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The Interaction and Acceptability of Potential Fashion Consumers in the Use of Virtual Reality for Fashion Shows: A Study with Generation Z

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Abstract

In recent years, virtual reality (VR) technology has grown in various industries, including fashion. VR in fashion shows can revolutionize how consumers interact with and experience fashion shows. As a reflection of social transformations, the fashion world follows the virtualization of social interactions, from developing personalized clothing for avatars to running fashion shows in a wholly digital environment. However, this human adaptability to different social contexts is conditioned to several things; among them, age directly influences this acceptance process of the virtual environment. Therefore, the acceptability of VR for fashion shows among potential fashion consumers, particularly Generation Z, is poorly understood. This study aimed to investigate the interaction and acceptability of potential fashion consumers in virtual reality for fashion shows, explicitly focusing on Generation Z. A survey was conducted with 66 Brazilian individuals from Generation Z. The study aimed to assess the influence of fashion involvement, attitude, and cybersickness on the user's

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experience with virtual reality for fashion shows. We asked the survey participants about their agreement with statements about their involvement with fashion, attitude towards virtual reality, symptoms of cybersickness, and demographic information such as age, gender, and income. The results of the study showed that involvement with fashion positively influences the attitude and experience with the use of virtual reality for watching fashion shows among Generation Z. Participants who reported higher levels of involvement with fashion also said more positive attitudes towards virtual reality and better experiences with virtual reality for fashion shows. Additionally, the study found that Generation Z participants reported cybersickness symptoms, which can negatively influence the user experience. The results of this study can provide valuable insights for businesses and marketers in the fashion industry who are interested in incorporating virtual reality technology into their fashion shows, as well as for researchers interested in using virtual reality technology in the fashion industry. The study highlights the importance of understanding the potential fashion consumers' involvement and attitude towards virtual reality for fashion shows and the adverse effects of cybersickness in the user experience.

Keywords: virtual reality, fashion show, generation, user experience, Metaverse.

Introduction

The industrial revolution, which took place in the second half of the 18th century, marked the beginning of significant technological innovations, which, with the emergence of capitalism, accelerated until the present day (Cavalcante; Silva, 2011). One of the creations since this period was virtual reality, which consists of a three-dimensional space produced by computers that simulate real life, whose visual elements can be accessed, among other ways, through augmented reality glasses (Machado; Netto; Oliveira, 2002). One of the functions of this device is to transmit images from different places in real-time. Such functionality has applications such as promoting events and immersing individuals in environments designed to

have social and consumer experiences, such as musical concerts, visits to museums, or, as it is used in the fashion world, for fashion shows (Marques, 2018).

For Madeira et al. (2022), the currently known internet would have a successor, the Metaverse. This term is not new and was already heard in some science fiction writings of the 90s, such as Snow Crash by Neal Stephenson, and consists of a three-dimensional cyberspace that promises significant changes in people's lives, from the digitization of education in schools and universities, even for social interactions such as work meetings and online games (Fernandes, 2022). Issues like this are becoming more and more relevant since avatars represent human bodies in a "world" where there is interaction and social contact, which can lead to alienation and disconnection from the real world (Bakes; Schlemmer, 2008).

In his article, Marques (2018) points out that technology and fashion have been going hand in hand from the first magazines of famous brands to the present day. In this way, it is possible to perceive this fact in the phenomenon of social networks, which is currently one of the means that most influences the world of clothing since it has a great reach throughout the social mass. The author still believes that many changes are yet to come and that technological trends ended up shaping the way that fashion is consumed, produced, and disseminated, as shown in her speech:

> Some of these macro trends are already clearly perceived and should influence the way we make and consume fashion, such as, for example, access, tracking, and sharing of items, the result of the revolution caused by cheapening and the use of artificial intelligence in all things (Marques, p. 263, 2018).

Under this bias, the context of the Sars-CoV-2 virus pandemic enters, which affected the entire world due to its high transmissibility rate. As a disease prevention measure, health authorities recommended quarantine, a form of social isolation, to reduce the spread of the virus (Dominguez et al., 2020). Thus, from the most conservative to the innovative, workers had to find an alternative to continuing their jobs. The home-office style, already adopted by some companies before, despite presenting adaptation difficulties for some people, was one of the possibilities to face now (Bridi et al., 2020). Since then, the use of digital platforms has

become increasingly common to the entire world population, promoting significant advances in how technology is used.

