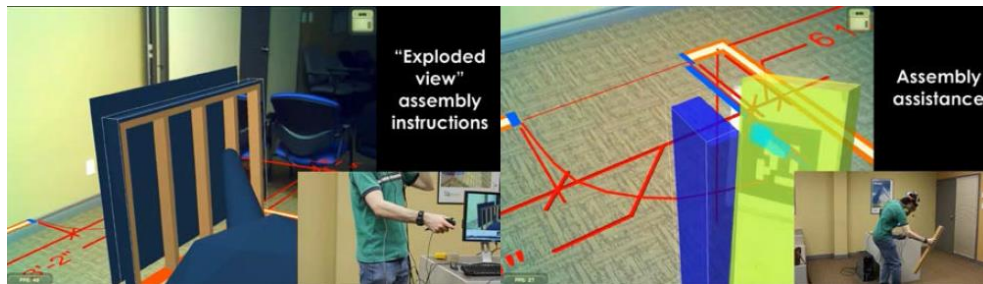


**Figure 13.** Magic Plan application

### **Bentley AR App**

In the AR application developed by Bentley Communities, users are able to make virtual construction applications with the aid of a head mounted display and input tools in real spaces (Figure 14). By means of the application, the structural elements can be transferred to the actual physical environment with desired dimensions and a structure can be constructed in the real environment with computer-generated virtual objects. Structural elements such as walls, columns, beams, doors and windows are utilized in the application. By combining the required architectural elements, virtual spaces are created that can only be experienced on the user's screen.

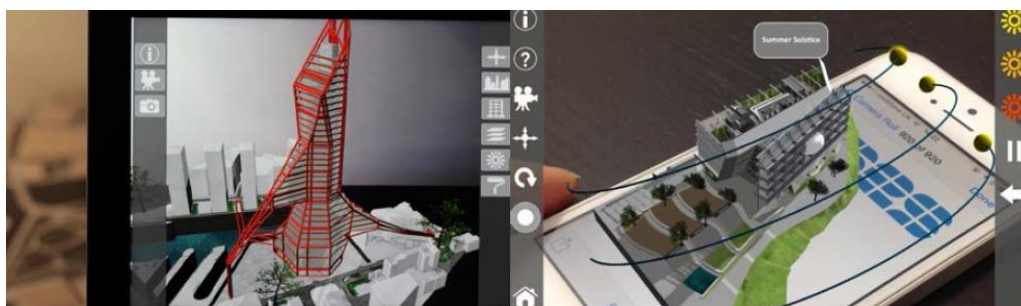
In app, users will be able to see the components of the structure to be built and how they will be applied and can simulate the problems that can be encountered during actual application. It is possible to experience and perceive places created by app before they are actually done. It is also possible to experience a building on the site before it is actually constructed and to prevent possible mistakes. With Bentley AR application, the manufacturing sequence to be followed in the construction process and the phases to be monitored can be visualized. In this case a more systematic field application is possible. It is also possible use of the program to give experience to the people who will be employed in the constructions of the buildings Virtual spaces produced within the program can be saved in the program memory and then used as 3D model outputs. With this feature, it can be said that the application has made the traditional 3D modeling process spatial. In its most basic form, the program can be said to be an AR platform that offers 3D modeling and virtual construction in the real physical environment.



**Figure 14.** Bentley's AR application for virtual construction

### Arki Application

ARki is an AR platform that can offer real-time visualization for architectural models developed by Darfdesing. The AR application can be used both in the visualization of 3D models and as a tool feeding the design process. Through multi- interacting layers, it can be said that real-time observation of 3D models can provide a more interesting and impressive experience than traditional visualization and presentation techniques. The application can be used on smart devices that use iOS and android operating systems. Users can transform the 3D models they create in real-time and real environment, and can observe them from different angles (Figure 15). To do this, default logo of the company has to be printed and used as a marker. In Arki, 3D models can be superimposed on existing 2D floor plans, enabling realtime visualizations that designers can use in their projects. In app, besides real-time visualization, there are many features that can enhance reality such as real-time shadow analysis and material selection. Users can record animations and visuals of models during 3D real-time visualization in ARki application. This feature also allows users to share images and animations they have recorded directly from the application, e-mail and social media.



