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Research Article

Understanding Consumer Acceptance of Virtual Reality Try-On Features in Apparel E-Commerce: A Pilot Study Approach

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Abstract: The pilot study investigation examines that consumer acceptance of Virtual Reality (VR) try-on technology is transformed consumers way to interact in apparel E-commerce. This innovation is enabling consumers to visualize garments in simulated environment which helps to reduce uncertainty and enhancing shopping experiences. This study evaluates six constructs: Perceived ease of use, Perceived usefulness, Attitude, Behavioral Intention, Purchase intention and trust. A pilot survey was conducted 100 respondents to assess reliability and validity of the measurement instrument which leads to large scale data collection. Data were analyzed by Smart PLS (4.1.1.7). the results show the satisfactory internal consistency reliability with Cronbach's alpha and composite Reliability under recommended values. Convergent validity was confirmed using Average Variance Extracted (AVE) values. Discriminant Validity was supported by Fornell-Larcker criterion. Overall, the pilot study provides a strong foundation for examining consumer adoption of immersive technologies in apparel e-commerce industry.

Keywords: Virtual Reality Try-on, Technology Acceptance Model (TAM), Behavioral Intention, Purchase Intention, Apparel E-commerce, Trust.

INTRODUCTION

The rapid growth of e-commerce in the apparel industry has completely changed the mindset of consumers that how to find the, evaluate and buy the suitable clothes. Even with its convenience, the online apparel industry face lots of challenges such as sizing issue, lack of physical interaction, issue in appearance and fit check, high return rates. This limitation mostly reduces the consumer trust and satisfaction level which affect purchasing decisions, trust and create critical concerns for online retailers.

To tackle this problem the Artificial intelligence technologies virtual reality and augmented reality try-on features has come to rescue as an innovative solution. The VR try-on features allow the consumers to visualize the garments on their stimulated body and digital avatar, which provides an immersive and interactive shopping experiences same as in physical stores. It helps consumers to find the perfect size and how the garments look on them without making the purchase. VR try-on features have an ability to increase the confidence making decisions, trust and influence their behaviors and satisfaction level.

Even with widespread industry utilization consumers are not fully accept the VR try-on technology in digital markets. The main reason not to accept these emerging technologies are trust in technology, social influence, limited sources, lack of knowledge plays a crucial role to determine that consumers are not willing to adopt these technologies. Most of the consumers still thinks that the VR technologies are complicated, unnecessary, ineffective, and lack of return the investment for retailers.

Considering this situation, this study aims to understand the main key factors which influence consumer acceptance of VR try-on features in online apparel industry. By adopting a pilot study approach, this research provides initial observed understanding that how the consumers adopt and response to VR try -on technology. This pilot study is particularly valuable for emerging research area as well as they help to validate test, constructs, assess the model feasibility and identify the mythological problems before conducting in the large-scale investigations and large populations.

LITERATURE REVIEW

Damian-Okoro & Harry (2025) examined that augmented reality majorly improves consumer experiences and stretching the online shopping outcomes it also highlights the augmented reality growth in e-commerce in Nigeria. Survey based research shows that positivist approach uses in this research and hypotheses shows 0.05 significance level. However limited attention given to developing country and in future work suggested a broader term and personalization in artificial intelligence technologies.

According to Priyanka Toprani (2025) augmented reality increase consumer engagement by enabling real time visualization and detailed product specifications.in this study exploratory research was used to describe the role of consumer satisfaction level and involvement.in future need to explore empirical testing which helps to analyse the consumer intention with validated scales.

Yanlei Gao & Jingwen liang (2025) suggested that artificial intelligence try-on features improve shopping confidence and reduce unreliability. It also helps to strengthens adoption intention when experience quality is strong. Despite this contribution there needs to work more on trust and privacy concern in different fashion industries.

Maria Nascimento Cunha & Oleksandr P. krupskyi (2025) examined that augmented reality improves consumer interaction, quality and purchase support by enabling richer products knowledge. The study needs to improve standardised measure and cross-cultural comparative studies.