In this sense, some people were harmed in the migration to the digital world, among them the elderly, since this generation may have more difficulties in handling devices or accessing the internet correctly, feeling excluded to the detriment of a necessary digital inclusion (Guimarães, Ito, and Yamanoe, 2019). On the other hand, younger individuals, especially Generation Z, did not feel the damage of this change, as they were born in a context of constant advances in information technology (Verona et al., 2006).

Fashion shows are a crucial point of the clothing industry (Vilaseca, 2011; Mcassey, 2013; Treptow, 2013). We are considering that they aim to disseminate the result of production, which involves research, idealization, and development of the piece for a particular target audience, as well as the presentation of the message and concept present in the launched collection (Esteves, 2018). We can say that access to fashion shows is an essential tool for students in the clothing area, as well as for marketing communication developed by brands (Cavalcanti, 2017) and for people interested in consuming this type of media or the products offered by it.

In this context, it is necessary to point out that, despite the advantages that parades can bring, it is known that, in reality, not everyone has the opportunity to witness this type of spectacle, either because of the distance, financial situation, authorization of a responsible, absence of an invitation or opportunity. Therefore, to identify new opportunities for solutions to this dynamic, this project intends to verify the acceptability of potential fashion consumers regarding a new way of experiencing fashion shows and see how people react to the catwalks in the middle of virtual reality.

According to Manuel Castells (2003, p. 6), “The internet is a means of communication that allows, for the first time, the communication of many with many, at a chosen moment, on a global scale.” That is, it is possible to interact with people or places simultaneously without being physically in the place or close to the person being spoken to. Nevertheless, the internet can be used as a means for people to watch fashion shows from the comfort of their homes as

they happen. In addition, we intended that viewers use virtual reality glasses to make the sensory experience of the fashion show even more real as if the person were in the same place.

Therefore, this paper aims to identify the acceptability of virtual reality applied to fashion shows by potential fashion consumers from Generation Z.

Methodology

The research analyzed consumers' acceptance of following clothing shows in virtual reality, and the negative symptoms felt from such interaction, if any, that virtual reality may be linked to. This research is associated with the survey method previously exposed (Santos et al., 2018). However, it is essential to appropriate the following questions: What? As? Why? Emphasizing that the researcher will not have control over the variables (Pinsonneault; Kraemer, 1993) since the analysis of each user becomes individualized.

Based on this principle, the influence of age (generations Z) was investigated along with the "user experience," "cybersickness," and "attitude" scales (Huygelier et al., 2019) to understand the acceptability of immersion virtual to follow fashion shows. Still, to understand whether people with greater familiarity with fashion are more likely to accept such interaction, the "involvement with fashion" scale was added to measure whether acceptability is linked to how much the person is interested in that area. (Suhud et al., 2020) (Table 1).

Table 1. Questions/Dimensions studied in the survey

DIMENSÕES - ESCALAS
Experiência do usuário *(User experience)*
UE1. Gostei da experiência.
UE2. Eu descreveria a experiência como interessante.
UE3. Achei a experiência confusa.
UE4. Senti-me tenso durante a experiência.

UE5. Eu estava interessado na experiência.
UE6. Achei a experiência chata.
UE7. Achei que poderia usar os controles facilmente.
UE8. Achei a experiência frustrante.
UE9. Me sair bem durante a experiência foi importante.
UE10. Gostaria de reviver esta experiência.
UE11. Achei muito difícil.
UE12. Senti como se tivesse pouco controle sobre a experiência.
UE13. Após a experiência, senti-me como se voltasse de uma viagem.
UE14. Fiquei desapontado porque a experiência acabou.
UE15. Durante a experiência perdi a noção do tempo.
UE16. O ambiente e os objetos no ambiente não pareciam reais.
UE17. Senti como se estivesse visitando o ambiente.
UE18. Dei mais atenção à experiência do que aos meus próprios pensamentos.
UE19. Queria que a experiência terminasse o mais rápido possível.
UE20. Achei que o ambiente não ficou legal.
UE21. Senti como se os objetos do ambiente pudessem me tocar.
UE22. Fiquei curioso para descobrir o meio ambiente.
UE23. Não me senti como se estivesse no mesmo lugar que os objetos do ambiente.
Ciberdoença ***(Cybersickness)***
CS1. Náusea.
CS2. Desconforto geral.
CS3. Desconforto no estômago.
CS4. Sudorese.
CS5. Salivação aumentada.
CS6. Vertigem.

