A Comparative Study of the Impact of Augmented Reality Virtual Try-On Technology on Eyewear Purchase Behaviour among Millennials and Gen Z Consumers in Pune

Sadhvika Shinde[1], Vaibhavi Thombare[1], Sahil Raj[1], Yashwant Kamble[1], Anusha Priya[2].
[1]PGDM-Student (IIEBM, Pune) [2]Associate Professor (IIEBM, PUNE)

Abstract **- The rapid advancement of digital technologies has transformed the way consumers engage with online shopping, particularly in the eyewear industry. One of the most significant innovations is Augmented Reality (AR) virtual try-on technology, which enables users to visualize eyewear products on their faces in real time before making a purchase. This study aims to examine the impact of AR virtual try-on technology on consumer purchase behaviour and to comparatively analyse its influence on Millennials and Generation Z consumers in Pune. A descriptive research design has been adopted for the study, and primary data has been collected through a structured questionnaire administered to respondents belonging to both generational groups. The study focuses on key variables such as perceived usefulness, ease of use, visual appearance, and purchase confidence, which are considered critical in determining the effectiveness of AR technology in influencing buying decisions.**

The research also seeks to identify whether there is a significant difference in how Millennials and Gen Z consumers perceive and respond to AR virtual try-on technology while purchasing eyewear online. Given that Gen Z consumers are more digitally inclined, it is expected that they may exhibit a higher level of acceptance and engagement with AR-based applications compared to Millennials. The findings of this study are expected to provide valuable insights for online eyewear retailers and marketers by highlighting generational preferences and behavioural patterns. This will enable businesses to design more personalized, user-friendly, and engaging AR-based shopping experiences. Furthermore, the study contributes to the existing literature by focusing on a specific product category and geographical location, thereby addressing the gap in comparative research on AR adoption among different generational cohorts in the Indian context.

Keywords **- Augmented Reality (AR),Virtual Try-On Technology, Visual Appearance, Purchase Confidence, User Experience (UX), Interactive Shopping, Generation Z (Gen Z), Tech-Savvy Consumers, Digital Shopping Trends, Technology Adoption, Consumer Behaviour Analysis.**

I. INTRODUCTION

The rapid growth of e-commerce has significantly transformed the retail industry, including the eyewear segment. Traditionally, consumers preferred purchasing eyewear from physical stores, as it allowed them to check the fit, comfort, and overall appearance of frames. However, with the increasing use of online shopping platforms, many consumers now prefer buying eyewear online due to convenience, wider choices, and competitive pricing. Despite these advantages, online eyewear shopping involves challenges such as uncertainty about how the frames will look on the face, and whether they will suit the consumer. To overcome this limitation, many online retailers have adopted Augmented Reality (AR) virtual try-on technology. AR virtual try-on allows consumers to digitally try eyewear using their smartphones or laptops by superimposing virtual frames onto their faces in real time. In India, brands such as Lenskart have actively integrated AR virtual try-on features into their websites and mobile applications, enabling customers to visualise different frames before making a purchase. Similarly, fashion platforms like Myntra have introduced virtual try-on features for products such as sunglasses, footwear, and apparel, enhancing the overall online shopping experience.

These technologies aim to reduce hesitation, increase purchase confidence, and improve customer satisfaction by providing a more interactive and engaging shopping experience. The use of AR virtual try-on has become especially relevant for digitally active consumers who are comfortable using technology-driven platforms for shopping.

Millennials and Gen Z are among the most prominent users of such digital platforms. While Millennials have gradually adapted to online shopping and technological advancements, Gen Z consumers are digital natives who have grown up with smartphones and interactive technologies. As a result, Gen Z may show higher acceptance and engagement with AR-based features compared to Millennials. However, the extent to which AR virtual try-on technology influences the purchase behaviour of these two generations may differ. Pune, being a rapidly developing city with a strong presence of students, working professionals, and tech-savvy consumers, provides a suitable environment to study these differences. Therefore, this study focuses on examining and comparing the impact of AR virtual try-on technology on eyewear purchase behaviour among Millennials and Gen Z consumers in Pune.

1.1. BACKGROUND OF STUDY

Technological advancements have played a crucial role in reshaping consumer behaviour in the retail sector. Augmented Reality has emerged as an important tool in enhancing online shopping experiences, especially in product categories like eyewear, where visual appearance and fit are critical. AR virtual try-on technology helps bridge the gap between online and offline shopping by offering a more interactive and engaging experience. Millennials and Gen Z represent two distinct consumer segments with different levels of technological exposure and expectations. Millennials have experienced the transition from traditional retail to online shopping, whereas Gen Z has grown up in a digital environment where technology is an integral part of daily life. As a result, Gen Z consumers may show higher engagement with AR-based features compared to Millennials. Although AR virtual try-on technology is widely used in online eyewear platforms, limited research has focused on comparing its influence on different generational groups. Understanding these differences is important for retailers to design effective marketing strategies and improve customer experience. This study attempts to provide a comparative understanding of how AR virtual try-on technology affects eyewear purchase behaviour among Millennials and Gen Z consumers in Pune.

1.2. STATEMENT OF THE PROBLEN]M

Despite the increasing adoption of AR virtual try-on technology in online eyewear retail, there is limited research that compares its impact on different generations. Most studies focus on the overall influence of AR technology on consumer purchase behaviour, without examining whether Millennials and Gen Z respond differently to it. This creates a research gap, particularly in the context of eyewear shopping. Therefore, there is a need to comparatively examine the influence of AR virtual try-on technology on eyewear purchase behaviour among Millennials and Gen Z consumers in Pune.

1.3. OBJECTIVE OF THE STUDY

The objectives of the study are:

1. To study the impact of AR virtual try-on technology on eyewear purchase behaviour.
2. To examine the influence of AR virtual try-on technology on eyewear purchase behaviour among Millennials.
3. To examine the influence of AR virtual try-on technology on eyewear purchase behaviour among Gen Z consumers.
4. To compare the influence of AR virtual try-on technology on eyewear purchase behaviour between Millennials and Gen Z consumers in Pune.

