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Personalization Vs Privacy: How Comfortable Are Indian Consumers With Data Used In Virtual Try-On

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Abstract: Virtual Try-On (VTO) technology is becoming popular in India, allowing people to see how clothes, glasses, or makeup look on them using AI and AR. While this makes shopping easier, it also raises concerns about how personal data is collected and used. This study explores how comfortable Indian consumers are with sharing their data for VTO, focusing on their awareness, opinions, and privacy concerns. A survey of people aged 18–35 helps understand if they prefer convenience over data security. The results will help businesses build trust and find a balance between personalization and privacy. By looking at consumers' attitudes, the study aims to guide companies on how to handle data responsibly. Understanding these concerns will also help businesses improve VTO features while ensuring privacy is respected. This balance can lead to better user experiences and more successful adoption of VTO technology in India.

KEYWORDS: Virtual Try-On (VTO), Augmented Reality (AR), Artificial Intelligence (AI), Privacy, Data Security, Personalization vs. Privacy, E-commerce, Online Shopping, Data Usage, Virtual Shopping Experience, Indian Consumers, Privacy Concerns, Data Sharing Preferences, Online Fashion Shopping.

I. INTRODUCTION

With the rise of online shopping, Virtual Try-On (VTO) technology is becoming an important tool for consumers. Using Artificial Intelligence (AI) and Augmented Reality (AR), VTO allows shoppers to see how products like clothing, eyewear, and makeup look on them before buying. This makes shopping easier and more personalized, helping customers choose products with more confidence. VTO also saves time by removing the need for physical trials. Many online stores use this technology to attract more customers. As a result, VTO is becoming more common in e-commerce.

As the technology advances, VTO experiences are becoming more accurate and realistic, making them an even more attractive option for online shoppers. It also opens up new possibilities for brands to engage with consumers, offering a seamless and innovative shopping experience. However, with this convenience comes the concern about how personal data is handled, leading to discussions about privacy and security. To gain trust, businesses must ensure that they prioritize data protection while offering personalized services. Ultimately, the growth of VTO could reshape the future of online shopping, balancing convenience and privacy [2][5].

However, VTO technology collects personal data, such as facial scans and body measurements, which raises concerns about privacy and security. Many people do not fully understand how their data is stored or used, making them unsure about using these tools. In India, where digital awareness varies, some people trust VTO, while others worry about their data being misused. Lack of clear information can make users more cautious. Not everyone is familiar with how VTO works, which affects their trust. Spreading awareness about data safety can help reduce these fears [1][5][6][7].

As more online stores and fashion brands add VTO to their platforms, customer opinions will shape its future. Businesses need to make VTO more accurate and easier to use while also being clear about data safety. Teaching users how VTO works can make them more comfortable using it. A smooth and safe experience will encourage more people to try VTO, leading to higher sales and better shopping experiences. A good VTO experience can also make customers return to the same brand.

This study looks at how Indian consumers feel about sharing their personal data for Virtual Try-On (VTO). It explores whether they prefer the ease of trying products virtually or worry more about privacy and data safety. The results will help businesses understand customer concerns and build trust in VTO, ensuring a safer and better shopping experience. By studying consumer views, this research will highlight key factors affecting VTO use. The insights will help businesses improve their strategies. In the end, balancing new technology with safety will be important for VTO's success in India [8][9].

II. OBJECTIVE

As Virtual Try-On (VTO) technology becomes more popular in India, it is important to understand how consumers feel about using it. While VTO offers convenience and a personalized shopping experience, it also raises questions about data security and privacy. This study aims to explore consumer awareness, preferences, and concerns regarding VTO to help businesses improve trust and adoption [5][6][7].

1. To understand consumer awareness – Explore how well Indian consumers understand Virtual Try-On (VTO) technology and its use of personal data.

2. To examine the appeal of personalization – Analyse how much consumers value the convenience and customized experience offered by VTO.