Vafaei-Zadeh, Nikbin, Wong, et al. (2025) explored the trust related factors and perceived performance to operate suitable consumers outcomes and experience quality matters. More studies need to be explored in retail try-on and omnichannel shopping.

According to Indiani, Keshminder, et al. (2025) e-commerce platforms have potential in SMEs depends on combined strategy, latest technology and capabilities factors. Empirical testing across the region and inclusion of immersive technology need to be explored.

Baliya, Chaudhary & jain (2024) investigated when usefulness and ease of use are strong the augmented reality helps to improve consumer buying decisions, boost the confidence and purchase related outcomes. In this study the structured evaluation approach was used and TAM based integration with trust improve the consumer experience perspectives. It also needs strong evidence for long term adoption and consumer differences.

K.D. V Prasad & Tanmoy De (2024) examined the meditating mechanism organisational through Generative artificial intelligence drives transformation. They examine the AI effect with mediation analysis. More studies need to focus on context specific models expand variables and cross- industry validation.

According to Sujood (2024) behavioral intention is strongly co related by perceive benefits, ease of use, and user willingness. This study based on adoption-intention approach. There remains a lack of more moderator testing such as, demographics, experiences and facilitating conditions.

Akgul, Uymaz & Uymaz (2024) examined that satisfying the perception influence the continuance intentions it also highlights the post adoption factors. This study needs to explore and tested immersive AR and VR try-on features across the different industries.

Fhatani Khoza (2024) investigated that adoption is not only direct effects indeed it also strengthens mediating and moderating paths explanatory powers. In this study the broader samples and experiences with trust mechanisms is needed.

Maria-Eleni loannou (2023) suggested that augmented reality support the transformation by enhancing immersive experience and decrease the purchase doubtfulness. Few studies have explored deeper empirical work and privacy risk handling in retail categories.

Jeon. Ali & Lee (2019) examined that the main adoption variables are significantly predict intention, it also highlights the importance of perceived value and usefulness. The area needs to be explored immersive AR and VR try-on features, trust and privacy variables.

THEORETICAL FRAMEWORK

The current study is embedded in a well-established theoretical framework, which explain technology acceptance, user intention, trust and buying behavior in digital environment. specifically, this pilot study integrates the Technology Acceptance Model (TAM) and trust theory to understand consumer acceptance of Virtual reality try-on features in apparel e-commerce industry.

- **Technology Acceptance Model**

The Technology Acceptance Model (TAM) proposed by Davis 1989, is one of the most widely used theories to explain user acceptance of new technologies. This model explains how user's beliefs about a systems functionality influence their attitudes and intention to use the technology.

In TAM, perceived ease of use (PEOU) refers to the degree to which a person believes that using a technology will be free of effort, while perceived usefulness (PU) refers to the scope to which a technology enhances their task performance. these perceptions shape users' attitudes (ATT) toward the technology, which subsequently influence behavioral intentions (BI).

In apparel industry TAM is highly relevant because the consumer evaluiate that the VR system is easy to operate and helps them for better purchase decision. If VR try-on technology is easy to use so that consumers are more likely to develop significant attitude and intention to adopt it.

Accordingly, TAM supports the relationship between PEOU, PU, attitude and behavioral intention in this pilot study.
Total 6 constructs were used perceived ease of use (PEOU), perceived usefulness (PU), Attitude towards VR try-on (ATT), Trust, behavioral intention (BI), purchase intention (PI)

- **Trust Theory**

Trust theory explains consumer behavior in technological- supported and digital environment where uncertainty, risk, and lack of physical interaction exist. Trust refers to consumers' confidence that a technology is reliable, secure, accurate, and capable of fulfilling its commitment.

In online apparel shopping consumer often face riskiness regarding product fits, visual accuracy and data privacy. Virtual try-on features add another layer of technical complexity, making trust critical for purchase decisions.
In this study trust in virtual reality try-on technology reflects consumer belief that this immersive experience represents accurate apparel product, reliable, and does not leak personal data. When the trust is high the consumer is willing to buy the products an increase their behavioral intention. It also increasing their purchase intention.

