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Augmented Reality in Shopping: Customer Experience and Response

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ABSTRACT: Today, Augmented Reality (AR) is making a huge impact in the market, be it medicine, gaming, shopping. It is the fusion between computer-generated data and the physical world. Augmented Reality (AR) is a technology that is used to superimpose 3D virtual objects in the real physical world. The main AR factors that create customer satisfaction are the rich quality of augmentation and the high level of informativeness. In this research, we have discussed the impact of AR in the field of shopping. Here, an effort is been done to get the response of people on AR-based shopping. We surveyed to check whether people are finding AR shopping is helpful or not and what are experiences while shopping using AR features. Our results show that a lot of people nowadays who are using AR-based applications for shopping are finding it helpful and they expect that in the future, AR will play a huge role in this field. The study helps to understand the user's shopping intention and helps in analyzing the customer experience with AR-based shopping.

KEYWORDS: Augmented Reality, Shopping, AR-based Shopping, online shopping, AR in Retail, consumer response

I. INTRODUCTION

Shopping online has become a trend or else one can say a necessity in today's world (due to the pandemic). Online shopping provides thousands of options, great filters, and easy-to-use interfaces to make online shopping more comfortable and fun. However, some people believe that despite all the options and filters, there are some serious issues while shopping online. The products that are seen in the picture and the products that are received at the user's end are different in appearance and quality. People face issues regarding the quality of the product, unclear information about the product, boring interfaces (in some cases).

However, some customers still prefer offline shopping. But again, the problems with offline shopping are – there are fewer options, products are usually expensive, it is time-consuming. So, there has to be a way where we can reduce these drawbacks in both modes of shopping. So here, the Augmented Reality (AR) experience comes into the picture.

Shopping using AR helps to try on the product virtually. For example, while shopping for clothes, you can try on the clothes virtually with help of a Smart Mirror (based on AR), or while buying a new sofa set, you can see that how it will look in the room by using AR applications like IKEA place, etc. Recently, emerging technologies that make use of Augmented-Reality (AR) and computer vision techniques bring new opportunities for intelligent shopping environments [13]. AR provides high-quality and seamless rendering of virtual objects in the real world.

In this paper, we are going to discuss the public response to AR-based Shopping over the traditional method (Non-AR). As we know that still the traditional method of shopping is used more at many places, we surveyed to get the public response on Augmented Reality-based Shopping.

II. RELATED WORK

The number and quality of AR applications have been increasing, and it seems that only recently AR developers are paying attention to user's actual needs and desires [1]. AR has also been used in the retail industry, and several companies have started investing in AR to create apps and amazing experiences to promote and sell their products [4]. Talking about Augmented Reality based shopping and not mentioning IKEA Place is difficult. The IKEA Place app uses AR to allow its users to visualize how furniture will look in their own homes and not only would it take the hassle of furniture shopping off, but it would also eliminate the burden of returning any furniture that does not fit [2]. Bringing online shopping features to offline retail will enrich the customer experience [3]. [3] has presented Augmented Reality



(AR) interfaces developed for handheld devices, linked to a physical Smart Space to bridge the gap between offline and online retail. Product information obtained through AR is considered more reliable and reduces the risk associated with buying the product, we expect that consumers will experience more positive affect, which will be transferred to their attitude towards the brand [7]. [8] has presented a system that integrates Artificial Intelligence (AI) methods with Augmented Reality (AR) techniques to enhance the grocery shopping experience through the use of smart glasses. [9] reveals the association between personality traits and online buying behaviors, i.e., neuroticism and the openness to experiences being associated with the willingness to buy online. The implementation of AR will become self-evident for retailers over time and it can be assumed that the perceived benefits for customers will influence the acceptance of using Augmented Reality Shopping (ARS) Services, which may turn affect their purchase decisions [14]. The in-depth insight on consumer behavior will expand on the knowledge of advertising approaches in the future, leading to better targeting of products and services [16].

III. METHODOLOGY

To get people’s opinion on Augmented Reality (AR) based shopping we conducted an online survey with the help of Google forms. We made a set of questions about AR-based shopping forwarded it to our contacts. After getting 100 responses in total, we closed the survey and then analyzed the responses. We have divided this survey into 4 sections.

