

AI-POWERED VIRTUAL TRY-ON: IMPACT ON CUSTOMER SATISFACTION AND PURCHASE INTENTION IN OPTICAL RETAIL

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Abstract

In the retail landscape, with the introduction of Artificial Intelligence (AI) has drastically brought the changes that enhance customer engagement and their decision making. In the midst of these innovative technologies, AI- powered Virtual Try-On (VTO) has emerged as an important tool in the optical retail industry which enables the customers to visualize spectacle frames virtually before making a buying decision. When compared to traditional spectacle selection methods, VTO offers a more personalized, interactive and convenient shopping experience by integrating artificial intelligence, facial recognition and augmented reality. Despite its increasing implementation, understanding its impact on customer satisfaction and purchase intention remains a key area of research. The present study aims to analyse the impact of AI- powered VTO technology on customer satisfaction and purchase intention in optical retail and also examines the customer perception of the technology. The primary data were collected through a structured questionnaire from 144 respondents who have experienced AI-powered Virtual Try-On for selecting spectacles. Descriptive Statistics, Cronbach's Alpha, Correlation and Regression Analysis were used to assess the relationship among the variables of the study. The results of the study suggest that AI-powered Virtual Try-On contributes to a better customer experience by enhancing customer satisfaction, which subsequently encourages purchase intention. These findings enrich the existing literature on AI-enabled retail technologies and provide useful guidance for optical retailers in designing more engaging and customer-oriented digital shopping experiences.

Keywords: Artificial Intelligence (AI), Virtual Try-On (VTO), Optical Retail, Customer Satisfaction, Purchase Intention.

Introduction

In this digital era, the optical retail industry faced a rapid transformation with the integration of Artificial Intelligence (AI) into the customer service and their shopping experiences. Initially customers depended on physical trails and the suggestions of the salesman to select frames for their spectacle. However, this method often required time and did not always enable them to visualize how different frames suited their facial features. Subsequently, optical retailers have considerably adopted AI-powered Virtual Try-On (VTO) technology to enhance the selection process of spectacles.

In real time, AI-powered VTO technology includes artificial intelligence, augmented reality and facial recognition algorithms to digitally display spectacle frames on a customer's face. This innovation enables customers to explore multiple frame styles, colours and sizes instantly without physically trying each option. Therefore, AI technology has the potential to enhance convenience, reduce uncertainty and facilitate better decision making in purchasing.

In spite of these advantages, the effectiveness of AI-powered VTO encompasses beyond technology advancement. Customer's perceptions and their overall shopping experiences ultimately decides its success. While some consumers think AI-powered VTO as a reliable support tool for their decision, others may remain doubtful about its accuracy than traditional in-store method. Such differing perceptions raise a significant question, whether AI-powered VTO genuinely enhances customer satisfaction and improves higher purchase intention.

Customer satisfaction plays a vital role in determining consumer's purchase intentions and recommending products. When customers perceive that AI-powered VTO provides proper visualization and eases spectacle selection, they tend to derive higher satisfaction which in turn may increase their purchase intention. On the contrary, if the technology fails to meet customer expectations, it has an adverse effect on their purchasing decision regardless of its innovative features.

In the optical retail sector, even though AI-powered Virtual Try-On (VTO) has gained increasing popularity, its effectiveness in improving customer experience requires further more empirical investigation. Understanding how AI-powered VTO influences customer satisfaction and purchase intention is essential for retailers in order to improve technology-enabled shopping experiences and strengthen customer engagement. Therefore, the present study analyzes the impact of AI-powered Virtual Try-On on customer satisfaction and purchase intention in optical retail, thus contributing to the growing body of research on AI-driven retail technologies.