**Figure 15.** ARki AR application

### RealAR

Australian company Realar Places has developed an augmented reality app in 2017 that puts Apple's ARKit framework to use for commercial purposes. The app gives builders the ability to showcase off-the-plan houses by placing a virtual house in a real space for buyers to walk through and experience in life-sized 3D (Figure 16). It works on any flat

surface where a model can be rendered. Realar fuses the real-world environment and a 3D rendering of the prospective home, allowing users to view the layout, stroll through rooms and look out the digital windows at the real view outside. The app is compatible with Apple and android devices. The developed augmented reality application helps potential customers to decide more accurately and easily due to spatial experience of the buildings in an augmented environment.



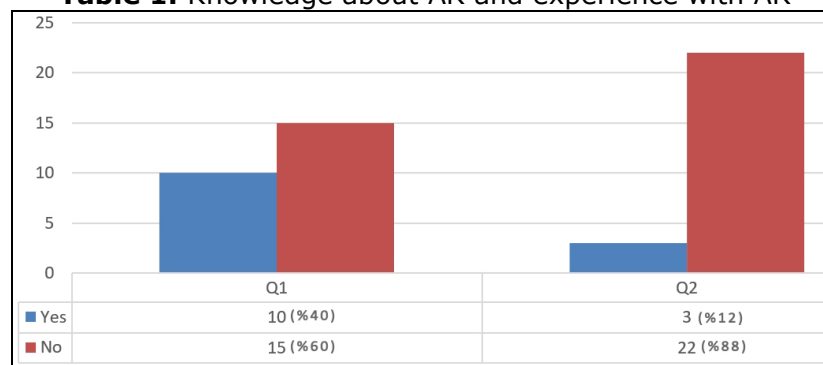
**Figure 16.** RealAR application for real-estate purposes

## FINDINGS

As mentioned before, a questionnaire of 10 questions was directed to the potential customers of the construction sector, which intend to measure the attitudes of the participants. Findings of the survey are listed below.

Level of knowledge about the AR before the presentations which made to introduce AR to the participants found to be important and the level of recognition of AR was tried to be measured. 40% of the respondents (20 people) have heard AR before and 60% (30 people) haven't heard the term AR before (Table 1). Sufficient information about the AR was given so that the other questions of the questionnaire could be answered in a healthy way. Participants in the study were asked if they have ever used an AR application. It's stated that 12% of the participants (6 people) used an AR app before and 88% (44 people) never used it. It was determined that most of the people who had information about AR did not use any AR app before and they have a basic knowledge of AR. Those who have already used AR applications (6 people) have been observed to work in design related works.

**Table 1.** Knowledge about AR and experience with AR

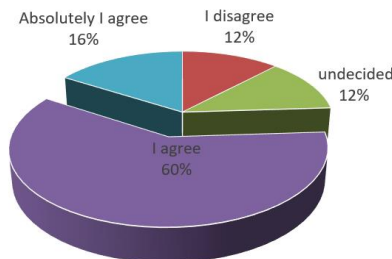


After measuring the knowledge about the AR, visual and theoretical information about the AR was given to the participants. After that, the state of providing information comparing to the other conventional methods in the introduction of the buildings has been questioned. It's stated that %76 (%16 absolutely agree, %60 agree) of the respondents think that AR systems provide more information about the buildings comparing to the

other expression methods. %12 of the respondents disagree with this idea and %12 are undecided (Table 2).

**Table 2.** Information provided by AR systems comparing to the conventional methods

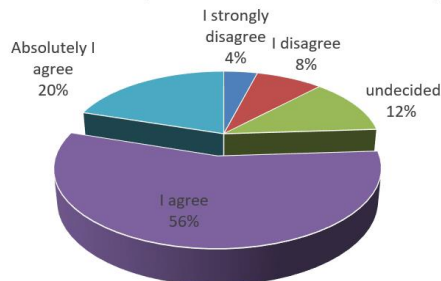
Q3-Using AR in the introduction of buildings and constructions provides more information than traditional 2D and 3D tools



In the next question, the use of AR in the introduction of buildings was questioned according to the other conventional methods in terms of spatial experience and better understanding of the space. According to the findings %76 of the respondents (%16 absolutely agree, %60 agree) think that AR systems are more succesfull comparing to the other methods about the understanding and experiencing the spaces. Total of %12 of the respondents (%8 strongly disagree, %4 disagree) doesn't agree with the this idea and %12 are undecided (Table 3).