1] Section 1 contains basic information like gender, age groups, and shopping mode preference of people.

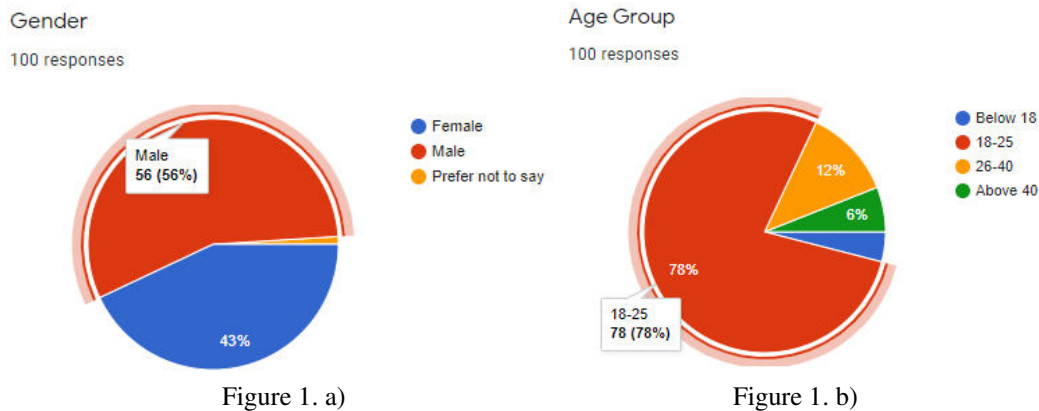


Figure 1. a)

Figure 1. b)

What type of Shopping do you prefer?
100 responses

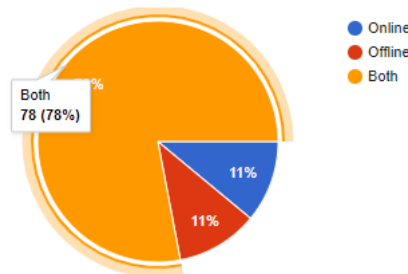


Figure 1. c)

2] Section 2 consists of questions for people like how frequently do they shop, difficulties faced while shopping, and if they have ever used an AR-based shopping application. Here, the survey ends for people who never used an AR application for shopping. On the other hand, people who have used AR-based applications for shopping will move to the 3rd section of questions.



How frequently do you shop?
100 responses

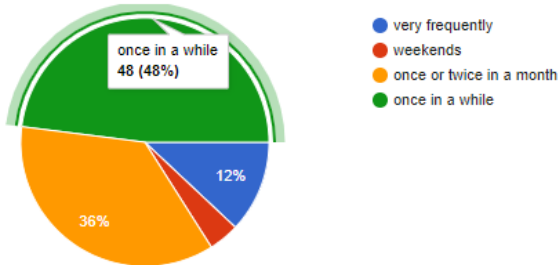


Figure 2. a)

Have you started shopping via online apps more during the pandemic?
100 responses

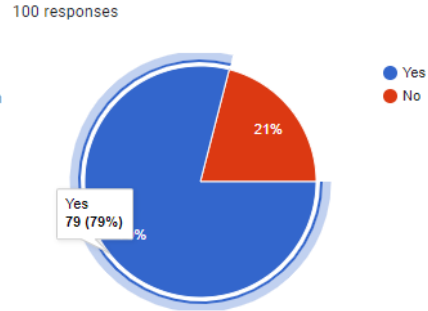


Figure 2. b)

What type of difficulties do you face while shopping online?
100 responses

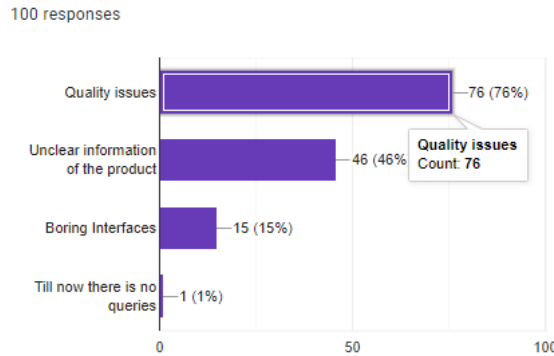


Figure 2. c)

Have you ever used any AR app for shopping? (For example : Lenskart, IKEA Place, etc)
100 responses