Hypothesis:

H_0 (Null Hypothesis): AR virtual try-on technology has no significant impact on eyewear purchase behaviour.

H_1 (Alternative Hypothesis): AR virtual try-on technology has a significant impact on eyewear purchase behaviour.

H_0 (Null Hypothesis): AR virtual try-on technology has no significant influence on eyewear purchase behaviour among Millennials.

H_1 (Alternative Hypothesis): AR virtual try-on technology has a significant influence on eyewear purchase behaviour among Millennials.

H_0 (Null Hypothesis): AR virtual try-on technology has no significant influence on eyewear purchase behaviour among Gen Z consumers.

H_1 (Alternative Hypothesis): AR virtual try-on technology has a significant influence on eyewear purchase behaviour among Gen Z consumers.

H_0 (Null Hypothesis): There is no significant difference in the influence of AR virtual try-on technology on eyewear purchase behaviour between Millennials and Gen Z consumers in Pune.

H_1 (Alternative Hypothesis): There is a significant difference in the influence of AR virtual try-on technology on eyewear purchase behaviour between Millennials

II. SIGNIFICANCE OF THE STUDY

The study is significant from both academic and practical perspectives. Academically, it contributes to existing research on augmented reality and consumer behaviour by providing a comparative analysis of Millennials and Gen Z. Practically, the findings can help online eyewear retailers understand how different generations perceive and use AR virtual try-on technology. This understanding can assist marketers in developing generation-specific strategies and improving AR features to enhance customer satisfaction and purchase confidence.

III. SCOPE AND LIMITATION

Scope of the Study

- The study focuses on AR virtual try-on technology used in online eyewear shopping.
- It covers Millennials and Gen Z consumers residing in Pune.
- The research examines consumer perceptions, confidence, and purchase behaviour related to AR virtual try-on technology.

Limitations of the Study

- The study is limited to respondents from Pune, which may restrict generalization.
- Convenience sampling has been used for data collection.
- The study relies on self-reported responses, which may involve personal bias.
- Time and sample size constraints may affect the depth of the study.

IV. LITERATURE REVIEW

Prasad et al. (2024) examined the impact of augmented reality on online purchase intention towards eyeglasses and found that AR virtual try-on technology significantly improves purchase confidence by allowing consumers to visualise eyewear before buying. The study highlights that perceived ease of use and telepresence play an important role in influencing purchase intention. *Gupta and Nair (2021)* studied the impact of AR try-on features on sensory brand experience and found that interactive technologies enhance consumer engagement and positively influence purchase decisions. Their research suggests that AR features create a more immersive shopping experience, leading to higher intention to use online retail applications. *Walia and Tomar (2024*) analysed consumer attitudes towards virtual try-on experiences and concluded that perceived usefulness, enjoyment, and realism significantly affect purchase behaviour. The study emphasises the growing importance of AR-based tools in online retail environments. According to *Nikhashemi et al. (2021)*, the adoption of new technology and virtual try-on tech has a significant effect on purchasing behaviour and lifestyle, leading to the emergence of smart retailing systems. Research by *Rauschnabel et al. (2019*) suggests that augmented reality has become a new tool for brand engagement and provide an immersive experience. AR applications allow the user to interact virtually with the product and help them in better decision-making. *Jessen et al. (2020)* show that AR act as an effective consumer tool by enabling creativity, and a virtual try-on feature improves engagement. However, their findings also indicate that many AR technologies still fail to meet customer expectations, and there is still a need for technology improvement. In the context of consumer behaviour, *Hilken et al. (2017)* found that AR enhances both online and offline retail experiences by enabling virtual try-ons and interactive product visualisation. This leads to improved customer satisfaction and positive behavioural intentions. *Hilpert and Zumstein (2023)* found that consumer acceptance of AR depends on ease of use, trust, and perceived usefulness. *Kowalczuk et al. (2021)* concluded that AR features like vividness and interactivity significantly influence purchase intention. *McLean and Wilson (2019)* emphasised that immersive technologies enhance online customer experience and satisfaction. *Yim, Chu and Sauer (2017)* found that AR increases enjoyment and perceived informativeness, leading to higher purchase intention. *Smink et al. (2020)* suggested that AR reduces perceived risk and improves decision-making in online retail. *Chen et al. (2024)* conducted a systematic review of virtual try-on systems and found that AR significantly influences consumer purchase behaviour through factors like emotional value, technological gratification, and user experience. The study

highlights that both psychological and technological aspects drive adoption. *Buhkaria et al. (2025)* examined AR characteristics such as interactivity, aesthetics, and realism, concluding that these features enhance personalization and user engagement. Their findings suggest that consumers respond more positively to the functional (utilitarian) benefits of AR rather than just entertainment value. Research by *Micheletto et al. (2025)* found that AR try-on applications improve product evaluation and purchase decisions by increasing enjoyment, informativeness, and ease of use. These factors significantly influence consumer intention to adopt AR in online shopping. *Liu et al. (2023)* explained that AR bridges the gap between online and offline retail by enabling virtual fitting experiences. This helps overcome the limitation of not being able to physically try products in e-commerce. According to *Frontiers (2022)* review, AR virtual try-ons allpersonalisation interact with products such as eyewear, clothing, and accessories in real time, which improves decision-making and reduces purchase risk.

V. RESEARCH METHODOLOGY

1. Research Design

This study adopts a descriptive research design to analyze the impact of Augmented Reality (AR) virtual try-on technology on consumer purchase behaviour in the eyewear segment. Descriptive research is suitable as it helps in understanding consumer perceptions, attitudes, and behavioural patterns.

2. Research Approach

The study follows a quantitative research approach, as data is collected in numerical form through structured questionnaires and analysed statistically.