**Table 3.** Comparison of AR with conventional tools about the understanding the space

Q4- Using AR in the introduction of buildings and constructions is more successful than conventional 2D and 3D tools to experience and understand the space



The production of a building according to the supply demand situation on the market accelerates the sales process. The importance of the promotion in the marketing process is obvious. Today, more successful promotions can be made about buildings with the latest technologies. AR is one of the latest technologies which is still being developed. The use of AR in the marketing process is expected to improve customer perception and experience and accelerate the decision-making process. Questions prepared in this direction were asked to the participants.

According to this; While 68% of the respondents reported that the AR would speed up the decision making (28% absolutely agree, 40% agree) and 32% left unfavorable (Table 4).

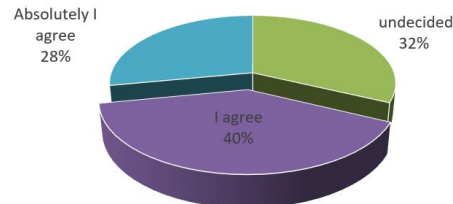
Those who participated in the questionnaire were asked if it is possible to produce more successful representations with the AR technology comparing to the traditional expression tools about the completed state of the buildings in the building marketing process. It was found that 88% of the respondents were positive (50% absolutely agree,



38% agree), 8% were negative (4% strongly disagree, 4% disagree) and 4% were undecided (Table 5).

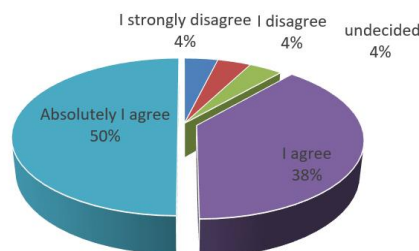
**Table 4.** The effects of AR applications on the decision making

Q5- Experiencing the buildings with ar techniques during the marketing processes will speed up the decision making process.



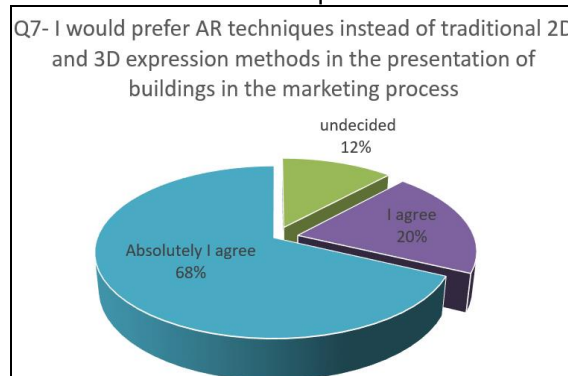
**Table 5.** information provision status of AR and traditional techniques

Q6- It is possible to produce more efficient representations than traditional expression tools about the finished state of buildings with the use of AG in the stage of building marketing

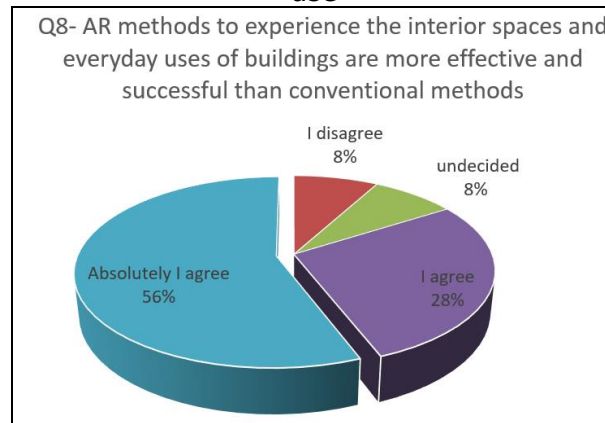


Customers have been examined about the preference of AR comparing to the traditional methods in the presentation of buildings during the building marketing. According to this, 88% of respondents (68% absolutely agree, 20% agree) stated that they prefer AR instead of traditional methods and 12% reported that they are undecided (Table 6). It's questioned to the participants if AR systems are more efficient than conventional tools to express the daily life inside the buildings and interior spaces. It's stated that %84 of the respondents (%56 absolutely agree, %28 agree) think that AR is more efficient than other tools to express the interior spaces of the buildings, %8 don't agree this and %8 are undecided (Table 7).