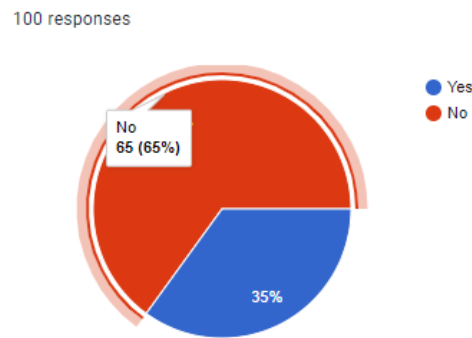


Figure 2. d)

3] In section 3, we asked few basic questions to the people (35 out of 100) who have used AR-based shopping applications and their experience with AR-based shopping.

Which of the following AR apps you have used?
35 responses

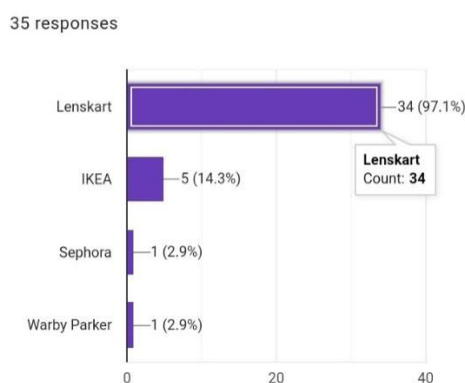


Figure 3. a)

How would you rate your shopping experience using AR?
35 responses

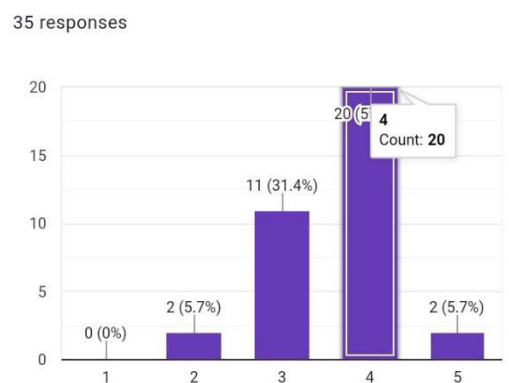


Figure 3. b)



Do you prefer shopping using AR technology over traditional methods?
35 responses

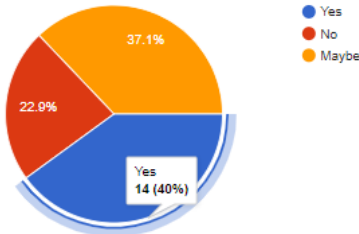


Figure 3. c)

Do you think having AR facilities even in offline stores will be helpful?
35 responses

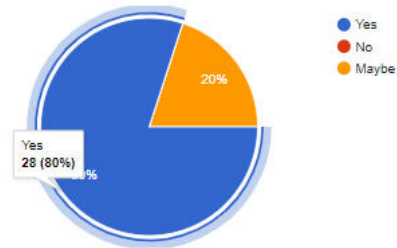


Figure 3. d)

If you have experienced AR in a store, how would you rate the experience?
35 responses

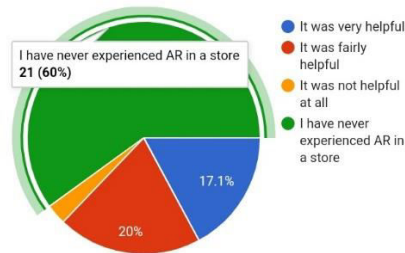


Figure 3. e)

4] Section 4 consists of questions on people’s views and expectations with AR-based shopping (online or offline).

Do you expect your favourite stores to offer AR experiences in the future? (for examples : clothing and accessories stores)
35 responses

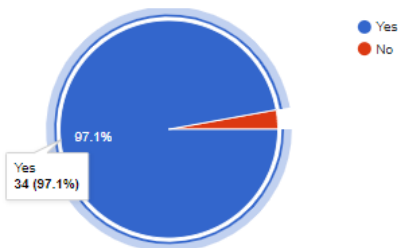


Figure 4. a)

Do you think shopping with AR helps you to explore more options very easily?
35 responses

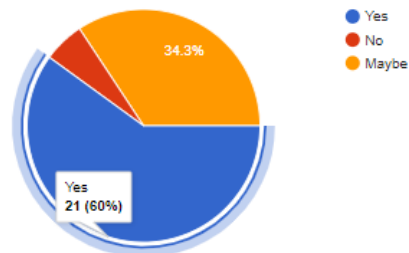


Figure 4. b)



Which of the following would you prefer while shopping?

