

VIRTUAL TRY-ON TECHNOLOGY AND THE NEW AGE OF PURCHASE DECISIONS

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Abstract-These waft expansion of e-commerce has propelled the integration of Virtual Try-On (VTO) technology as a means to mitigate uncertainty in online shopping. This research investigates consumer awareness, usage trends, perceptions, influencing factors, and the perceived advantages of Virtual Try-On technology within the realm of online retail. Employing a descriptive research design alongside a quantitative methodology, primary data were gathered from 151 participants in the Tirupur district via a structured questionnaire, which was subsequently analyzed through percentage analysis, weighted average scoring, and Garret ranking techniques. The results indicate that Virtual Try-On is primarily utilized by younger, educated consumers, with clothing emerging as the most favored category. Although respondents display a moderately positive perception of Virtual Try-On, there remains a degree of neutrality in specific aspects, such as its influence on purchase decisions. Key influencing factors identified include ease of use, technology reliability, and internet speed, while the most significant benefits recognized were time-saving and confidence enhancement. In conclusion, the study asserts that Virtual Try-On technology not only improves shopping convenience and boosts purchase intentions but also decreases product return rates, thus functioning as an effective strategic instrument for enhancing customer experience and fostering sustainable growth in online retail.

Key Words: E-Commerce, customer, purchase decision, Virtual Reality, virtual try-on technology etc

1. INTRODUCTION

The swift expansion of e-commerce has revolutionized consumer shopping habits, resulting in the incorporation of sophisticated technologies to improve online purchasing experiences. One notable advancement is Virtual Try-On technology, which allows consumers to digitally visualize items such as apparel, shoes, eyewear, cosmetics, and accessories prior to making a purchase. By facilitating real-time product interaction, Virtual Try-On seeks to close the gap between in-store and online shopping, thus minimizing uncertainty and enhancing decision-making.

Despite its growing implementation by online retailers, consumer awareness, usage trends, and perceptions of Virtual Try-On technology differ considerably. It is crucial for retailers to comprehend how consumers view its utility, ease of use, and influence on purchasing behavior

in order to enhance customer satisfaction and decrease product return rates. Elements such as confidence in product choice, shopping convenience, and overall experience are vital in shaping consumer acceptance of this technology.

In this regard, the current study aims to investigate consumer awareness, usage, and attitudes towards Virtual Try-On technology in the realm of online shopping. The structured questionnaire is crafted to gather demographic information, levels of awareness, frequency of use, consumer perceptions, purchasing behavior, perceived advantages, influencing factors, and overall satisfaction. The results of this study will offer significant insights for e-commerce platforms and marketers to refine Virtual Try-On functionalities and boost consumer engagement and purchasing results.

REVIEWS OF LITERATURE

Raheela Batool and Jian Mou (2024), in their research titled A Systematic Literature Review and Analysis of Try-on Technology: Virtual Fitting Rooms, investigated the evolution and effects of virtual try-on technology within the realm of online clothing shopping. This study conducted a systematic review of eighty academic articles published from 2005 to 2023, sourced from prominent academic databases including Scopus, Springer, Science Direct, and IEEE Explore. The authors organized the literature according to publication year, geographical location, research methodology, theoretical frameworks, and significant influencing factors. Initially, the research examined methodological strategies and theoretical frameworks, such as the Technology Acceptance Model (TAM) and the Stimulus-Organism-Response (S-O-R) theory, to gain insights into consumer adoption behavior. The results indicated that elements like image interactivity, telepresence, perceived usefulness, and enjoyment have a positive effect on consumer purchase intentions and shopping confidence, whereas perceived risk and technological constraints impede adoption. The study concludes that virtual fitting rooms greatly improve online shopping experiences and decrease product returns, while also pinpointing research gaps to inform future investigations in fashion e-commerce and virtual retail technologies.

Quan Hong Nguyen, Truong Thi Hanh, Nghiem Le My Hanh, Nguyen Duong Lan Nhi, Dang Ngoc Anh, and Ha Thuy Linh (2021) conducted a study titled *The Impacts of Virtual Try-On for Online Shopping on Consumer Purchase Intention: The Moderating Role of Technology Experience*, which explored the influence of virtual try-on technology on consumers' purchase intentions within online shopping contexts. The research primarily aimed to assess the direct impact of virtual try-on features on consumer attitudes and buying intentions, while also investigating the moderating effect of consumers' previous technology experience. Data were gathered through a structured questionnaire administered to online shoppers who had utilized virtual try-on applications. The results indicated that virtual try-on technology significantly enhances purchase intention by improving perceived usefulness, enjoyment, and confidence in product selection. Additionally, the findings demonstrated that prior technology experience amplifies the connection between virtual try-on usage and purchase intention, suggesting that consumers with greater technological familiarity exhibit a more favorable response to these features. The study concludes that virtual try-on technology serves as an effective mechanism for enhancing online shopping results, especially among consumers with substantial technological experience.