CS7. Dificuldade de concentração.
CS8. Dificuldade de foco.
CS9. Fadiga ocular.
CS10. Dor de cabeça.
CS11. Visão turva.
CS12. Tontura.
Atitude ***(Attitude)***
AT1. Usar óculos de realidade virtual me deixaria nervoso.
AT2. Estou animado para usar a realidade virtual.
AT3. Usar a realidade virtual me deixaria desconfortável.
AT4. Estou ansioso para usar a realidade virtual.
AT5. Acho que há muitos usos para óculos de realidade virtual.
AT6. Acho que a realidade virtual é difícil de usar.
AT7. Acho que a realidade virtual terá um grande impacto no futuro.
AT8. Acho que poucas pessoas estão abertas ao uso da realidade virtual.
AT9. Acho que gostaria de usar a realidade virtual com frequência.
AT10. Acho que teria que aprender muito para usar a realidade virtual.
AT11. Acho que a realidade virtual é segura de usar.
AT12. Sinto-me preocupado em usar a realidade virtual.
AT13. Se eu tivesse acesso a um dispositivo de realidade virtual, gostaria de usá-lo.
AT14. Estou relutante em usar a realidade virtual.
AT15. Acredito que a realidade virtual pode ser utilizada para diferentes faixas etárias
AT16. Acho que a realidade virtual é inútil.
AT17. Eu recomendaria o uso da realidade virtual para amigos e conhecidos.
AT18. Acho a realidade virtual intimidante.
Envolvimento com Moda

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(Fashion involvement)
FI1. Para mim pessoalmente, a moda é um produto importante.
FI2. Moda é importante para mim.
FI3. A moda é uma parte importante da minha vida.
FI4. Estou muito envolvida(o) com moda.
FI5. Estou interessado em moda.
FI6. Achei a moda um produto muito relevante na minha vida.

Source: Adapted from Huygelier et al. (2019) and Suhud et al. (2020)

The glasses used to mediate the experience were the Tecnet Virtual Reality Headset model from the VR Shinecon brand (Figure 1).

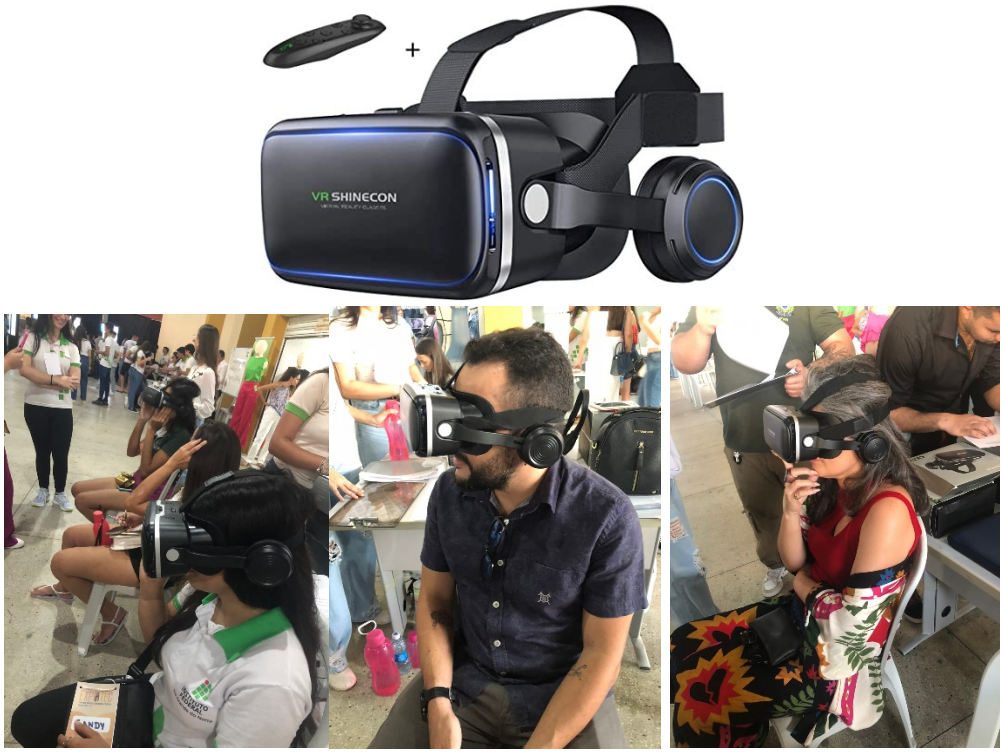

Figure 1. Immersive virtual reality glasses used in field research

Source: Prepared by the authors according to research data (2022)

The entire research team tested the virtual reality glasses with a video of just over 1 minute before starting the data collection process as a form of methodological validation. We observed the need to compress the video time, as there would possibly be fatigue in the experimentation and response process. Once all project members approved the final method, the field research participants subsequently watched the last 40 seconds of a 2017 Dior fashion show, available in 360° on YouTube, to have a complete and objective experience - centered on the fashion show (Figure 2).