3. To identify privacy concerns – Understand consumer fears about data collection, storage, and potential misuse in VTO applications [5].

4. To compare personalization vs. privacy concerns – Investigate whether Indian consumers prioritize the ease and benefits of VTO over their privacy and data security worries.

5. To provide insights for businesses – Offer recommendations on how companies can balance personalization and privacy to build consumer trust while using VTO technology.

III. REVIEW OF LITERATURE

Augmented Reality (AR), is transforming the online shopping experience by allowing users to visualize products before purchasing. Research suggests that VTO enhances shopping satisfaction by reducing uncertainty and return rates. The ability to try products virtually before making a purchase helps customers make more confident decisions, leading to better engagement and increased sales for e-commerce platforms. Additionally, personalization in VTO improves user experience, making shopping more interactive and convenient.

However, while personalization makes shopping easier, data privacy and security concerns remain a significant issue. VTO applications collect scanning data, such as facial scans and body measurements, raising concerns about how this data is stored, processed, and shared. Many consumers are unaware of the extent of data collection involved, leading to hesitation in using VTO technology. As digital privacy awareness grows, there is increasing demand for transparency in data handling and security measures. The introduction of stronger data protection laws and policies has further emphasized the need for companies to handle user data responsibly [8][9].

1. **Consumer Perception and Attitude Towards VTO**

Consumer attitudes toward VTO technology are shaped by their trust in digital shopping platforms and their willingness to share personal data. A study published in the International Journal of Fashion Design, Technology and Education found that while consumers appreciate the convenience of VTO, many hesitate to upload personal images due to concerns about data misuse. Instead, they prefer pre-loaded avatars resembling their body type, indicating a trade-off between personalization and privacy [2].

Another study in the Journal of Interactive Advertising examined consumers' responses to VTO apps and found that users with high privacy concerns perceived these apps as more intrusive, leading to negative attitudes toward the app and the sponsoring brand. Providing users with control over privacy settings reduced perceived intrusiveness and led to more positive attitudes and increased purchase intentions [1][5].

2. **Privacy Concerns and Risks in VTO Adoption**

Despite the advantages of VTO, privacy concerns remain a significant barrier to adoption. A 2022 lawsuit against Christian Dior Inc. highlighted privacy risks associated with VTO applications, particularly the unauthorized collection of facial scanning data without explicit user consent. This case underscores the legal and ethical challenges surrounding scanning data protection [4].

3. The Balance Between Personalization and Privacy

Research published in Humanities and Social Sciences Communications examined the "privacy paradox" in 3D body scanning technology. The study revealed that although consumers express concerns about privacy, positive experiences with 3D virtual try-on can mitigate these concerns, leading to increased adoption intentions. This suggests that enhancing user experience in VTO applications can help balance personalization benefits with privacy considerations [5].

Method and Methodology

This study uses a quantitative research approach with a descriptive design to analyse Indian consumers' views on personalization vs. privacy in Virtual Try-On (VTO) technology.

Survey method: A structured questionnaire with google form questions.

Target audience: Indian consumers aged 18–35.

Sampling: Convenience sampling, with 50–60 respondents via social media.

IV. FINDINGS AND DISCUSSION

Awareness and Experience with Virtual Try-Ons (VTOs):