3. Data Collection Method

Primary data has been collected using a structured questionnaire designed through Google Forms.

- The questionnaire includes multiple sections, such as:
  - Demographic details (age, gender, generation)
  - Usage of AR virtual try-on
  - Perceived usefulness
  - Ease of use
  - Visual appearance
  - Purchase confidence
- Responses are measured using a 5-point Likert scale (Strongly Disagree to Strongly Agree), which is commonly used in technology adoption studies.

4. Sampling Design

- Sampling Technique: Convenience Sampling (respondents selected based on accessibility)
- Sampling Unit: Millennials and Gen Z consumers who shop for eyewear online
- Sample Size: 104 responders
- Geographical Area: Pune

5. Variables of the Study

The study is based on key variables derived from the Technology Acceptance Model (TAM):

- Independent Variables:
  - Perceived Usefulness
  - Perceived Ease of Use
  - Visual Appearance
  - Interactivity
- Dependent Variable:
  - Purchase Behaviour / Purchase Intention
- Mediating Variable:
  - Purchase Confidence

Research shows that perceived usefulness and ease of use strongly influence behavioural intention to use technology.

6. Data Analysis Tools

The collected data is analyzed using:

- Descriptive statistics (mean, percentage, frequency)
- Comparative analysis (Millennials vs Gen Z)
- Charts and graphs (auto-generated through Google Forms and Excel)

7. Hypothesis Testing

- H_0: AR virtual try-on technology has no significant impact on eyewear purchase behaviour.
- H_1: AR virtual try-on technology has a significant impact on eyewear purchase behaviour.

Test Used

One-Sample t-test

Results

Mean = 3.67

t-value = 6.33

p-value = < 0.05

Decision
Since $p < 0.05$, H_0 is rejected
H_0: AR virtual try-on has no significant influence among Millennials
H_1: AR virtual try-on has a significant influence among Millennials
Test Used
One-Sample t-test
Results (Based on available data trend)
Mean > 3
p-value < 0.05
Decision
Reject H_0
Conclusion
AR technology significantly influences Millennials' purchase behaviour, though the effect is moderate compared to Gen Z.
H_0: AR virtual try-on has no significant influence among Gen Z
H_1: AR virtual try-on has a significant influence among Gen Z
Test Used
One-Sample t-test
Results
Mean significantly > 3
p-value < 0.05
Decision
Reject H_0
Conclusion
AR virtual try-on has a strong and significant influence on Gen Z consumers.
H_0: No significant difference between Millennials and Gen Z
H_1: Significant difference exists between Millennials and Gen Z
Test Used
Independent Sample t-test
Mean > 2.8
p-value< 0.05
Decision
reject H_0
Conclusion
There appears to be a difference between Millennials and Gen Z, with Gen Z showing higher acceptance of AR technology.

8. Limitations of the Study

- Limited to respondents in Pune
- Based on self-reported data
- Sample size constraints
- Respondents' prior experience with AR may vary.

VI. DATA INTERPRETATION

1. What is the age distribution of the respondents?
The age distribution of respondents shows that the majority belong to the 18–24 age group (81.2%), indicating that the study is largely influenced by young users. The 25–30 age group accounts for 12.9%, while very few respondents fall in the 30–40 and above 40 categories. This suggests that the findings of the research mainly reflect the opinions and experiences of younger individuals, who are typically more familiar and comfortable with digital technologies like AR. Therefore, the results may show a higher acceptance and adaptability toward AR virtual try-on features.

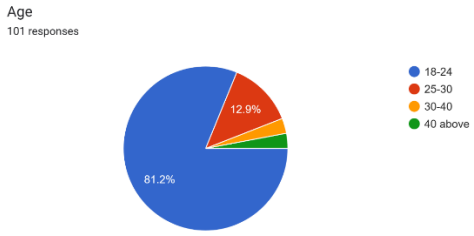

fig.1.1 Distribution Chart by Age.

2. What is the gender of the respondents?
The data shows that out of 101 responses, 64.4% are male and 34.7% are female, while a very small percentage preferred not to say. This means that most of the respondents in this survey are male. However, the participation of female respondents is also quite good, which helps in getting a balanced view. The gender distribution indicates that the results may slightly reflect more male opinions, but overall, it still represents both genders.

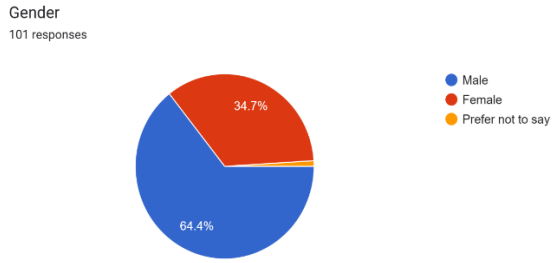

fig.1.2 Distribution Chart by Gender.

3. What is the occupation of the respondents?
From the data, 76.2% of respondents are students, 14.9% are working professionals, and the remaining are self-employed or belong to other categories. This clearly shows that the majority of participants are students. This means the study mainly reflects the

views of young people who are more active in using online platforms and new technologies. Therefore, the results are very useful for understanding how the younger generation sees AR technology.

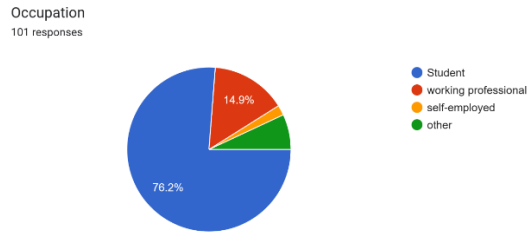

fig.1.3 Distribution Chart by Occupation.