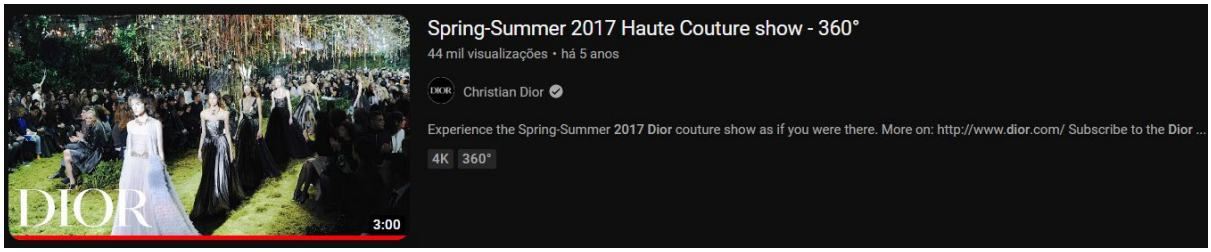

Figure 2. Video used as an object of study in field research
Source: Prepared by the authors according to research data (2022)

When it comes to sampling, we used the concept of non-probabilistic convenience. Gil (2008, p. 94) explains, "The researcher selects the elements to which he has access, admitting that these may, in some way, represent the universe." This choice is justified based on the time available to develop the research, as well as its exploratory-descriptive objective, where it is not possible to map all individuals, potential consumers of fashion, from Generation X, Y, and Z with internet access, nor is this configured as part of the objective of the research.

A minimum of 30 respondents was established for each Generation (X, Y, and Z) based on the premise seen in the central limit theorem that "samples greater than 30 are normal, regardless of the shape of the probability distribution of the population from which the sample is being taken" (Luchesa; Chaves Neto, 2011, p. 43). It focused on obtaining at least 90 general responses, with a distribution of 30 for each generation. In the same sense, a maximum limit of participants was not set, reaching 126 answers at the end, distributed as follows: Generation X (30 volunteers), Generation Y (30 volunteers), and Generation Z (66 volunteers). This paper proposes to analyze only the data of Generation Z.

Results and Discussions

Firstly, regarding previous knowledge of fashion, generation Z, in its majority (53%), claims not to have seen any fashion show during their lifetime, showing their low mastery over the subject, and, of the 31 who have already attended one, 25 had remote access, a fact that accentuates the lack of disposition and availability of the parades for this generation, with only six claiming to have participated in one in person.

This parameter continues to decline when asking about knowledge of fashion shows through virtual reality, where 54 claim not to know, 12 of which are already familiar with the subject. However, in the case of virtual reality, there is a great interest of the participants in the subject, since only one person interviewed declares that he does not want to know more or claims that he has not heard of virtual reality, thus showing a greater understanding in the regarding augmented reality environments among people aged 13 to 20 years. Such interest may result from their previous contact with technology, the generation called "digital natives." In this way, from an early age, there is a proximity between this generational cut and the digital world, making them more able to deal with modernity, as Guerin et al. (2018) argued.

Next, a survey was carried out on the involvement with the fashion of the people interviewed, which was generally positive (46%). However, despite considering fashion a vital product, it was possible to analyze that there is not a significant engagement in this segment on the part of the generation since only 19% (12 people) placed themselves in position 4 or 5 when questioned about your involvement with fashion.

About the attitude of this generation towards virtual reality, more specifically in the positive constructs, the data show the great connection with the technology, already foreseen, and the enthusiasm when talking about the subject, presenting a portion of potential consumers of this innovation, when giving a positive general picture, of 84%. The acceptance of this public to the use of virtual reality devices is also noticeable, with positive topics when asked if they agree that there are many uses for virtual reality, with a positive response of 84%, also regarding animation to use reality virtual, which corresponded to 88% of positive responses, or when asked about the impact of this use in the future, which varied to positive, with 90% of responses.

In this sense, the most relevant points can also be observed, such as the topic "If I had access to a virtual reality device, I would like to use it", which had 91% of positive responses, and "I would recommend the use of virtual reality for friends and acquaintances", with 92% consenting to the statement. The lowest percentage of positive responses is found in "I think I would like to use virtual reality often", with 54 affirmative answers, in contrast to the previous statements, where great excitement was observed with virtual reality.

