

A View of Augmented Reality in the Beauty Industry from an Exploratory Perspective: Generations X and Z



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Abstract Augmented reality (AR) is shaping a new environment for marketers, playing an essential role in consumer choice. AR seems to be a good solution for undecided online shoppers. However, their implementation in the physical store can also play an important role in both the purchase decision and in increasing the number of consumers visiting the shop. AR allows potential consumers to virtually try-on products and imagines how they would look on their face, through technologies such as Virtual Try-on. From a qualitative perspective, this research aims to explore perceptions of AR and then differentiate between the use of Virtual Try-on from the smartphone and the use of Virtual Try-on in the physical shop through mirrors. Through two focus groups, composed of women from two generations (generation X and generation Z), we found a greater acceptance of the use of AR on smartphones in a private context, with a certain rejection of its use in a physical shop. In general, there is a rejection of the use of AR mirrors in the physical shop due to the lack of privacy during use. However, these problems could be solved by choosing the right location in the shop. Also, the presence of staff who can help and advise during use seems to be of interest. Concerning to the use of Virtual Try-on on mobile phones, there is a certain mistrust that the shades shown are not the real ones, which is the main problem identified.

Keywords Augmented reality · Virtual mirror · Perceptions · Generation X · Generation Z

1 Introduction

Over the last decade, technology and marketing have become inseparable partners. Technological advances have been successfully integrated into marketing strategies given rise to numerous advantages for both customers and enterprises.

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The evolution of AR is allowing new uses and applications to emerge, some of which may be very interesting for a certain sector. AR can improve consumer knowledge about the products offered, while they enjoy the process of trying the items on themselves effortlessly through their phone or smart device. Many industries that focus on providing value for consumers such as retailing, tourism, fashion, entertainment, automotive, services or education may benefit from this technology to deliver enhanced experiences to their consumers. The beauty industry is currently undergoing a profound digitalization process with a 40% global worth in online cosmetic sales during 2020, accounting for 22% of the sales in the industry [1]. The current COVID-19 crisis has sped up the adoption of AR since more people were online shopping and many beauty stores do not allow trying products for sanitary reasons. In this sense, this crisis has highlighted how AR can be a realistic tool to facilitate the shopping experience from home. Before the pandemic just 8% of the US retailers wanted to offer Virtual Try-on to their customers, now the percentage has raised to 20% [1].

Academic research has recently focused attention on the study of the use of AR in consumer behaviour [2, 3]. A lot of research has followed a quantitative methodology, conducting many experimental designs. However, the scarcity of exploratory studies carried out is striking [4], particularly given the novelty of the topic and the need to explore in-depth the perceptions and causes of user behaviour. For this reason, this research aims to contribute to the knowledge of the perceptions and factors that motivate the use of AR both online and in the physical shop, by conducting two focus groups. It also sheds light on in which shopping situations the use of different types of AR may be more useful. To this end, the topic is addressed with different age groups, and some differences between generation X and generation Z can be identified.

2 How to Implement Augmented Reality in the Shopping Decision Process

Some steps should be considered for the successful implementation of AR campaigns in the context of marketing [5].

First, it is necessary to define target audiences and communications objectives before starting to design the campaigns. The campaign can follow completely different patterns depending on to whom it is directed. As an example, generation Z and Millennials are more likely to be keen on technology than “Boomers” or elderly generations, so it is easier for them to participate in campaigns that involve a more complex use of technology [6].

Secondly, it has to be established how the AR filter will be activated. Marketers need to decide when and how the AR layer will be activated. When the user is given the option to activate the AR layer, they feel more in control of the situation and are more likely to have a positive response to it. However, when they do not have to take

any deliberate action, the time and space are precisely selected by the marketer and there is a reluctance to engage at the beginning [7].

Thirdly, the information and content to be provided by the AR filter should be regulated according to its objectives and content. Next, designers will establish the level of interactivity to give users. Interactivity refers to the extent to which users can participate in modifying the form and content of a mediated environment in real-time [8]. This can provide fun and playfulness, which have been shown to have a positive impact on consumer satisfaction. Control, responsibility, personalization and perceived connectivity are necessary characteristics to achieve interactivity [9]. However, when one of the goals of your AR campaign is to provide very low-cost information or there is a likelihood that people will use it maliciously (e.g. showing hate speech), it may be necessary to have strong control over the content and actions available [10].