Tingting Zhang, William Yu Chung Wang, Ling Cao, and Yan Wang (2019), in their research titled *The Role of Virtual Try-On Technology in Online Purchase Decision from Consumers' Aspect*, investigated the impact of virtual try-on technology on consumers' online purchasing choices. The focus of the study was to comprehend consumer perceptions regarding virtual try-on features within online apparel shopping platforms. Data were gathered through a structured survey conducted among online shoppers who had previous experience with virtual try-on technology. The researchers examined critical factors including perceived usefulness, perceived enjoyment, perceived risk, and trust in virtual try-on systems. The results indicated that virtual try-on technology significantly boosts consumers' intention to purchase by alleviating uncertainty associated with product fit and appearance. Furthermore, the study discovered that perceived enjoyment and perceived usefulness have a positive effect on consumer attitudes towards virtual try-on technology, whereas perceived risk has a detrimental impact on purchasing decisions. In summary, the research emphasizes that virtual try-on technology plays a crucial role in boosting consumer confidence and decision-making processes within online shopping environments.

Nandini Dixit (2022), in her research titled *Effect of AI Virtual Try-On Technology on Customer Purchase Intent and Buying Experience*, investigated the impact of artificial intelligence-driven virtual try-on technology on consumers' purchase intentions and overall shopping experiences in the realm of online retailing. The objective of the study was to explore how AI-enhanced features, including precise fit visualization, personalization, and interactive interfaces,

influence consumer decision-making. Data were gathered via a structured questionnaire from customers who had utilized AI virtual try-on applications. The results indicated that AI virtual try-on technology significantly boosts customer purchase intentions by enhancing shopping confidence, perceived usefulness, and enjoyment. Furthermore, the study underscored that AI-based virtual try-on mitigates perceived risks and uncertainties linked to online purchases. The research concludes that the incorporation of AI virtual try-on technology has a favorable effect on the buying experience and acts as a strategic asset for online retailers aiming to elevate customer satisfaction and conversion rates.

Ekta Jain and Dr. Preeti Chhabra (2021), in their research titled *The Impact of Consumer Perception Towards Virtual Reality (Try-on) Features in Online Clothing Platforms – A Detailed Review Between E-Commerce and V-Commerce*, examined how consumers perceive virtual reality-based try-on features in both traditional e-commerce and the emerging v-commerce sectors. The study utilized a thorough review methodology to assess the influence of VR try-on technologies on consumer attitudes, engagement, and purchasing behavior. The results indicated that virtual reality try-on features significantly boost consumer confidence, perceived enjoyment, and trust by offering immersive and interactive shopping experiences. Additionally, the research underscored that v-commerce platforms provide greater experiential value than traditional e-commerce by mitigating perceived risks and enhancing product assessment. The authors conclude that consumer perception is vital for the effective adoption of VR try-on technologies and stress the increasing significance of immersive technologies in the future of online clothing retailing.

Thevaranjan Dinesh (2018), in his research titled *Factors Affecting Consumer Attitudes towards Online Shopping*, investigated the primary factors that affect consumers' perceptions of online shopping platforms. The research aimed to identify elements such as perceived usefulness, ease of use, trust, security, convenience, and perceived risk that influence consumers' online shopping behavior. Data were gathered using a structured questionnaire directed at consumers who had previous online shopping experience. The results indicated that perceived convenience, trust, and ease of use significantly enhance consumer attitudes, whereas perceived risk and security issues adversely affect the adoption of online shopping. The study concludes that comprehending consumer attitudes is crucial for online retailers to improve customer satisfaction, foster trust, and enhance the overall online shopping experience.

Hyunwoo Hwangbo, Eun Hie Kim, So-Hyun Lee, and Young Jae Jang (2020) conducted a study titled *Effects of 3D Virtual "Try-on" on Online Sales and Customers' Purchasing Experiences*, which examined the influence of 3D virtual try-on technology on consumer purchasing behavior and online sales outcomes. The research specifically

addressed how 3D visualization and interactive try-on functionalities affect customers' shopping experiences within online retail settings. Data were gathered through experimental approaches and consumer assessments involving users of 3D virtual try-on systems. The results indicated that 3D virtual try-on technology significantly boosts customer engagement, perceived product fit, and purchase confidence, which in turn leads to an increase in purchase intention and enhanced online sales. Furthermore, the study demonstrated that immersive 3D experiences elevate customer satisfaction by alleviating the uncertainty linked to online product evaluations. The research ultimately concludes that 3D virtual try-on technology is a valuable instrument for enhancing purchasing experiences and improving sales performance in the realm of online fashion retailing.