35 responses

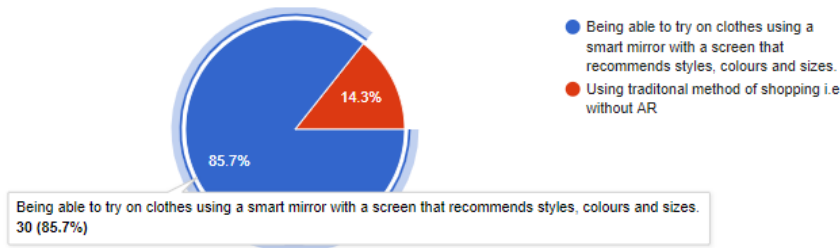


Figure 4. c)

What kind of stores would you expect to receive a better experience if technology such as AR was in place?

35 responses

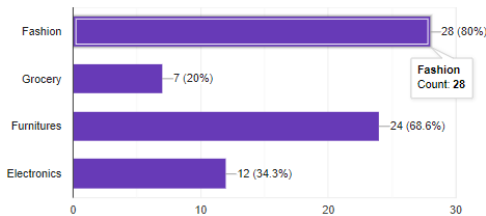


Figure 4. d)

Do you think AR is future in the field of shopping?

35 responses

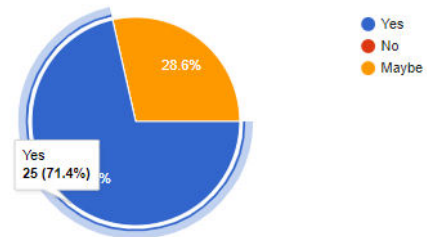


Figure 4. e)

IV. EXPERIMENTAL RESULTS

In section 1, from figure 1. b), we can see that 78% of people using AR for shopping are between the ages group 18-25. From figure 1. c), it is observed that there are mixed responses for online and offline shopping, and 78% of the people use both modes of shopping.

In section 2, figure 2. a) shows that many people prefer online shopping just once a while (48%). From figure 2. b), it is observed that 79% of people have started online shopping during the pandemic. Figure 2. c) shows that 76% of people when shopped online faced quality issues, 46% of the people feel there is unclear information about the product, and 15% of people do not shop online because of boring interfaces. From figure 2.d), we are surprised to see that only 35% of people have used AR apps for shopping.

In section 3, from figure 3. a), it is observed that 97.1% of the people used the Lenskart app, shocking only 14.3% of the people have used the IKEA Place app. Figure 3. b) shows that more than 50% of the people have rated their AR shopping experience as good. In figure 3. c), where we asked people for their preference on AR technology over traditional methods, there are mixed responses. Still, 40% of the people preferred AR-based shopping over the traditional methods. From figure 3. d), it is observed that 80% of the people think that having AR facilities in offline stores will be helpful. Figure 3. e) shows that 60% of the people have never experienced AR facilities in an offline store. Though around 37% of the people who have experienced it think that it was helpful.

In section 4, figure 4. a) shows that more than 95% of the people expect their favorite store to offer an AR experience in the future. In figure 4. b), more than 90% of responses show that AR helps to explore more options very easily. Figure 4. c) shows that many people prefer the AR features to try clothes virtually while shopping offline using a smart mirror over the traditional method. Figure 4.d) shows that many people think that fashion and furniture stores may receive a better experience by using AR technology.



V. CONCLUSION

The main aim of this study was to identify the people's involvement in shopping using AR technology and to understand the problems faced by them as well the ease of shopping they feel because of AR. This will allow the professionals and experts to understand the consumer attitudes towards AR-based shopping in a better way and also to measure the impact of AR on consumers. It can also help professionals to understand the problems faced by people during traditional methods of shopping and add new features (like AR) to resolve them. The in-depth insight on consumer behavior and response will lead to expansion of knowledge for AR approaches in the future which will lead to better development of apps and services. Future researches might also include the problems faced by customers in AR-based shopping and how they can be reduced or resolved.

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