Finally, establish how the AR information layer will be integrated with the specific social and physical contexts. The last step involves selecting how the AR content will be integrated with the passive elements: the bystanders and the background. In this sense, research has distinguished between augmented reality and mixed reality [11]. Depending on the type of experience a particular brand intends to offer, it will be crucial to decide how much of the context content will be integrated. Higher integration of a certain layer in the context is more resource-intensive in terms of planning, investment and technical capacity requirements. Furthermore, if the content is to be presented in a public place, bystanders have to be taken into account as elements of interaction that could interrupt and ruin the experience (voluntarily or involuntarily). These threats should always be kept in mind and avoided whenever possible. The goal is to engage the consumer at the highest level, so all of these considerations should be assessed and taken into account.

3 Method

After looking at the different technical steps to carry out the correct implementation of AR, through qualitative methodologies we aim to find out the general impressions of this tool, and the perceptions and opinions of the different types of AR that are available for the purchase of beauty products.

For this purpose, we carried out qualitative research (two focus groups). Qualitative methodologies have been deemed appropriate due to their ability to provide a deep understanding of consumers' perceptions and feelings [12]. In this kind of discussion, participants can give their opinion and express their feelings freely. This fact, enhance the interaction between participant and many different points of view arise enriching the quality of the information [13].

The interaction between the researcher and the participants is the origin of valuable data. These data are subjective; however, once interpreted can have an extraordinary value for the research [14]. The subjective experiences described by participants help us to understand their reality and behaviours. Observing participants' interactions,

corporal languages and ways of communicating in a specific context give rise to a lot of interpretable data that would be unmeasurable using quantitative methods.

3.1 Focus Group Design

We conducted two focus groups with consumers who usually buy online. One focus group was formed of six women between 18 and 21 years old (digital natives), and the other of six women between 41 and 57 years old (digital immigrants). Small qualitative sample sizes are considered appropriate for the investigation of emerging concepts [15]. The recruitment process started with postgraduate students over 18 years of age and continued via snowballing.

Generally, the number of participants ranges from four up to twelve; in this case, we opted for small groups of 6 participants to create a more comfortable environment that favours the deepening on more specific issues [16]. Group's composition should have a certain degree of homogeneity to avoid great contrasts, but at the same time, they must be heterogeneous enough to encourage debate and different criteria. Thus, we selected groups with similar characteristics in terms of gender, age and buying habits. Participants should be females of similar ages with an interest in purchasing beauty products, but they came from different backgrounds and had no close personal relationships with each other. The respondents were advised they were participating in a research project to better understand their shopping experiences with AR. The focus group sessions lasted between 60 and 90 min and were audio-recorded. Before the data analysis, the research team checked the transcripts for accuracy.

The sessions took place during the first semester of 2021, and due to the current COVID-19 sanitary restrictions, the focus groups had to take place using Google Meet online conference. However, to increase engagement and spontaneity by having a close feeling all the participants kept their microphones and cameras on. The two groups of people that can use AR technology have the following characteristics [17]:

- (1) Digital natives that have grown in close contact with technologies such as Millennials and generation Z, born after the 80 s.
- (2) Digital immigrants have had to adapt to new technologies, such as Boomers and generation X.

During the focus groups, respondents first described their perceptions and experiences of AR as a Virtual Try-on tool in general and then were presented with an AR as a Virtual Try-on technology to use. Later, it was shown a video of AR in-store, with the use of virtual mirrors. Consequently, a series of short easy questions were asked by the moderator to "break the ice" creating a more comfortable atmosphere. Participants were then asked to try-on virtual make-up on their smartphones and then asked about their experiences using it. Finally, a video was shown of a user using a virtual mirror in the shop, which allowed her to try-on different combinations of make-up on her face and provides personalized recommendations based on her skin tone and other factors. Table 1 shows the sample profile of participants.