Seyed Omid Mohammadi and Ahmad Kalhor (2022), in their research titled *Smart Fashion: A Review of AI Applications in Virtual Try-On and Fashion Synthesis*, examined the impact of artificial intelligence on the evolution of virtual try-on systems and digital fashion design. The research concentrated on AI-driven methodologies, including deep learning, computer vision, and generative models, which are employed in virtual try-on and fashion synthesis applications. Through a thorough analysis of existing literature, the authors underscored the ways in which AI enhances garment fit prediction, improves body modeling accuracy, and facilitates realistic fabric simulation. The results revealed that AI-powered virtual try-on technologies significantly boost personalization, visual realism, and user engagement, thus favorably affecting consumer experience and adoption rates. The study concludes that the integration of AI is a pivotal element in the progression of smart fashion systems and in shaping the future landscape of virtual apparel retail and digital fashion ecosystems.

Devika Parab, Meghana Peethambaran, and Pranjali Shirode (2023), in their research titled *Dress up Digital – The Virtual Wardrobe: Innovating the Future of Online Apparel Shopping with Virtual Try-Ons*, investigated the impact of virtual wardrobe and virtual try-on technologies on enhancing the online apparel shopping experience. The study analyzed how digital wardrobes, when integrated with virtual try-on capabilities, aid consumers in visualizing outfits, managing their personal collections, and making well-informed purchasing decisions. The results indicated that virtual try-on and wardrobe systems significantly enhance shopping convenience, personalization, and user engagement by providing interactive and immersive experiences. Furthermore, the study emphasized that these technologies diminish the effort involved in decision-making and alleviate uncertainties related to product fit and styling. The authors concluded that virtual wardrobe-based try-on systems signify a promising advancement for the future of online fashion retail, leading to increased customer satisfaction and purchase intention.

Joy Onma Eneyejo, Omotoyosi Qazeem Obani, Olusegun Afolabi, Emmanuel Igba, and Akan Ime Ibokette (2022), in their study titled *Effect of Augmented Reality (AR) and Virtual Reality (VR) Experiences on Customer Engagement and Purchase Behaviour in Retail Stores*, explored the influence of immersive AR and VR technologies on customer engagement and purchasing behavior within retail settings. The research concentrated on assessing interactive and experiential elements such as immersion, interactivity, and perceived enjoyment. Data were gathered through consumer surveys and experimental retail environments. The findings demonstrated that both AR and VR experiences significantly boost customer engagement, dwell time, and emotional involvement, which subsequently have a positive impact on purchase intention and buying behavior. Additionally, the study pointed out that immersive technologies mitigate perceived risk and enhance decision-making by providing realistic product visualizations. The research concludes that AR and VR experiences serve as effective tools for improving customer engagement and influencing purchasing decisions in retail.

STATEMENT OF THE PROBLEM

Online shopping provides convenience; however, it does not allow for physical trials of products, which creates uncertainty regarding fit, appearance, and suitability. This often leads to diminished purchase confidence, incorrect product choices, and higher return rates. To mitigate these challenges, Virtual Try-On (VTO) technology has been developed, enabling consumers to virtually experience products prior to making a purchase. Nevertheless, despite its increasing adoption, there remains a lack of clarity concerning consumer awareness, actual usage, perceived accuracy, user-friendliness, reliability, privacy issues, and its genuine influence on purchasing decisions and overall satisfaction. Therefore, this study aims to examine consumer perceptions, the factors that influence them, and the effectiveness of Virtual Try-On technology in enhancing the online shopping experience.

OBJECTIVES OF THE STUDY

- To investigate the socio-economic characteristics of the participants
- To determine the categories of products that are most frequently associated with Virtual Try-On usage.
- To evaluate the elements that affect the adoption of Virtual Try-On, including user-friendliness, precision, and technological dependability.
- To assess the perceived advantages of Virtual Try-On as reported by consumers.
- To gauge the overall satisfaction of consumers regarding Virtual Try-On technology.
- To provide credible recommendations

RESEARCH METHODOLOGY

The research employs a quantitative research design to investigate consumer attitudes towards virtual try-on technology in the context of online apparel shopping. Data is gathered through a structured questionnaire administered to participants who have previously utilized virtual try-on features. The findings are evaluated using statistical methods, including percentage analysis, mean ranking, correlation, and regression, to determine the influence of virtual try-on on purchase intention, confidence, and overall shopping experience.