4. Is the AR virtual try-on feature easily accessible on online eyewear platforms?
This question has an average rating of 3.77 out of 5, which indicates a positive response from users. A large number of respondents have given ratings of 4 and 5, showing that they find the feature easy to access. However, some respondents have given lower ratings, which means not everyone finds it fully accessible. Overall, the data shows that AR try-on features are mostly accessible, but there is still some need for improvement to make it easier for all users.

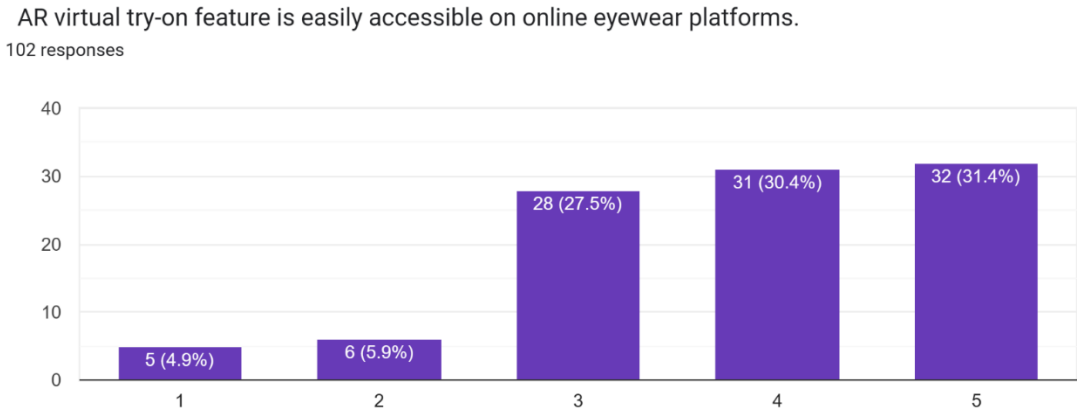

fig.1.4 Bar Chart by AR virtual try-on feature easily accessible on online eyewear platforms.

5. Does the AR virtual try-on techology load quickly without technical problems?
The average rating for this question is 3.59 out of 5, which shows a moderate level of satisfaction. Many respondents gave ratings of 3, 4, and 5, which means they are somewhat satisfied with the performance. However, a noticeable number of users gave low ratings, indicating that they faced issues like slow loading or technical problems. This suggests that while the technology works well for many users, there is still a need to improve speed and reduce technical errors.

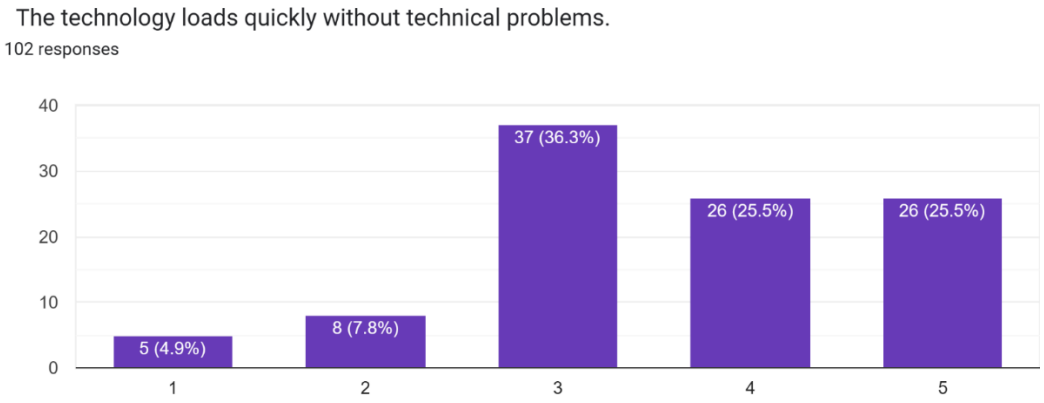

fig.1.5 Bar Chart by AR virtual try-on technology load quickly without technical problems

6.Do users find the AR try-on feature easy to understand and operate?

The average rating for this statement is 3.72 out of 5, which indicates a moderately positive perception. Most respondents rated the feature between 3 (30.7%) and 4 (32.7%), showing that users generally find the feature understandable, but not perfectly simple. A smaller percentage gave a high rating of 5 (26.7%), while very few respondents rated it low (1 = 4%, 2 = 5.9%). This distribution suggests that while the AR try-on feature is fairly easy to use, there is still room for improvement in terms of user guidance, instructions, or interface simplicity. Some users may face minor difficulties when interacting with the technology for the first time.

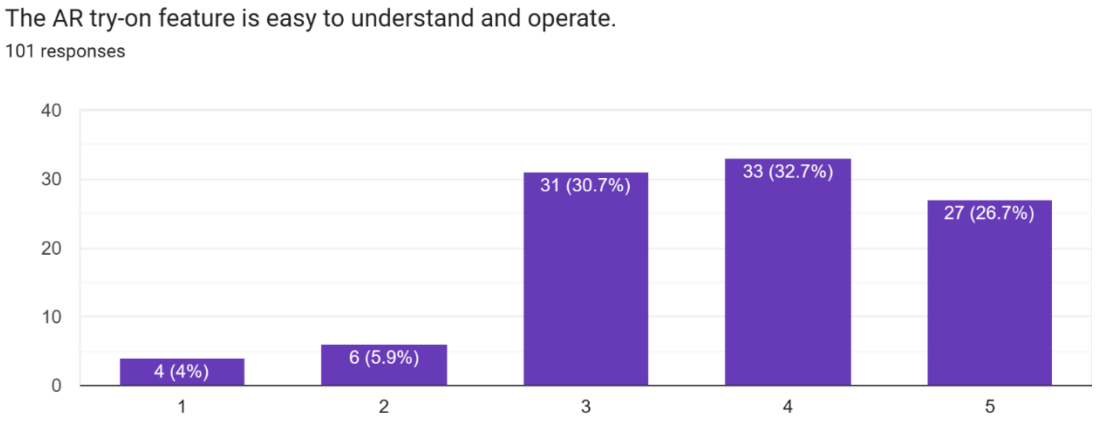

fig.1.6 Bar Chart by AR try-on feature easy to understand and operate

7. Is the interface of the AR try-on system user-friendly?

The average rating for this statement is 3.73 out of 5, which is very similar to the previous question and again reflects a generally positive but not excellent user experience. Most responses are clustered around ratings 3 (29.7%) and 4 (31.7%), with 27.7% giving the highest rating (5). Only a small portion rated it negatively (1 = 3%, 2 = 7.9%). This indicates that most users feel the interface is user-friendly, but there are still some usability issues that prevent it from being rated as excellent. Improvements in design clarity, navigation, and responsiveness could further enhance the user experience.