Table 1 Sample profile

Participant	Age	Profession	Group
1	21	Business student	Generation Z
2	23	Journalist	Generation Z
3	18	Chemist student	Generation Z
4	21	Business student	Generation Z
5	20	Architecture student	Generation Z
6	21	Management student	Generation Z
7	57	Doctor	Generation X
8	52	Tourism teacher	Generation X
9	56	Technology teacher	Generation X
10	41	User experience designer	Generation X
11	49	Teacher	Generation X

4 Results

Our findings reveal three main themes concerning the perceptions and use of AR in different contexts. Below, we outline each theme.

4.1 *Augmented Reality Perception*

All the participants agreed that AR can help them decide which products to buy, especially when there is a great range of colours that look similar in the photographs. Participants stated that tones that looked the same in the webpage photographs looked completely different once they had tried them out with the AR tool: “It is especially helpful when two colours seem very much alike, then you try them out and you see a clearer distinction” (P1, 21).

A participant in the aged focus group even stated that the experience was similar to going to the store: “it is almost as if you were going to the store to choose the product!” (P8, 52) while another noted that this experience could be even better cause you see the result directly in your face: “in the store, they test it on your hand, not on your lips, so you can see how it suits you and your skin” (P10, 41).

In addition, all of them agreed that they will be opened to try many different products since they can do it effortlessly from their homes with just a few clicks without having to remove the make-up afterwards and making the process much faster than physically trying them out: “I think you try many more products online, for convenience and hygiene reasons” (P2, 23). Moreover, they will try products they had never thought about trying just because they have the possibility in hand, and they feel anonymous using the tool. Some participants will do it just for fun because they find the process of online trying entertaining and fun: “It makes the shopping experience more interactive. You are more entertained, you try things out, you see

how it looks on your face. It's a more fun process, it's something innovative, it's a new experience. It motivates you to try products. Now if you buy by just looking at photos, it is boring" (P4, 21). This could become a problem, due to the large number of alternatives evaluated, as previous research has shown [4].

Therefore, we can say that the interactive of the application makes the client experience an entertaining moment enhancing his purchasing experience and that they are more likely to try new products, since they feel in a safe environment, and this can help them make their final decision.

The younger generation remarked that sometimes they do not like asking for help from the staff of the stores while trying many different products because they feel like they are making them lose their time if in the end up not buying anything, so having this technology in hand could also help them to solve this issue: "If in the end, you are not going to buy anything after having tried on many things, you feel certain remorse. But if someone is advising you are also embarrassed to say that you do not want it. In the application, you try it and that's it" (P3, 18).

4.2 In-Sore Augmented Reality Mirrors

However, participants did not seem to like the idea of trying this AR technology in the stores, they stated that one of the aspects they like about the AR application is that you can try it from your home anonymously without anyone watching you. If this technology is carried out to the store where other people can see them trying things out on a screen, they won't feel motivated to try as many different products.

Regarding this matter, the Millennial and generation Z group added that having this technology in the stores will not suppose an attraction to them since they are used to seeing this kind of filter daily on social media so seeing it in a store will not impact them as much: "I do not think it is very useful to have the same tool that you already have on your phone and you can do it whenever you want at home" (P2, 23); "in the case of makeup, it is not so new. you may not have seen it in stores, but you can already do it on your cell phone..." (P1, 21).

Also, there is a certain rejection due to factors such as use in a public place, such as a shop: "I would never use the mirror in the shop. If I want to try it out virtually, I prefer to do it at home and then go to the shop. If I have any doubts, I will ask in the shop, but I will go with clear ideas. Maybe I would use it for the novelty, but I do not think I would use it for real. I would prefer to do it from home online and then if I have any doubts I can go to the shop. The other option would also be to buy directly online or go to the shop to see the product physically." (P6, 21); "I think I would also use the AR at home because I would be a bit embarrassed to go to the shop and be using the mirror. It is a question of privacy. I would not want other people to see me trying it on. But I do think there will be more. Now in the shops, because of covid, the tester has been removed" (P1, 21).

For generation X, the aspect of privacy in use is also seen as a factor of rejection for the use of AR in the physical shop: "I do not think the virtual mirror in the shop

makes sense. One of the good things about trying things on virtually is the anonymity, not that you are in the shop, and everyone is looking at you, I would rather try it on online". (P11, 49). However, some people are in favour of its implementation in physical shops, subject to certain conditions, such as the availability of staff to help you or that the mirror is located in a place that allows a certain degree of privacy, that not all shoppers can observe you while you are using it: "I like to be recommended and I find it very important to try the products, especially the textures and the scent. I think it's great to try the products on the mirror in the shop if someone is advising me which ones to try and that there is some privacy while you are using them" (P7, 57).