Research Design

The research utilizes a descriptive research design to examine consumer awareness, usage, perception, and satisfaction regarding Virtual Try-On technology in online shopping. This design is suitable as it facilitates a systematic description of consumer characteristics and opinions based on structured data.

Research Approach

A quantitative research approach is adopted, employing a structured questionnaire to gather numerical data that can be statistically analyzed to gain insights into consumer behavior and attitudes towards Virtual Try-On technology.

Data Source

The research relies on primary data gathered directly from participants via a self-administered questionnaire. Additionally, secondary data, including journals, research articles, websites, and reports, were utilized to reinforce the theoretical framework of the study.

Sampling Method

A convenience sampling approach is employed to select participants who possess experience or knowledge regarding online shopping and Virtual Try-On technology. This method is preferred due to its accessibility and the constraints of time.

Sample Size

The researcher collected data from one hundred fifty-one respondents utilizing online shopping in the Tirupur district for this investigation. The sample consists of 151 participants (to be detailed according to the actual data obtained), representing a diverse range of demographic attributes including age, gender, education, and income.

Data Analysis Techniques: After the data collection phase, appropriate tools and methodologies were employed for data analysis. The study implemented percentage analysis, weighted average scoring, and Garret ranking to elucidate the results.

Limitations of the study: The precision of the data is influenced by potential biases.

DATA ANALYSIS AND INTERPRETATION SOCIO-ECONOMIC FACTORS OF THE ESPONDENTS

Table No. 1.1

Socio-Economic Factors		No. of Respondents	Percentage
Gender	Male	78	52
	Female	71	47
	Prefer Not to Say	2	1
Age Group	Below 20	40	27
	21-30	98	65
	31-40	11	7
	41-50	2	1
Educational Qualification	School Level	7	5
	Undergraduate	67	44
	Postgraduate	62	41
	Professional	15	10
Monthly Income	Below Rs.15,000	78	52
	Rs.15,001-30,000	39	26
	Rs.30,001-50,000	16	10
	Above Rs.50,000	18	12
Products used on Virtual Try-on	Clothing	77	51
	Footwear	12	8
	Eyewear	39	26
	Cosmetics	11	7
	Accessories	12	8
Used Virtual Try-on Shopping Online	Always	31	21
	Often	18	12
	Sometimes	51	34
	Rarely	34	23
	Never	17	10
Virtual Try-on influence your Purchase Decision	Highly Influential	18	12
	Influential	41	27
	Neutral	70	46
	Less Influential	13	9
	Not Influential	9	6
Virtual Try-on makes Shopping	Much Easier	21	14
	Easier	91	60
	No Change	30	20
	Difficult	9	6
Recommend Virtual Try-on to others	Yes	48	32
	No	37	25
	Maybe	66	43
Total		151	100

Source: Primary Data

Interpretation: The survey data presented in Table No.1.1 reveals that a significant portion of respondents are young adults, with 65% falling within the 21–30 age range, which underscores a greater adoption of virtual try-on technology among younger consumers. Gender representation is

relatively balanced, comprising 52% male and 47% female respondents, indicating a similar level of interest across both genders. Regarding educational background, the majority of respondents are undergraduates (44%) and postgraduates (41%), suggesting a heightened awareness and utilization of virtual try-on technology among those with higher education. A notable percentage of respondents (52%) report earning less than ₹15,000 per month, which implies that virtual try-on technology is appealing to lower-income demographics as well. Clothing is identified as the most frequently utilized product category (51%), followed by eyewear (26%), highlighting the prevalence of apparel-related applications. In terms of usage frequency, most respondents engage with virtual try-on either occasionally or regularly, while a smaller group has never utilized it. Almost half of the respondents (46%) express neutrality regarding the technology's impact on their purchasing decisions, although a significant number view it as influential. A substantial majority (74%) believe that virtual try-on facilitates online shopping, thereby enhancing both convenience and confidence. Nevertheless, recommendation levels are somewhat reserved, with 43% of respondents uncertain about endorsing it to others. In summary, the data illustrates an increasing acceptance of virtual try-on technology, particularly among young, educated, and budget-conscious consumers, although further enhancements are necessary to amplify its effect on purchasing decisions.