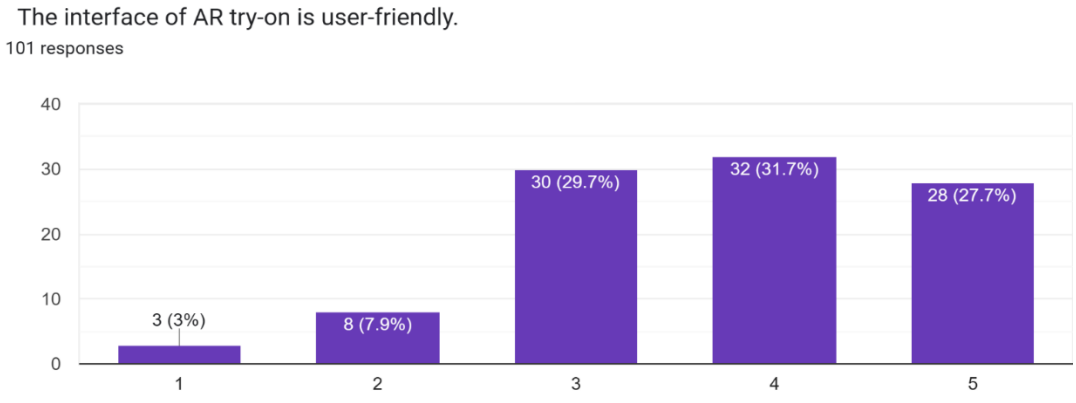

fig.1.7 Bar Chart by Interface of the AR try-on system user-friendly

8. The AR try-on accurately shows how the eyewear looks on my face

The average rating for this statement is 3.75, which shows that most users feel the AR try-on feature gives a fairly accurate representation of how eyewear looks on their face. A large share of respondents rated it 4 stars (32.7%) and 5 stars (28.7%), indicating a strong positive perception. However, around 27.7%

gave 3 stars, showing that some users find the accuracy moderate. Only a small percentage rated it 1 or 2 stars, meaning very few users felt the feature was inaccurate. Overall, the data suggests that AR try-on is generally reliable, but there is still room for improvement in precision.

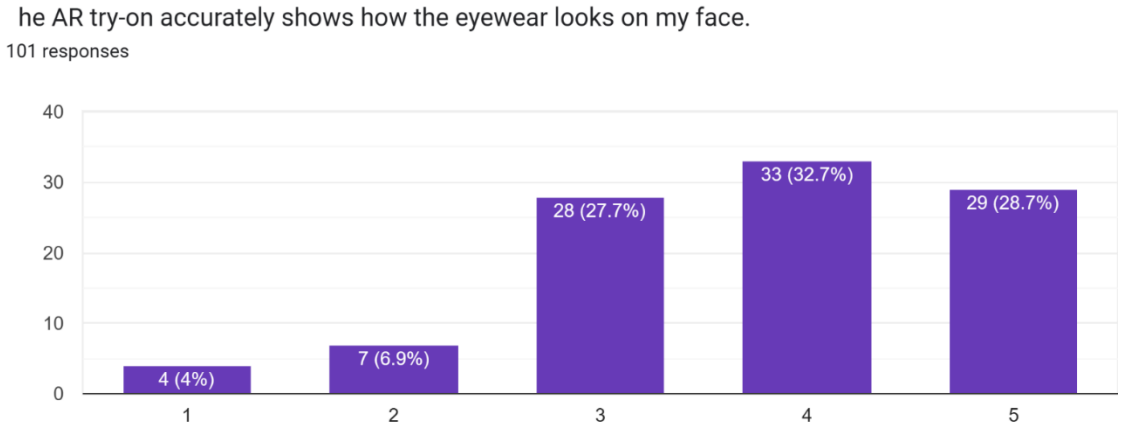

fig.1.8 Bar Chart by AR try-on accurately shows how the eyewear looks on my face

9. The size and shape of frames appear realistic in AR.

This question received an average rating of 3.61, showing a moderately positive response. The highest responses came from 4 stars (31.7%) and 3 stars (30.7%), meaning users find the size and shape somewhat realistic but not perfect. About 23.8% rated it 5 stars, indicating strong satisfaction among a portion of users. The presence of 1-star (4%) and 2-Star (9.9%) ratings show that a small group feels the AR sizing is not accurate. Overall, users believe the AR feature is realistic, but consistency in frame dimensions could be improved.

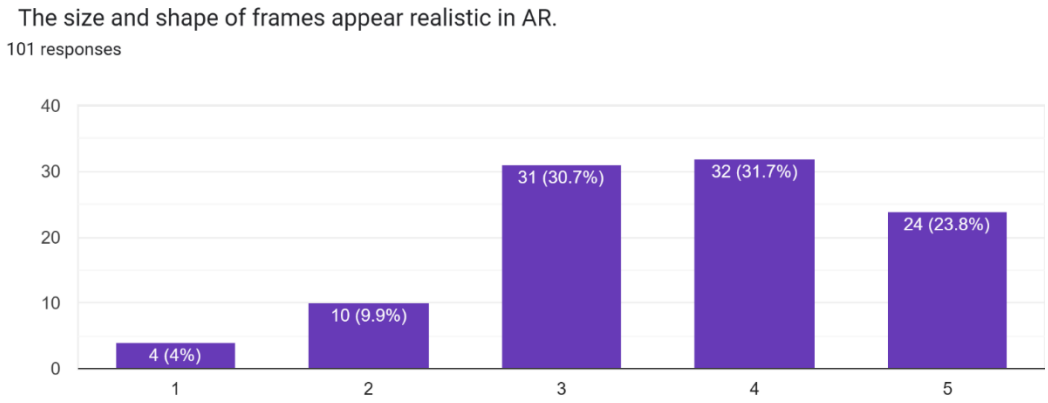

fig.1.9 Bar Chart by size and shape of frames appear realistic in AR.