**Table 6.** The preference of AR techniques instead of traditional methods



**Table 7.** Comparison of the AR and traditional methods in terms of representing daily use



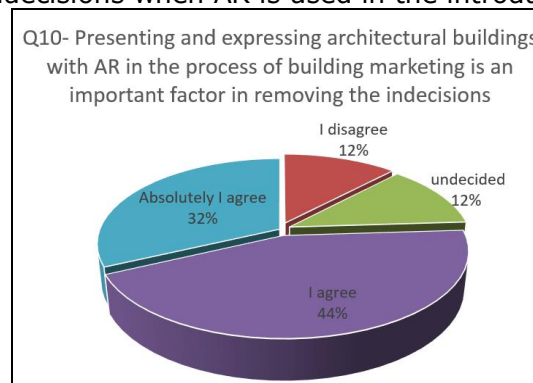
In today's building marketing process, models are used as well as 2D and 3D representation tools. However, it is still doubtful how much the costumers perceive the buildings using these techniques. It has been questioned in the case study whether the use of AR with these traditional methods, will be effective to better understand the buildings. According to this, 80% of the participants (48% definitely positive, 32% positive) indicated that the use of AR with the traditional methods would be effective, 4% don't agree this idea (strongly disagree) and 16% is uncertain about this (Table 8). It is possible to say that the use of AR in conjunction with traditional tools in order to introduce the buildings in the building marketing process will increase the understandability of the buildings.

**Table 8.** Evaluations of the effects of co-use of AR and traditional expression tools



It is known that customers are indecisive because they sometimes do not understand the buildings. The reasons of indecision are not able to understand the design, not to understand the dimensions, and so on. The effects of AR about the eliminating indecisions were also questioned within the scope of the study. 76% of those surveyed (%32 absolutely agree, %44 agree) stated that if the AR was used in the promotion of the structures, their indecision would cease. 12% of the respondents think the other way and %12 are undecided (Table 9).

**Table 9.** State of indecisions when AR is used in the introduction of the buildings



## CONCLUSIONS

To ensure continuity in the building sector is measured by taking part in the market. The construction sector, which is important in the economies of the countries, also contributes to the gross national product (GNP-national income). Therefore, it is important for companies to increase their market share in this sector for their continuity. In particular, a design that has been completed can be understood by the customer before the construction and the firms can better analyze their situation before the construction stage by feedbacks from customers. In such cases, up-to-date technologies such as AR can provide significant benefits to both consumers and construction companies compared to previous traditional methods.

As a result of this study, it has been found that the knowledge of the community is very low about the AR, and those with a small number of knowledge use almost no AR application. When people are informed about AR, they have stated that many of them can learn more about the buildings with AR. It is also thought that AR will be successful in perceiving the space and experiencing everyday activities in the buildings. It is also thought that more successful expressions than other conventional techniques can be made about the completed states of the buildings by using AR applications to introduce buildings.

It has been seen that potential customers in the building industry think that they will understand buildings better when they experience both the interiors and outdoor spaces using AR instead of traditional methods. In addition, it has been determined that the buildings will be better understood by the use of traditional expression techniques such as 2D and 3D drawings and models together with AR in the marketing process and indecision is likely to diminish in building purchases. Due to the clearer perception of spaces and uses when AR is used, it has been observed that customers will exhibit a clearer attitude when AR is used in the presentation of the buildings. At the same time, it has been seen that AR can shorten the building marketing processes in general and this situation is thought to be a positive effect for the market. With the increase in sales in the building sector, it is expected that the mobility will increase in the building market and in all sub-sectors affected by this market.

The clients in the construction sector are generally occupational groups operating outside this sector. It is not easy to understand buildings by 2D technical drawings or other traditional expression techniques for people who are not from the architecture discipline or construction industry. So that there is a doubt about the expenditure of the limited money that is owned. In order to get rid of this hesitation, the structures must be perceived in detail by the customers or the spaces must be experienced at 1/1 scale. It is almost impossible to build buildings at 1/1 scale before the buildings are built, so it is possible to have the same experiences with technological methods like AR.

Starting from the design stage, it is important for customers to know what they are investing, and for companies what they are marketing. In such a situation AR technology would be a great help. With the use of AR, the market shares of companies and market continuity will also increase. It is hoped that this work will form the basis for the future studies on the use of AR in the building marketing process.

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