Review of Literature

Jain and Chhabra (2025) reviewed consumers' perceptions of virtual reality try-on features in online retailing. The study reported that immersive try-on features enhance engagement, shopping confidence, satisfaction, and purchase decisions by reducing uncertainty during product evaluation. **Nguyen et al. (2025)** investigated the impact of Virtual Try-On (VTO) on consumers' purchase intention using the Technology Acceptance Model. Based on data from 557 respondents analyzed through SEM, the study found that perceived usefulness, perceived ease of use, and perceived enjoyment positively influenced attitudes toward VTO, which subsequently enhanced purchase intention. Technology experience strengthened this relationship, demonstrating the importance of digital familiarity in AI-enabled shopping. **Sekri et al. (2025)** investigated the effects of Virtual Try-On (VTO) technology as an innovative e-commerce tool on consumers' online purchase intentions. The study examined how Virtual Try-On enhances consumers' online shopping experiences by improving product visualization and reducing uncertainty during product evaluation. The findings revealed that Virtual Try-On positively influences perceived usefulness, perceived enjoyment, and consumer confidence, which subsequently increase online purchase intention. The study concluded that retailers adopting AI-enabled Virtual Try-On technologies can create more engaging shopping experiences, strengthen customer confidence, and improve consumers' willingness to purchase products online. The study emphasizes the growing importance of AI-driven interactive technologies in enhancing digital retail performance. **Chen and Tsai (2024)** conducted a systematic review of 69 studies on Virtual Try-On systems. The review identified perceived usefulness, enjoyment, trust, realism, and ease of use as key drivers of VTO adoption and purchase intention. The study recommended extending VTO research into sectors such as optical retail and customer satisfaction. **Guo and Zhang (2024)** examined augmented reality

shopping experiences using the Technology Acceptance Model. Results showed that immersive AR experiences significantly improved perceived usefulness, perceived ease of use, customer trust, and purchase intention. The findings highlight the value of AR technologies in enhancing digital retail experiences. **Hwangbo et al. (2020)** demonstrated that 3D virtual try-on positively influenced customers' purchasing experiences and online sales by improving visualization, confidence, and decision quality. Although earlier than other studies, it remains one of the foundational empirical works supporting VTO adoption.

Research Gap

Previous studies have mainly examined AI-powered Virtual Try-On in the context of fashion, apparel, and beauty retail, with a primary focus on technology adoption, ease of use, perceived usefulness, and purchase intention. Comparatively, limited empirical research has analysed the impact of AI-powered Virtual Try-On on customer satisfaction within the optical retail sector, mainly in the Indian context. Moreover, studies integrating AI-powered Virtual Try-On, customer satisfaction, and purchase intention within a single empirical framework remain limited. Therefore, this study addresses these gaps by examining the impact of AI-powered Virtual Try-On on customer satisfaction and purchase intention among consumers in optical retail

Objectives of the Study

1. To examine customers' perception of AI-powered virtual try-on technology in optical retail.
2. To analyze the impact of AI-powered virtual try-on technology on customer satisfaction.
3. To evaluate the influence of customer satisfaction on purchase intention toward spectacles.

Research Methodology

The research followed a descriptive design to assess the influence of AI-powered Virtual Try-On on customer satisfaction and purchase intention in optical retail. The study primarily uses a quantitative approach, with 144 data collected at a single point in time through structured questionnaires consisting of four sections:

Part 1: Demographic Profile, Part 2: Customer Perception on AI- Powered Virtual Try-On.

Part 3: Customer Satisfaction, Part 4: Purchase Intention.

SPSS was used to analyse the data in order to achieve the study objective, Descriptive Statistics, Cronbach's Alpha, Correlation and Regression Analysis were utilized to test the relationship among the variables of the study.

Data Analysis and Interpretations

Table 1: Gender Distribution

GENDER					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	88	61.1	61.1	61.1
	Female	56	38.9	38.9	100.0
	Total	144	100.0	100.0	
Source: Primary Data					

From the table we infer that the demographic analysis of the respondents based on gender shows 61.1% of the respondents are male and 38.9% of the respondents are female

Fig.1: Distribution of Age



The bar diagram shows the age distribution of the respondents where the majority of the respondents (33.33%) were below 20, 30.56% of the respondents were in the age group of 30-40, 19.44% of the respondents were in the age group 20-30, 11.11% of the respondents were in the age group of above 50, the smallest proportion of the respondents were in the age group of 40-50.

Table 2: Distribution of occupation of the respondents

		Frequency	Percent
Valid	Student	52	36.1
	Employed	64	44.4
	Self Employed	16	11.1
	Home maker	12	8.3
	Total	144	100.0

Source: Primary Data

From the frequency table it has been observed that a major portion of the respondents 44.4% were employed, 36.1% were students, 11.1% were self-employed and 8.3% were home makers.

Table 3: Distribution of Income

		Frequency	Percent
Valid	Below 25000	20	13.9
	25001-50000	20	13.9
	50001-75000	8	5.6
	75001-100000	44	30.6
	Above 1 Lakh	52	36.1
	Total	144	100.0

Source: Primary Data

The frequency table shows that majority of the respondents (36.1%) are in the income group more than One Lakh followed by 30.6% of the respondents were in between 75,000 to One Lakh, 13.9% of the respondents were in the income group 25,000 to 50,000 and below 25,000, the least percent of the respondents (5.6%) were in the income group between 50,000 to 75,000

Fig.2: Pie Chart - Platform used to experience the AI-powered VTO



The pie chart explains that the majority of the respondents (52.78%) use mobile applications for virtual try on features and 38.89% of the respondents use optical retail stores whereas only 8.33% of the respondents used online optical websites.