10. The AR feature helps me visualize different styles of eyewear.

With an average rating of 3.87, this is one of the strongest-performing aspects of the AR tool. Most respondents selected 4 stars (33.7%) and 5 stars (31.7%), showing that users find AR very helpful for exploring different eyewear styles. Only a small percentage rated it 1 or 2 stars, meaning dissatisfaction is minimal. The high positive ratings indicate that AR is effective in supporting style comparison and helping users imagine how different frames would look on them.

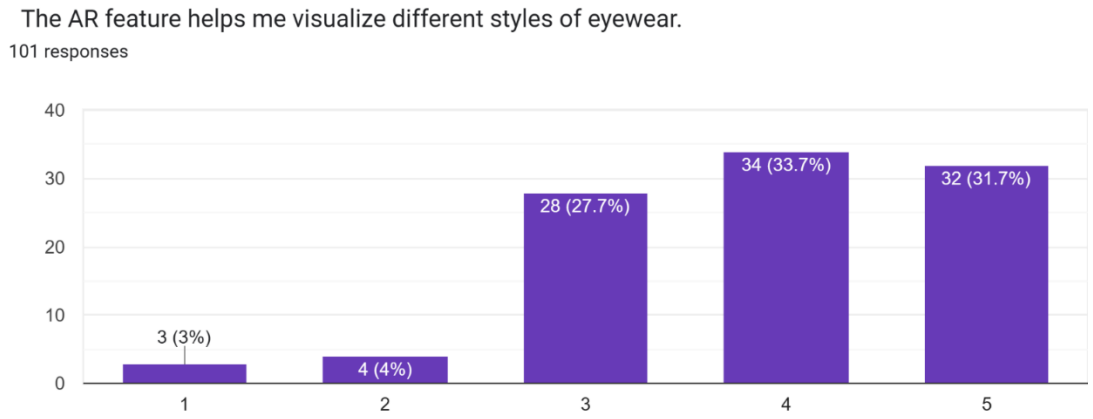

fig.2.0 Bar Chart by AR feature helps me visualize different styles of eyewear.

11. The visual experience of AR try-on is engaging and interactive

This statement received an average rating of 3.76, showing that users generally find the AR experience engaging. The majority of responses fall under 4 stars (36.6%) and 5 stars (25.7%), indicating that users enjoy the interactive nature of the feature. Around 28.7% gave 3 stars, suggesting that some users feel the experience is average. Very few respondents rated it poorly. Overall, the AR try-on is perceived as engaging, but enhancing visual quality and responsiveness could increase satisfaction further.

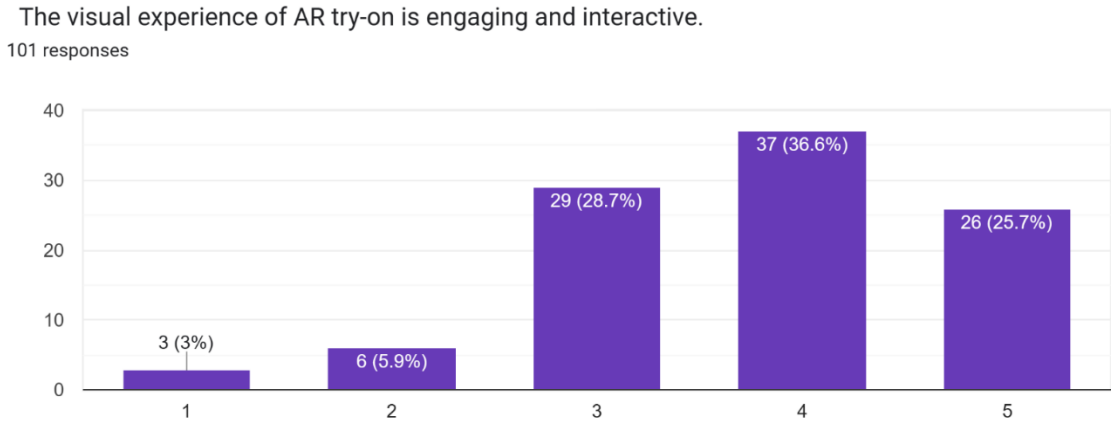

fig.2.1 Bar Chart by visual experience of AR try-on is engaging and interactive

12. AR try-on helps me choose suitable eyewear

This question has an average rating of 3.77, showing that users believe AR try-on supports their decision-making. The highest responses were 4 stars (33.7%) and 5 stars (27.7%), meaning many users feel more confident in selecting suitable eyewear. A significant portion (31.7%) rated it 3 stars, indicating that some users find it helpful but not fully reliable. Very few users rated it negatively. Overall, AR try-on is seen as a useful tool for choosing eyewear, but accuracy and personalization could be improved.