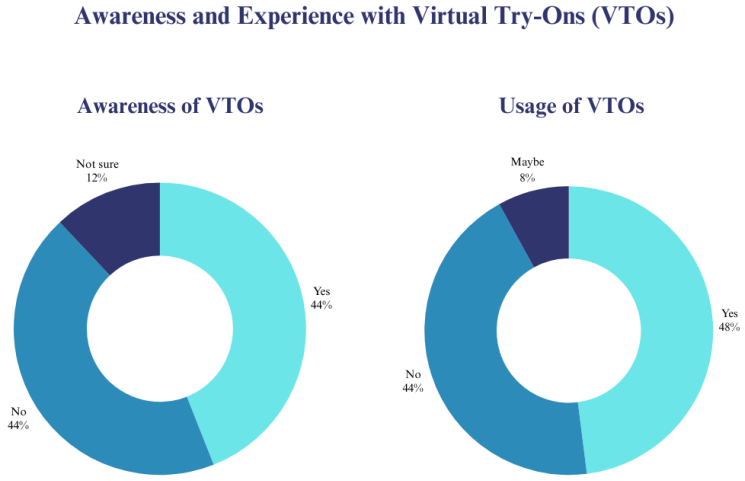

Fig.1

Fig.1. The survey results show an interesting trend in the awareness and use of Virtual Try-Ons (VTOs) among the target group. 44% of respondents are familiar with VTOs, while the same percentage (44%) have never heard of them, indicating that VTO technology is still not widely recognized. Another 12% were unsure, suggesting many people don't know what VTOs are or how they work. This shows a big gap in consumer awareness that can be addressed through more targeted outreach, education, and clear communication on how VTOs can improve the shopping experience.

The usage results are similar, with 44% of respondents having used VTO tools, while 48% haven't, and 8% are unsure. This matches the awareness data and shows that VTOs are still not widely adopted. Despite growing interest, VTOs have not yet become a regular part of shopping. For them to become more common, there needs to be more focus on showing their value and ease of use. Educating consumers about the benefits, how easy they are to use, and privacy protection could help reduce doubts and encourage more people to use VTOs.

Perceptions of Usefulness:

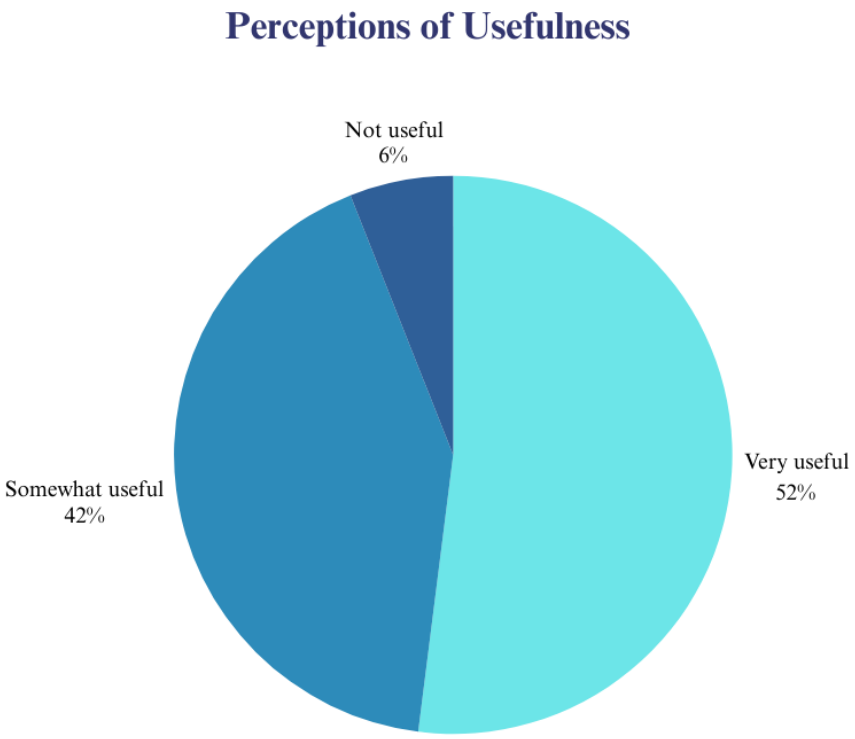

Fig.2

Fig.2. A large majority (94%) of respondents think Virtual Try-Ons (VTOs) are useful for making purchase decisions, with 42% saying they are "very useful" and 52% saying they are "somewhat useful." This shows that most people see the value of VTOs in improving online shopping and boosting confidence in their choices. However, the 6% who find VTOs "not useful at all" may point to problems like inaccuracies, glitches, or lack of trust in the technology. To improve adoption, companies should focus on making VTOs more accurate and reliable.