Still, the results indicate the facility that respondents would have with virtual reality. In this sense, the results tend towards the negative part of the graph. However, they point out that the public claims not to have significant difficulties or aversion to virtual reality, revealing a positive attitude towards technology. Concerns raised by the survey, such as nervousness, discomfort, or reluctance, are not reported by about 75% of respondents. This shows that the

generation would suffer less from possible problems caused by using technology. However, when asked if they thought that few were open to virtual reality, 51% agreed with the statement, demonstrating that some people resist dealing with the subject. Furthermore, according to the data, only about 10% of respondents claim to have great difficulty using virtual reality, and 35% say they have to learn a lot to use virtual reality, a fact that would change with more significant investment in disseminating knowledge of this technology.

In summary, the general picture of the attitude of generation Z to the use of virtual reality tends the positive in most of the questions raised by the research, showing its relevance for the technological research environment. Such data can be used both for the topic in question and for future work that needs to know the level of acceptability of people aged 13 to 20 to use this technology.

The survey also carried out a study regarding the perception of cybersickness, which in all topics was negative in generation Z, revealing that this generation did not experience significant discomfort when using virtual reality glasses. The overall picture shows a negative trend of 83%. The most frequent cybersickness were eyestrain and blurred vision, with 21% and 24% positive responses, respectively. The problem least reported by the interviewees was sweating, where only one person claimed to have felt it.

In the foreground, about the experience of each user of Generation Z, it is possible to emphasize that the level of satisfaction was average since 50% of the opinions about the user experience were positive. Being the variable about having enjoyed the experience the most contributed positively to the participants' satisfaction level (95%), showing that the practice was pleasant for the vast majority. In addition, another point that had a beneficial influence on the users' experience was that they found the experience enjoyable (92%), which is directly linked to the fact that 82% of the participants responded that they would like to repeat the experience, thus demonstrating, a certain degree of curiosity, acceptability, and excitement with this new modality of watching fashion shows.

Furthermore, analyzing the negative constructs, the variable that most generated dissatisfaction in public was the one about the experience being boring (83%), which may be directly related to the fact that 84% of the participants found the experience least a little confused, and 73% of them didn't see the environment and objects in the environment real.

Examining the survey data, it turns out that Gen Z has a 46% engagement with fashion; it presents low symptoms of cybersickness since only 11% of the participants felt some discomfort; in addition, 51% of this generation showed a positive attitude towards virtual

reality shows, the main highlight being the desire to use virtual reality glasses again if they had one; and, finally, regarding the user experience, Generation Z demonstrated that they enjoyed the experience and found it interesting, variables that most contributed to the total of 50% positive opinions about the experiment they experienced.

Final Consideration

Technological innovations emerged in the mid-eighteenth century under the influence of the industrial revolution. Since then, these innovations have evolved more and more. One of the inventions that emerged was virtual reality, which consists of a three-dimensional space produced by computers which simulate virtual reality, whose visual elements can be accessed, among other ways, through augmented reality glasses. One of the functions of this device is to transmit images from different places in real-time. With the final considerations of writing the project, one should remember where and why this research was developed.

In such a way, the importance of fashion shows for the clothing industry was addressed. They are the critical point for promoting the result of production and have the objective of dissemination. However, despite fashion shows' advantages, there is a lack of practicality in person. That is, not all audiences have access to fashion shows in person. Thinking about technological advances, the idea of using virtual reality as a facilitator to watch fashion shows was developed to develop a more practical technique for watching these shows. Therefore, it would also be a way to promote different fashion shows, which, as has been said, are the critical point of the clothing industry. And for that, it was necessary to survey to identify the interaction and acceptability of potential fashion consumers in the use of virtual reality for fashion shows based on age observation, where people from generations X, Y and Z were interviewed, comparing dimensions such as attitude, experience, and symptoms of cyber-illness.

In Generation Z, 66 people aged between 13 and 21 were interviewed. The analysis of the answers showed that the dimensions of involvement with fashion, attitude and experience positively influenced the project; in addition, there were symptoms of cyber-illness, which can negatively affect the individual's experience, causing discomfort and possibly poor use of the experience.

Finally, we have the general and specific objectives completed. The general aim of identifying the acceptability of virtual reality applied to fashion shows by potential consumers of Fashion Generation Z could be determined from the data analysis. Furthermore, the specific objectives were identified from the division of data into dimensions of the general data, such

as analyzing the experience of using virtual reality by generations; and defining the perception of cyber-illness symptoms from using virtual reality by ages.

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