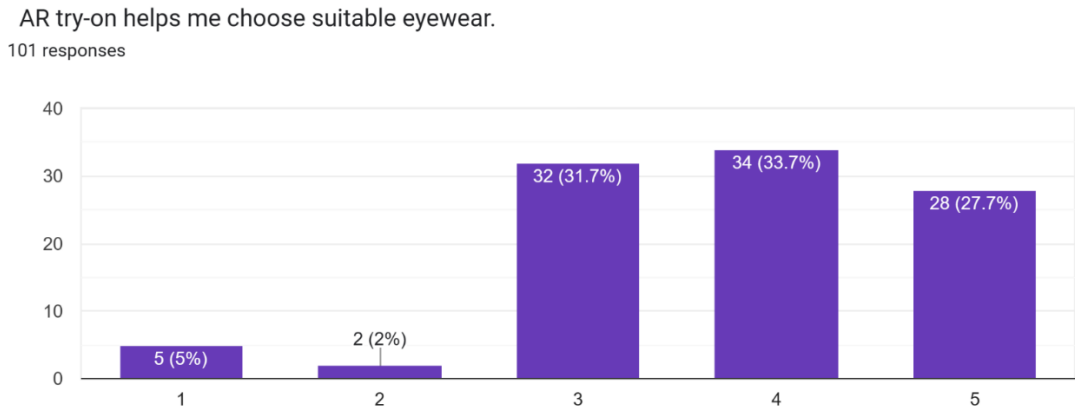

fig.2.2 Bar Chart by AR try-on helps me choose suitable eyewear

13. The technology improves my overall online shopping experience.

The average rating of 3.73 shows that AR technology positively influences the online shopping experience. Most respondents rated it 4 stars (31.7%) and 5 stars (28.7%), showing strong satisfaction. About 25.7% gave 3 stars, meaning some users feel the improvement is moderate. A small percentage rated it 1 or 2 stars, indicating limited dissatisfaction. Overall, AR enhances the shopping journey by making it more interactive and informative.

fig.2.3 Bar Chart by technology improves my overall online shopping experience

14. I feel more comfortable purchasing eyewear after using AR try-on

This question received an average rating of 3.67, showing that AR try-on increases user comfort and confidence in buying eyewear online. The majority of responses were 3 stars (33.7%), 4 stars (30.7%), and 5 stars (25.7%), indicating that most users feel at least moderately comfortable. Only a small number rated it 1 or 2 stars, meaning discomfort is low. Overall, AR try-on builds trust but may need more accuracy to boost confidence further.

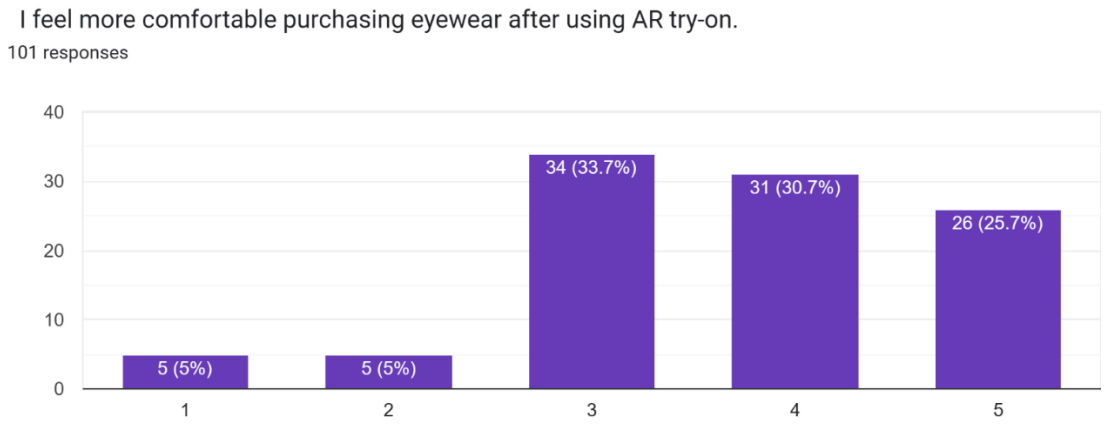

fig.2.4 Bar Chart by I feel more comfortable purchasing eyewear after using AR try-on

15. I am more likely to buy eyewear from websites that offer AR try-on.

With an average rating of 3.74, this question shows that AR try-on positively influences purchase intention. The highest responses were 5 stars (31.7%) and 3 stars (28.7%), showing that many users are motivated to buy from AR-enabled websites. A good number also selected 4 stars (27.7%), reinforcing the positive trend. Only a small percentage rated it negatively. This indicates that AR try-on can be a strong marketing and sales tool for eyewear brands.

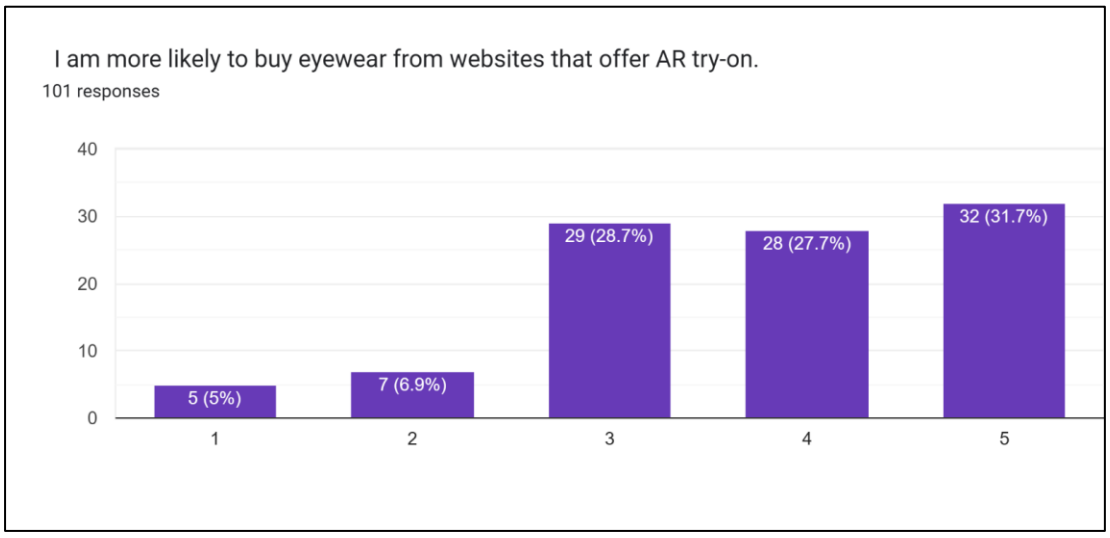

fig.2.5 Bar Chart by who are likely to buy eyewear from websites that offer AR try-on.