Fixing these issues could help build trust and encourage more people to use VTOs. Ensuring that VTOs show products correctly and work smoothly will be important in gaining consumer confidence. Clear explanations of how VTOs work and their benefits could also help people feel more comfortable using them. Companies should continue testing and improving VTOs to meet consumer needs and make them even more helpful.

Familiarity with AR/VR Technologies:

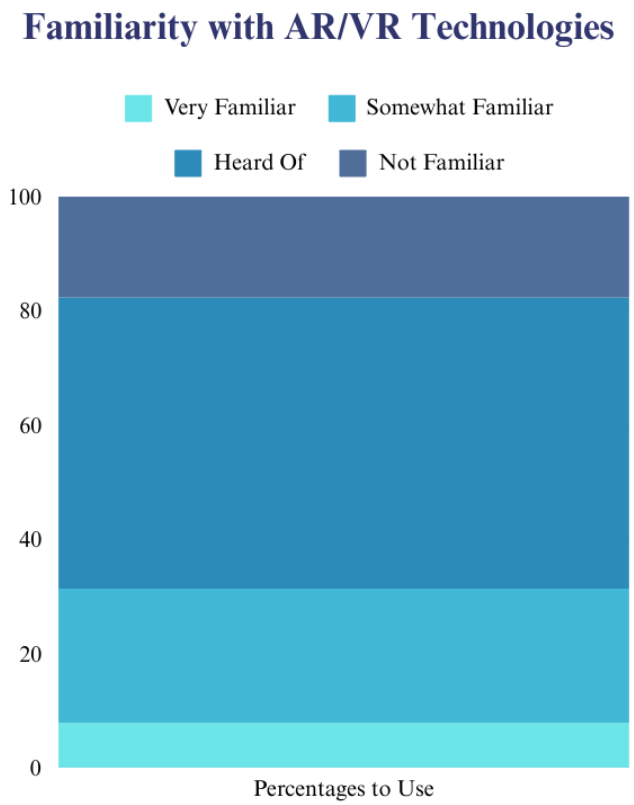

Fig.3

Fig.3. Despite the high perceived usefulness of VTOs, many consumers aren't very familiar with the AR/VR technologies behind them. Only 8% say they are "very familiar," while 24% are "somewhat familiar." Most people (52%) have only "heard of" AR/VR technologies, and 18% are "not familiar at all." This shows that there's a need for more education to help people understand and use VTOs.

Retailers and developers could make things easier by offering clear explanations, interactive learning tools, and simple onboarding to help users feel comfortable with VTOs. Partnering with influencers and tech experts to show how AR/VR works in real life could also help build trust. Offering hands-on experiences through tutorials or in-store demos could encourage more people to try VTOs and make the technology feel more accessible.

Interest in Virtual Try-Ons:

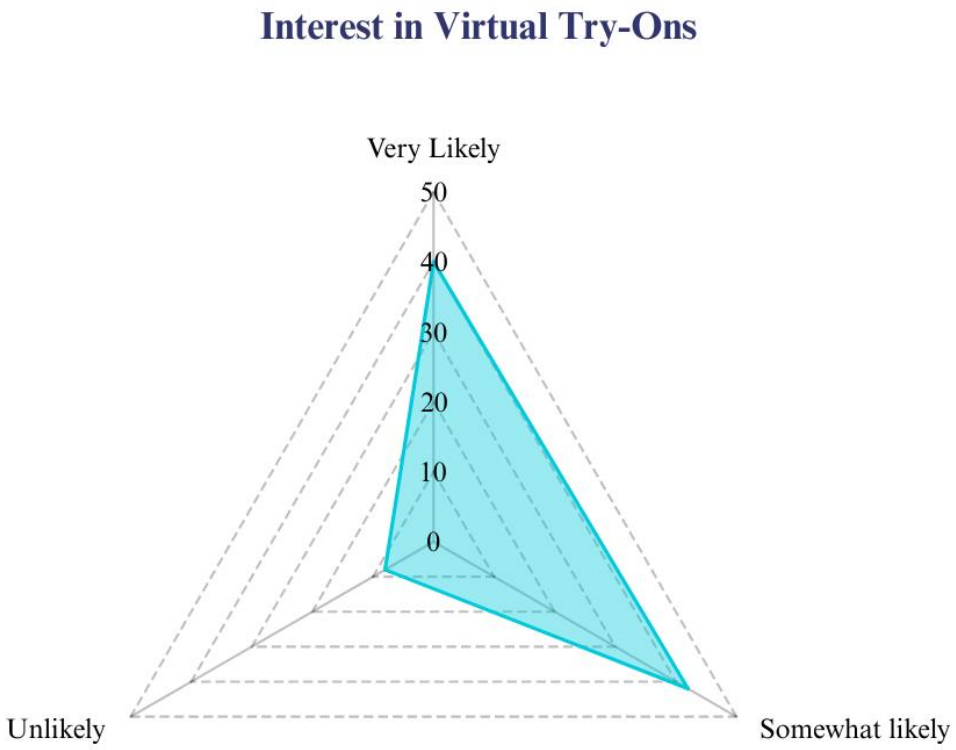

Fig.4

Fig.4. The survey reflects strong interest in trying VTO features, with 40% being "very likely" and 42% "somewhat likely" to use them. Only a small portion (8%) express reluctance. This finding indicates a promising adoption rate if accessibility and user experience are enhanced. To capitalize on this interest, retailers should focus on seamless integration of VTOs into e-commerce platforms, ensuring that the interface is intuitive and the technology delivers reliable and realistic results. Offering incentives, such as discounts for first-time users or interactive promotions, may further encourage participation.

Impact on Purchase Behaviour:

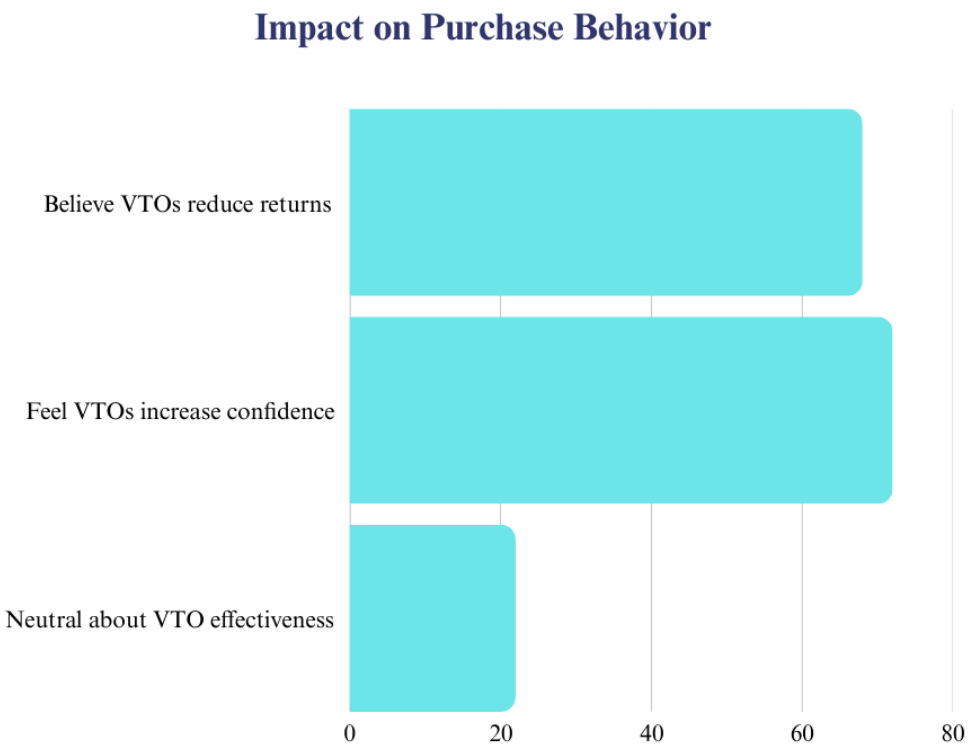

Fig.5

Fig.5. VTOs appear to have a strong influence on purchase decisions. A majority (68%) believe VTOs help reduce product returns, indicating their effectiveness in mitigating size and style mismatches. Additionally, 72% of respondents (combining "strongly agree" and "agree") feel that VTOs increase their confidence when purchasing online. However, 22% remain neutral, suggesting that some consumers may still require further convincing or improved VTO accuracy. Addressing potential concerns, such as discrepancies in virtual representations and real-life products, will be crucial in ensuring sustained consumer confidence.

Recommendations and Preferences:

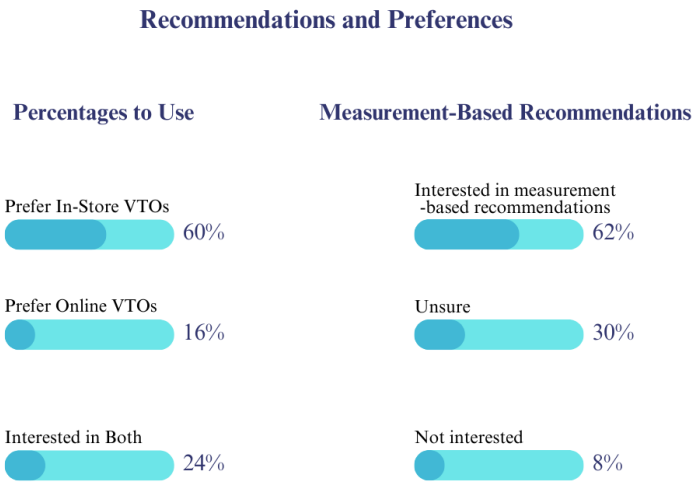

Fig.6

Fig.6. When asked about their preferred mode of using VTOs, 60% favour in-store VTOs, while only 16% prefer online shopping. Another 24% express interest in both options. This suggests that while VTOs are valuable online, their integration into physical retail spaces could drive further adoption. In-store implementations could provide a more controlled and interactive experience, allowing consumers to directly compare virtual fits with physical products.

Regarding measurement-based recommendations, 62% express interest, while 30% remain uncertain, and 8% are uninterested. This highlights an opportunity for retailers to offer personalized sizing and fit recommendations to enhance consumer confidence. AI-driven solutions that analyse body measurements and suggest ideal products could further optimize the shopping experience and minimize returns.

Privacy and Trust Concerns:

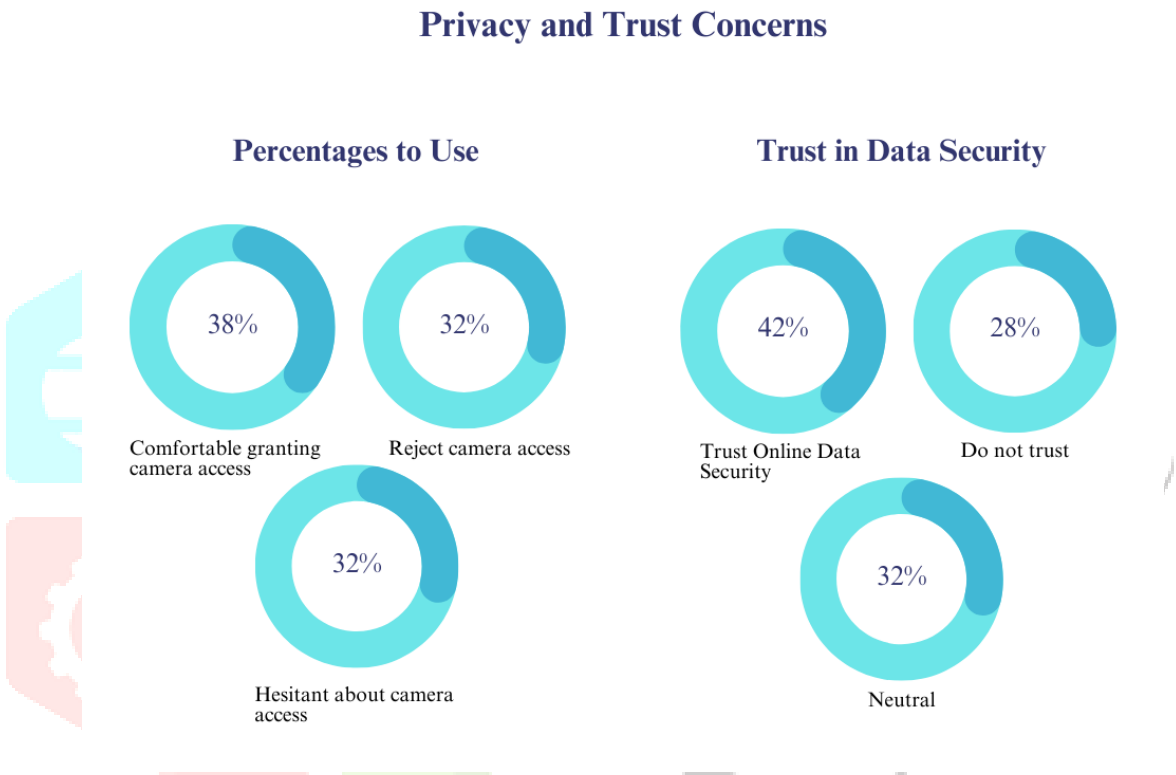

Fig.7

Fig.7. Privacy remains a significant consideration for consumers. While 38% are comfortable granting app access to their camera, 32% outright reject this, and another 32% remain hesitant. This demonstrates that data privacy concerns remain a substantial barrier to adoption. Similarly, trust in data security for online shopping is moderate, with 42% expressing trust, but 28% distrusting and 32% remaining uncertain. To address these concerns, retailers must communicate clear data policies, obtain explicit consent, and ensure robust security measures are in place to protect consumer information.

Data storage security is another crucial factor. If no data is stored, 62% express comfort, but 32% remain unconvinced, and 6% are unsure. This suggests that even with reassurances, some consumers remain sceptical of how their data is managed. Implementing transparent, user-controlled privacy settings can help alleviate concerns.

Security Enhancements and Willingness to Recommend VTOs:

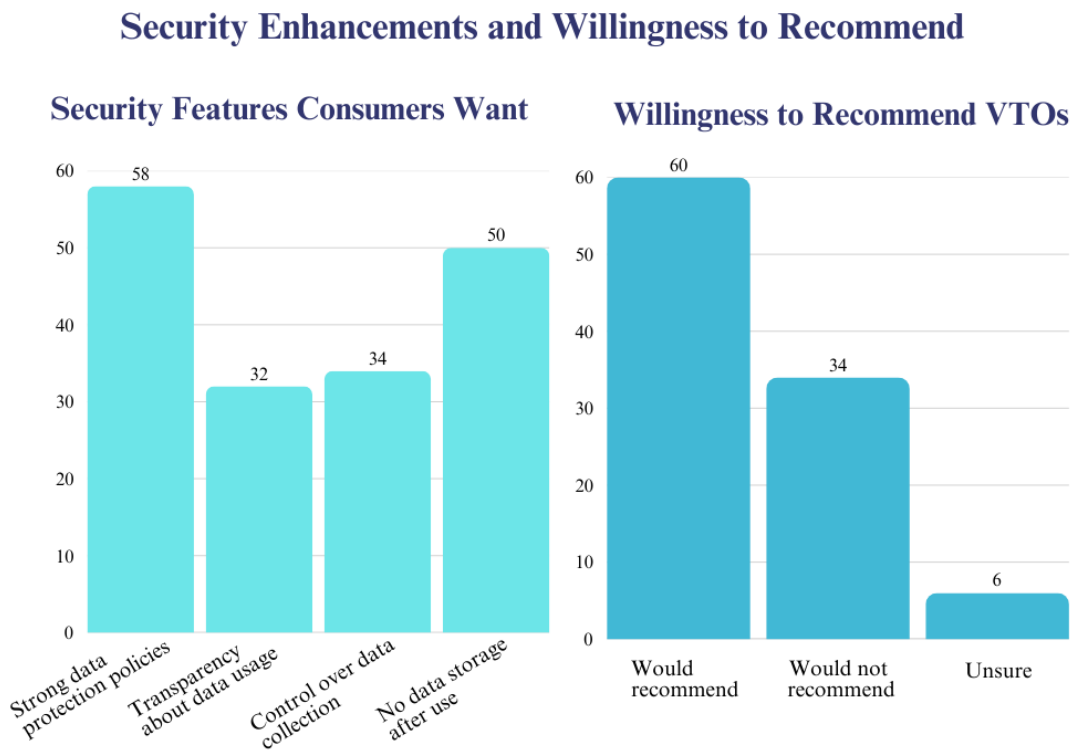

Fig.8

Fig.8. When asked about preferred security features, respondents emphasize strong data protection policies (58%), transparency about data usage (32%), control over data collection (34%), and no data storage after use (50%). These insights indicate that retailers must implement robust security measures and clear communication regarding data handling. Additionally, visible certifications and compliance with data protection regulations could improve consumer trust.

Finally, 60% of respondents are willing to recommend VTOs, while 34% are not, and 6% are uncertain. This demonstrates a generally positive perception, but also underscores the need to address concerns related to security, privacy, and accuracy to drive broader adoption. Encouraging satisfied users to share testimonials and success stories could further promote the benefits of VTO technology.

V. CONCLUSION

The survey findings reveal a strong interest in Virtual Try-Ons (VTOs), with 82% of respondents expressing a likelihood to try the technology. This is a promising indicator of future adoption if the right improvements are made to user experience and accessibility. With 40% of participants saying they are "very likely" and 42% saying they are "somewhat likely" to use VTOs, it shows a clear desire for this technology, especially among younger consumers who are more open to digital innovations. Only a small portion (8%) expressed reluctance, which suggests that most of the target audience is willing to explore this feature, provided the experience is easy and effective.

However, the survey also highlights some barriers to widespread adoption. A significant portion of respondents (52%) have only heard of AR/VR technologies, with many being unfamiliar with the details of how they work. This gap in knowledge could explain why some consumers might hesitate to fully engage with VTOs. It’s crucial for retailers and developers to prioritize education, offering clear and accessible information about how VTOs function and their benefits.

Additionally, while most participants see VTOs as useful, many still lack experiences with the technology, suggesting that retailers need to focus on improving both the accuracy and reliability of VTO tools. This could involve refining the virtual fitting process to ensure that the digital representations of products are realistic and trustworthy.

To foster greater adoption, retailers should also consider enhancing the VTO experience through incentives like discounts for first-time users or interactive promotions. Ensuring the technology is seamlessly integrated into e-commerce platforms and works well across different devices will also play a significant role in driving usage. By focusing on these areas, retailers can address potential concerns, boost confidence in VTOs, and ultimately improve consumer engagement with the technology.

In conclusion, the survey findings suggest that while there is significant interest in VTOs, much work remains to be done in terms of improving user experience, increasing awareness, and building trust in the technology. With the right strategies in place, VTOs have the potential to become a valuable tool in online shopping, offering convenience and enhancing customer confidence in their purchase decisions.

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