- **Integration of TAM and Trust Theory**

The integration of TAM and trust theory provides a comprehensive explanation of consumer acceptance of VR try-on features, where TAM explain acceptance of usability and performance, trust theory explains the risk-reducing and confidence building aspects of virtual reality technology.
This integrative theoretical approach is particularly appropriate for pilot study because it shows the balance explanatory power and model simplicity.

OBJECTIVE OF THE STUDY

- To examine how perceived ease of use and perceived usefulness of VR try-on features influence consumers' attitude towards using VR try-on features in apparel e-commerce.
- To investigate how attitude and trust towards VR try-on technology affect consumers' behavioral intention to use VR try-on features.
- To assess how behavioral intention towards VR try-on features influences consumers' purchase intention in online apparel shopping.

RESEARCH METHODOLOGY

- **Research Design**

  This study employs quantitative approach and cross-sectional research design using a pilot study approach to pre-test and refine the research instruments which help to examine consumer acceptance of Virtual reality (VR) try-on features in apparel industry.

- **Sample and Data Collection**

  Data were collected from the VR try-on features experiencing users in e-commerce platforms. A structured questionnaire was administered using an online survey method. The sample size is taken 100 participants data which are adequate for pilot study. The questionnaire consisted of main constructs with multiple items measured on 7 Point Likert scale ranging from strongly disagree (1) to strongly agree (7).

- **Measurement Instruments**

  All the constructs were measured using multi-items scales adapted from prior validated studies and modified as per the virtual reality try-on technology. A 7-point Likert scale ranging from strongly disagree to strongly agree was used.

- **Data Analysis Techniques**

  The proposed main study employs Partial Least Square Structural Equation Modelling (PLS-SEM 4.1.1.7). The pilot study data were analyzed using Smart PLS. The analysis focused on internal consistency reliability and indicator performance, which considered appropriate and sufficient for pilot studies.

DATA ANALYSIS

The pilot study was anlayzed using SmartPLS 4.1.1.7 was selected because it is suitable for exploratory research and ability to handle complex models. small sample size is adequate in this model. The analysis primarily focused on the measurement model.

MEASUREMENT MODEL ASSESSMENT

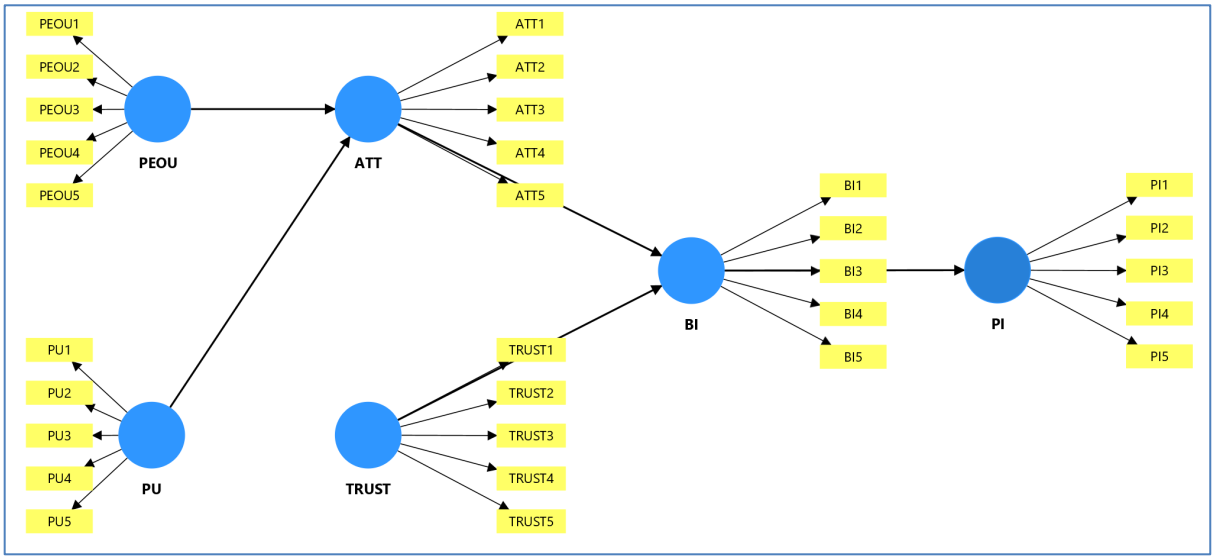

Figure 1: Measurement Model (PLS-SEM Algorithm)