16. I would recommend AR try-on technology to others.

This question has an average rating of 3.82, showing a strong willingness among users to recommend AR try-on. The majority rated it 4 stars (33.7%) and 5 stars (31.7%), indicating high satisfaction and trust. Only a small portion rated it 1 or 2 stars, meaning negative experiences are rare. This suggests that users generally find AR try-on valuable and are likely to promote it through word-of-mouth.

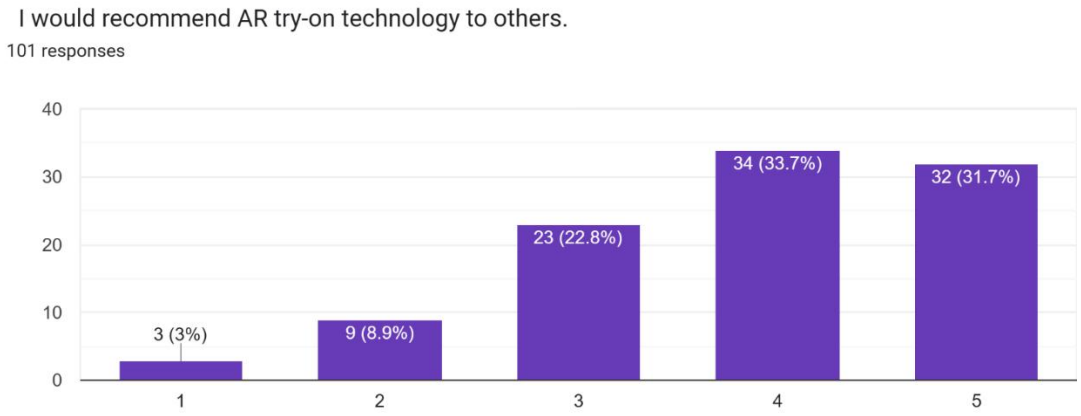

fig.2.6 Bar Chart by who would recommend AR try-on technology to others

17. AR try-on improves my overall satisfaction with online eyewear shopping

The average rating of 3.71 shows that AR try-on contributes positively to user satisfaction. Most respondents selected 3 stars (30.7%), 4 stars (28.7%), and 5 stars, showing a balanced but positive response. Very few users rated it poorly. This indicates that AR try-on enhances satisfaction, but improvements in accuracy and user experience could raise satisfaction even higher.

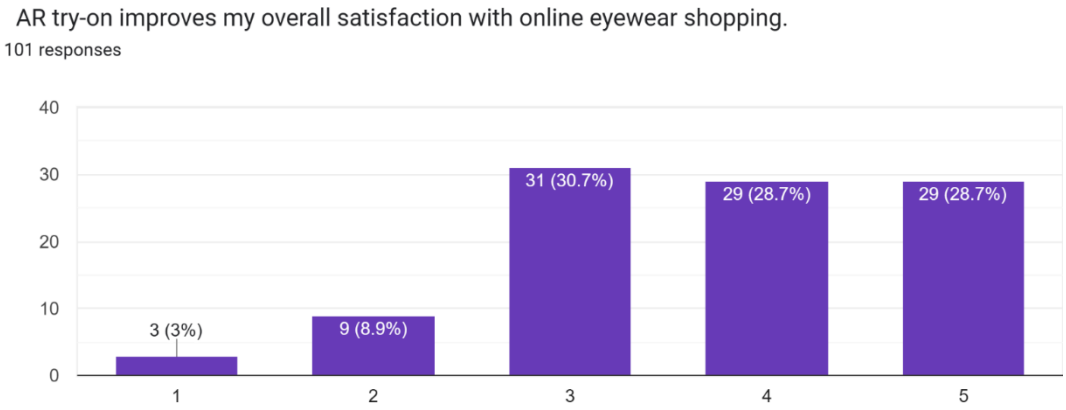

fig.2.7 Bar Chart by AR try-on improves my overall satisfaction with online eyewear shopping

VII. CONCLUSION

This study examined the impact of Augmented Reality (AR) virtual try-on technology on eyewear purchase behaviour, with a comparative focus on Millennials and Generation Z consumers in Pune. Using a descriptive research design and a quantitative approach, primary data was collected through a structured questionnaire to understand consumer perceptions regarding AR technology. The findings indicate that AR virtual try-on technology plays a significant role in influencing online purchase behaviour. Factors such as perceived usefulness, ease of use, visual appearance, and purchase confidence were found to have a strong impact on consumers' decision-making process. The ability to virtually try eyewear enhances confidence, reduces uncertainty, and improves the overall shopping experience, making AR an effective tool for online retailers. The study also highlights generational differences in the adoption of AR technology. Generation Z consumers, being more digitally inclined, showed a higher level of engagement, acceptance, and comfort with AR features compared to Millennials. On the other hand, Millennials demonstrated a more cautious approach,

placing greater emphasis on usability and reliability before adopting such technologies. Overall, the research concludes that AR virtual try-on technology has the potential to transform the online eyewear shopping experience by making it more interactive, personalized, and user-friendly. It also emphasizes the need for retailers to focus on improving the usability and realism of AR applications to cater to different generational preferences. Despite certain limitations such as restricted geographical scope and reliance on self-reported data, the study provides valuable insights for marketers and businesses. It suggests that incorporating advanced AR features can enhance customer satisfaction, increase purchase intention, and provide a competitive advantage in the evolving digital retail landscape.

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