Table 4: Reliability Statistics

Items	Cronbach's Alpha	N of Items	Interpretation
Virtual try-on	.881	6	Reliable
Customer Satisfaction	.931	5	Reliable
Purchase intension	.929	5	Reliable

Source: Computed Data

Reliability analysis was conducted to assess the internal consistency of virtual try on, customer satisfaction and purchase intention. Since all the items Cronbach's Alpha are greater than .8 we conclude that there exists strong internal consistency for each item.

Correlation

H_0 : AI- powered virtual try on has no significant effect on customer satisfaction

H_1 : AI- powered virtual try on has no significant effect on customer satisfaction

Table 5: Correlations			
		VT	CS
VT	Pearson Correlation	1	.779**
	Sig. (2-tailed)		.000
	N	144	144
CS	Pearson Correlation	.779**	1
	Sig. (2-tailed)	.000	
	N	144	144
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Computed Data

From the table we infer that Pearson correlation value is 0.779.Hence there is a strong positive correlation between AI powered virtual try on technology and customer satisfaction.

Simple Linear Regression

H_0 : Customer satisfaction has no significant influence on purchase intention towards spectacles

H_1 : Customer satisfaction has a significant influence on purchase intention towards spectacles

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df2	Sig. F Change
1	.816 ^a	.666	.664	1.85640	.666	283.170	1	142	.000

a. Predictors: (Constant), CS Source: Computed Data

A simple linear regression analysis was conducted to examine the effect of customer satisfaction on purchase intention. There is a strong positive correlation between the independent and dependent variables and 66% of the variation in purchase intention is explained by customer satisfaction.

Table 7: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	975.861	1	975.861	283.170	.000 ^b
	Residual	489.361	142	3.446		
	Total	1465.222	143			

a. Dependent Variable: Purchase Intension

b. Predictors: (Constant), Customer satisfaction Source: Computed Data

From the above table we conclude that the regression model is statistically significant, that is the independent variable has a significant effect on the dependent variable

Table 8: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.951	1.164		2.536	.012
	CS	.896	.053	.816	16.828	.000

a. Dependent Variable: PS Source: Computed Data

The simple linear regression model is given by Purchase intention = 32.951+0.896 (Customer satisfaction)

Suggestions

- Optical retailers should continue to invest in AI-powered Virtual Try-On technology and improve its accuracy so that customers can confidently select spectacle frames that best suit their preferences.
- Since customer satisfaction has a significant influence on purchase intention, retailers should focus on delivering a smooth, personalized, and user-friendly Virtual Try-On experience to encourage customers to complete their purchases.

- As the majority of respondents experienced Virtual Try-On through mobile applications, retailers should give greater attention to enhancing the performance, usability, and features of their mobile platforms.
- Employees should be trained to assist customers in using AI-powered Virtual Try-On effectively, especially those who are unfamiliar with the technology. This can improve customers' confidence and overall shopping experience.
- Retailers should regularly collect customer feedback on the Virtual Try-On experience and use it to make continuous improvements, ensuring that the technology remains aligned with customers' expectations and changing market needs.

Conclusion

The growing adoption of AI-powered Virtual Try-On is transforming the way customers select spectacles by making the shopping process more convenient, interactive, and personalized. The findings of this study indicate that customers generally have a positive perception of AI-powered Virtual Try-On technology and that it contributes meaningfully to their overall shopping experience. The study further establishes that AI-powered Virtual Try-On is positively associated with customer satisfaction, while customer satisfaction, in turn, has a significant influence on purchase intention. These findings suggest that technological innovation alone is not sufficient to encourage purchase decisions. Instead, the value of AI-powered Virtual Try-On lies in its ability to create a satisfying customer experience that builds confidence during the spectacle selection process. As digital technologies continue to reshape the optical retail industry, retailers should focus not only on adopting AI-based solutions but also on enhancing the quality and usability of these technologies to meet customer expectations. Overall, the study contributes to the understanding of AI-powered Virtual Try-On in optical retail and highlights its potential as an effective tool for improving customer satisfaction and encouraging purchase intention. The findings may also serve as a useful reference for optical retailers seeking to strengthen customer engagement through technology-enabled retail experiences.

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