4.3 Augmented Reality Drawbacks

The biggest drawback with AR for participants is that through this technology you can see how products look in your face; however, you cannot experience or feel the textures, smells, creaminess or flavours of the products. These properties are very important and special when choosing make-up since not all products perform equally in everybody. This is shown in statements like: "indeed, you do not try the textures and I also think that is important and the creaminess is also important, even if give you the information later, you have to see how you feel" (P7, 57).

Another issue is that participants did not completely rely on the veracity of this application, and therefore, they questioned if what they were seeing on the screen was 100% true and feared the possibility of it being different in real life. The colours in the photographs being very different to the ones seen in the simulation seemed to raise more doubts about what the real colour is if the one in the photograph or the one in AR. A participant stated: "I don't know if they reflect exactly the colours that they are. Down below you saw some colours and then when you put them on, they were very different. So, that makes me a little bit doubtful" (P6, 21).

Nevertheless, participants of all ages agreed on the fact that this can help them make their final decision or at least reduce the number of alternatives they have in mind. In the case of having tried out AR and still having doubts, the older group would go to the store to try the products and maybe would ask the professionals their opinions. On the other hand, the younger group would look for online reviews (YouTube videos, comments...), friend's opinions or even trust influencers opinions about certain products and finally if the doubts persisted they would go to the stores to try to reaffirm their decision: "I would also send it to my friends. Anything that is augmented reality is much easier to share, especially on mobile" (P2, 23); "Now there are beauty influencers who recommend products and I rely quite a lot on the opinion they have" (P3, 18).

5 Discussion and Conclusions

This technology has huge implications in the field of e-commerce since the consumer is not able to see or try the products until they are delivered to their homes. This may be a huge problem for beauty products buyers since colours and looks play a very important role in their buying decision.

One of the principal reasons for not buying make-up online is the distrust in the shopping decision process. For most of them, it is important to feel and try the product before buying it. Finding a product that fits with their characteristics (skin type, facial shape, skin tone) is crucial, especially if they want to use it for a special occasion. In the traditional online process, potential buyers cannot see how the product looks on them and this is what ultimately causes them to avoid the online process or, if they do proceed with the purchase, to experience some discomfort due to the uncertainty of having chosen the wrong product [18].

AR has been proved to help participants in the decision process. Being able to see how the product may look into their faces eliminates one of the unknowns. This process can be particularly beneficial when there are a lot of options that at first sight look very similar in the photographs. In addition, this technology encourages buyers to try-on many different things, even those who are out of their comfort zone and may end up buying something they had never thought about. The experience of trying different things seems to be fun and enjoyable for shoppers because it does not require as much effort and time as physically trying them, it is more hygienic, and they can do it in a private environment without being observed or feeling judged by others.

Younger generations are the drivers of the industry with the biggest expenditure in this area [19]. In this sense, AR marketing in social media (e.g. Instagram filters) can be useful to attract these young consumers since they will probably engage with the filters without even realizing just to have fun and share the content in their accounts. If they have doubts about the product, they will be more likely to look for information online, reading reviews on social media or listening to influencers opinions.

On the other hand, Generation X will still prefer going to the store to try the products out or been given the opinion from the professionals. This technology can help them try more products and reduce the number of options they have in mind but most of them will still prefer going to the store in the case of being buying something they have never tested.

An important drawback of this technology is the lack of trust in the veracity of the results. This technology is relatively new, and consumers do not fully rely on his ability to show a precise image. However, this technology is going to be more and more common and if people have good experiences buying with it, they will gradually start to trust it. Moreover, despite the benefits, AR has shown a realistic image of how the products will look in the consumers face, consumers are still not able to feel the products, touch them, and check their texture, creaminess.

Finally, given the differences observed between the generations, AR technology should be mainly targeted at "younger generations" that are the ones that are already

adapted to this kind of technology and believe more in the online process. AR can be the solution to a more hygienic and fast way of testing cosmetics, so even if the consumer does not complete the online process, this technology will also allow them to have a clearer idea of what they want and streamline offline purchasing process.

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