RESPONDENTS' OPINION ABOUT INFLUENCING FACTORS TO USE VIRTUAL TRY-ON TECHNOLOGY
Table No. 2

S. No	Influencing Factors	1	2	3	4	5	Garret Score	Garret Rank
1	Ease of use	2025	1680	3100	780	336	7921	1
2	Accuracy	1275	1500	2950	1365	360	7450	5
3	Technology reliability	1650	2460	2450	1092	264	7916	2
4	Internet speed	1875	1440	3000	1014	384	7713	3
5	Privacy & security	2025	1620	2600	975	480	7700	4

Source: Primary Data

Interpretation: Table No: 2 presents the opinions of respondents regarding the factors that influence the use of virtual try-on technology. The ranking analysis reveals that

Ease of Use occupies the top position with the highest total score of 7921, indicating that respondents regard user-friendliness as the most critical factor in virtual try-on technology. Technology Reliability follows in second place with a score of 7916, underscoring the significance of consistent and reliable system performance. Internet Speed is ranked third with a score of 7713, suggesting that fast and smooth connectivity is essential for user satisfaction. Privacy & Security is positioned fourth with a score of 7700, reflecting that while data protection is important, it is slightly less prioritized compared to other factors. Lastly, Accuracy ranks fifth with a score of 7450, indicating that it is valued but is comparatively considered less important than the other factors.

RESPONDENTS' OPINION ABOUT BENEFITS OF VIRTUAL TRY-ON TECHNOLOGY Table No.3

S.No	Benefits	100(Ri-0.5/Nj)	Calculated Value	Garret Value
1	Saves time	100(1-0.5/5)	10	75
2	Reduces return rate	100(2-0.5/5)	30	60
3	Increase confidence	100(3-0.5/5)	50	50
4	Enhance shopping experience	100(4-0.5/5)	70	39
5	Accurate product selection	100(5-0.5/5)	90	24

Source: Primary Data

S.No	Benefit	1	2	3	4	5	Garret Score	Garret Rank
1	Saves time	2100	1440	3050	858	384	7832	1
2	Reduces return	1950	1440	2850	1092	384	7716	3

	rate							
3	Increases confidence	1800	1500	2950	1131	336	7717	2
4	Enhances shopping experience	1650	1500	2700	1131	504	7485	4
5	Accurate product selection	1650	1500	2700	1131	504	7485	4

Source: Primary Data

Interpretation: Table No.3 illustrates the perspectives of respondents regarding the advantages of utilizing virtual try-on technology. The analysis of rankings reveals that Saves Time occupies the top position with the highest cumulative score, signifying it as the most significant benefit of virtual try-on technology among the participants. Increases Confidence is positioned second, indicating that consumers experience greater assurance when making online purchasing decisions. Reduces Return Rate is ranked third, demonstrating that virtual try-on technology aids in decreasing the likelihood of incorrect product acquisitions. Enhances Shopping Experience is placed fourth, implying that respondents value the enhanced and interactive nature of the shopping experience. Lastly, Accurate Product Selection is ranked fifth, suggesting that while it is appreciated, it is relatively less prioritized compared to the other benefits.

RESPONDENTS OVERALL OPINION ABOUT VIRTUAL-TRY-ON TECHNOLOGY Table No.4

Respondents opinion	Total	Weighted Average	Rank
Helps me make better purchase decisions	478	31.8	3
Reduces the risk of wrong product selection	461	30.7	6
Increases my confidence in online shopping	484	32.2	2
Improves my overall shopping experience	498	33.2	1
Reduces product returns	474	31.6	4
Likely to purchase products with Virtual Try-On features	469	31.2	5

Source: Primary Data

Interpretation:

Table No. 4 illustrates the general sentiment of respondents regarding virtual try-on technology. This technology significantly enhances the overall shopping experience, securing the 1st position. The 2nd position is attributed to its ability to boost confidence in online shopping, while the 3rd position is awarded for assisting in making more informed purchase decisions. The 4th position is given for its role in minimizing product returns, followed by the 5th position for the likelihood of purchasing items that feature virtual try-on capabilities, and finally, the 6th position is for its effectiveness in reducing the risk of selecting incorrect products.

RECOMMENDATION AND CONCLUSION:

Based on the findings, virtual try-on technology demonstrates strong potential in influencing consumer purchase decisions, particularly among young and educated users. Although overall perception is moderately positive, improving accuracy, realism, and system reliability can further strengthen user trust and engagement. Since ease of use and time-saving benefits are key drivers of adoption, platforms should focus on maintaining simple interfaces and smooth performance even under low internet speed conditions. Enhancing privacy and security measures, increasing awareness through promotional strategies, and expanding virtual try-on to additional product categories can boost customer confidence and recommendation levels. In conclusion, virtual try-on technology plays a significant role in improving online shopping experience, increasing purchase intention, and reducing return rates; with continuous technological improvement and strategic implementation, it can become a vital tool for sustainable growth in the digital retail industry.

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