- **Indicator Reliability**

Outer Loading were examined. all the items show factor loading above 0.70 which indicates acceptable indicator reliability so that no items required deletion.

Table :1 Factor Loading (Indicator Reliability)

	ATT	BI	PEOU	PI	PU	TRUST
ATT1	0.832					
ATT2	0.807					
ATT3	0.817					
ATT4	0.837					

ATT5	0.721					
BI1		0.812				
BI2		0.824				
BI3		0.730				
BI4		0.808				
BI5		0.786				
PEOU1			0.760			
PEOU2			0.858			
PEOU3			0.791			
PEOU4			0.849			
PEOU5			0.787			
PI1				0.845		
PI2				0.905		
PI3				0.878		
PI4				0.798		
PI5				0.753		
PU1					0.802	
PU2					0.918	
PU3					0.922	
PU4					0.929	
PU5					0.812	
TRUST1						0.815
TRUST2						0.711
TRUST3						0.861
TRUST4						0.884
TRUST5						0.791

- **Internal Consistency Reliability**

Both Cronbach alpha and Composite Reliability exceed the recommended range of 0.70. Values ranged from 0.852 to 0.925 for Cronbach's alpha, 0.859 to 0.940 for Composite Reliability (rho_a), 0.894 to 0.944 for Composite Reliability (rho_c). This range confirm the satisfactory internal consistency.

Table :2 Internal Consistency Reliability

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**
ATT	0.863	0.864	0.901
BI	0.852	0.859	0.894
PEOU	0.869	0.877	0.905
PI	0.898	0.940	0.921
PU	0.925	0.934	0.944
TRUST	0.872	0.890	0.907

- **Convergent Validity**

Average Variance Extracted (AVE) value ranged from 0.646 to 0.772, which exceed the recommended value 0.50. This indicates the constructs are explain more than 50% of the variance of their indicators.

Table: 3 Convergent Validity

	Average variance extracted (AVE)
ATT	0.646
BI	0.628
PEOU	0.656
PI	0.702
PU	0.772
TRUST	0.663

- **Discriminant Validity**

In Fornell- Larcker all the diagonal values are greater than and correlated below them, therefore discriminant validity is established.

Table: 4 Discriminant Validity

	ATT	BI	PEOU	PI	PU	TRUST
ATT	0.804					
BI	0.333	0.793				
PEOU	0.711	0.387	0.810			
PI	0.629	0.308	0.745	0.838		
PU	0.545	0.153	0.601	0.837	0.878	
TRUST	0.137	0.541	0.126	0.162	0.090	0.815

FINDINGS

The pilot study achieved its primary objectives of measurement instrument validation. And also find that all the constructs show satisfactory internal consistency reliability. Also, convergent validity was established, with AVE values satisfied their recommended ranges. Discriminant validity confirmed using Fornell-Larcker criterion. Fornell-Larcker results indicated acceptable discriminant validity. The structural relationship aligned with theoretical expectations which provides preliminary support for the conceptual model.

CONCLUSION

The pilot study was conducted to evaluate the reliability and validity of the measurement instrument which designed to assess consumer acceptance of Virtual Reality try-on technology in apparel industry. The result shows the satisfactory internal consistency with all constructs meeting recommended reliability values. Convergent validity was established through sufficient AVE values, and discriminant validity was performed by the Fornell-Larcker criterion.

Overall, the pilot study successfully fulfils their criteria of scale purification and validation. In main study we will examine the proposed hypotheses and evaluate the structural relationship in greater depth.

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