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Determinants of Consumer Acceptance of AI-Powered Virtual Try-On Technology in Online Fashion Commerce: An Extended Technology Acceptance Model Approach

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ABSTRACT

AI-powered virtual try-on technology has emerged as an innovative solution to enhance online fashion shopping experiences. This study aims to examine consumer acceptance of virtual try-on technology by extending the Technology Acceptance Model (TAM) with perceived realism, perceived enjoyment, and trust. A quantitative approach was conducted using data from 500 respondents selected through purposive sampling. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.0. The results indicate that perceived realism significantly influences perceived usefulness and trust. Moreover, perceived enjoyment and perceived usefulness positively affect attitude toward virtual try-on, while attitude and trust significantly influence purchase intention. This study emphasizes the importance of realistic, enjoyable, and trustworthy AI-based shopping experiences in increasing consumer adoption of virtual try-on technology.

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has transformed the digital commerce landscape, particularly in the online fashion industry. AI-powered technologies have enabled retailers to provide personalized shopping experiences, intelligent recommendations, and immersive interactions that improve consumer engagement and purchasing decisions (Zhang and Liu, 2026). Among these innovations, AI-powered Virtual Try-On (VTO) technology has emerged as one of the most promising solutions for addressing the limitations of online fashion

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shopping. By allowing consumers to virtually visualize apparel, shoes, and accessories before purchasing, VTO technology reduces uncertainty regarding product fit, appearance, and style while enhancing the overall shopping experience (Farid and Pawar, 2026; Haran *et al.*, 2026).

The growing adoption of AI-powered VTO has attracted increasing attention from both practitioners and researchers. Recent studies indicate that VTO technology helps consumers evaluate products more accurately, shortens product exploration time, and reduces purchase uncertainty, thereby contributing to higher customer satisfaction and lower product return rates (Kim *et al.*, 2026). Moreover, advancements in AI, computer vision, and augmented reality have enabled fashion retailers to deliver more realistic and interactive shopping experiences that strengthen consumer confidence during online purchasing (Khalid and Gong, 2026). These developments have encouraged many fashion retailers to integrate VTO technology into their digital commerce strategies as a means of improving customer experience and maintaining competitive advantage.

Despite its growing implementation, consumer acceptance of AI-powered VTO technology remains an important research issue. Existing studies have demonstrated that technological characteristics alone are insufficient to ensure user adoption because consumers' perceptions and psychological evaluations significantly influence their behavioral intentions (Davis, 1989; Venkatesh and Davis, 2000). The Technology Acceptance Model (TAM) proposes that perceived usefulness and perceived ease of use are fundamental determinants of technology acceptance (Davis Jr, 1986; Davis, 1989). Consequently, TAM has become one of the most widely adopted theoretical frameworks for explaining consumer acceptance of emerging digital technologies, including AI-enabled retail applications (Wu *et al.*, 2026).

Recent studies have extended TAM by incorporating additional psychological and technological constructs to better explain AI adoption in fashion e-commerce. For example, Alameri *et al.* (2026) integrated perceived value, perceived risk, and electronic word-of-mouth to explain consumers' adoption intentions toward AI-supported circular fashion services. Similarly, Hien *et al.* (2026) combined TAM with personal innovativeness, compatibility, self-efficacy, and curiosity to investigate consumers' intentions to adopt AI-integrated e-commerce platforms. Meanwhile, ElSayad and Mamdouh (2026) emphasized the important roles of trust and perceived usefulness in encouraging positive consumer behavior toward AI-powered retail applications.

In the context of virtual try-on technology, previous studies have primarily focused on technological performance, interactivity, immersion, and user experience. Baber, Baber and Narula (2026) investigated AR-based virtual try-on in luxury jewellery by integrating Flow Theory and the Stimulus–Organism–Response framework, whereas Mishra, Saxena, and Jain (2025) highlighted the importance of spatial presence and immersion in shaping luxury consumers' behavioral responses toward VTO technology. Likewise, Sony and Suresh (2026) demonstrated that realism, interactivity, and user-friendliness significantly enhance perceived usefulness and trust, which subsequently increase consumers' purchase intentions. Although these studies provide valuable insights, empirical research integrating perceived realism as an antecedent of both perceived usefulness and trust within an extended TAM framework remains limited, particularly in the context of AI-powered virtual try-on technology for online fashion commerce.

This study addresses this research gap by extending the Technology Acceptance Model through the inclusion of perceived realism, perceived enjoyment, and trust to explain consumers' purchase intentions toward AI-powered virtual try-on technology. Unlike previous studies that predominantly emphasize technological features or immersive experiences, this

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research proposes that the perceived realism of AI-generated virtual visualization serves as a fundamental determinant of consumers' cognitive evaluations and trust formation. Furthermore, perceived enjoyment is expected to strengthen consumers' positive attitudes toward using virtual try-on applications, ultimately encouraging purchase intention.

Accordingly, this study aims to examine the effects of perceived realism on perceived usefulness and trust, the effects of perceived usefulness and perceived enjoyment on consumers' attitudes toward AI-powered virtual try-on technology, and the influences of trust and attitude on purchase intention. The findings are expected to enrich the literature on technology acceptance in AI-enabled fashion commerce while providing practical implications for online fashion retailers in designing more realistic, enjoyable, and trustworthy virtual shopping experiences.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Theoretical Foundation

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was originally developed by Davis Jr (1986) to explain and predict users' acceptance of computer-based information systems. TAM proposes that an individual's intention to adopt a technology is primarily determined by two key beliefs, namely perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which an individual believes that using a particular technology will enhance performance, while perceived ease of use reflects the extent to which the technology is perceived as effortless to use (Davis Jr, 1986). The model was developed to provide both a theoretical explanation of technology acceptance behavior and a practical framework for evaluating user acceptance before technology implementation.

Davis (1989) further refined TAM by developing and validating reliable measurement scales for perceived usefulness and perceived ease of use. The study demonstrated that perceived usefulness has a stronger influence on users' behavioral intention than perceived ease of use, while perceived ease of use also serves as an antecedent of perceived usefulness. These findings established TAM as one of the most widely accepted theoretical frameworks for explaining technology adoption across various information system contexts.

To improve the explanatory power of TAM, Venkatesh and Davis (2000) proposed the Technology Acceptance Model 2 (TAM2), which incorporates social influence and cognitive instrumental processes as additional determinants of perceived usefulness and behavioral intention. Subsequently, Venkatesh *et al.* (2003) synthesized several prominent technology acceptance theories into the Unified Theory of Acceptance and Use of Technology (UTAUT), demonstrating that technology acceptance is influenced not only by technological characteristics but also by psychological, social, and contextual factors.

The increasing adoption of artificial intelligence (AI) in digital commerce has encouraged researchers to extend TAM by incorporating additional constructs that better explain consumer behavior. Alameri *et al.* (2026) extended TAM by integrating perceived value, perceived risk, and electronic word-of-mouth to explain consumers' intentions to adopt AI-supported circular fashion services. Likewise, Hien *et al.* (2026) combined TAM with personal innovativeness, compatibility, self-efficacy, and curiosity to investigate AI-integrated e-commerce adoption. Wu *et al.* (2026) also identified that perceived usefulness and perceived ease of use remain the core constructs of TAM, while trust and AI-related technological innovations have become increasingly important in explaining consumer behavior within contemporary e-commerce environments.

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Considering the characteristics of AI-powered virtual try-on technology, the present study adopts TAM as the primary theoretical foundation because it effectively explains consumers' cognitive evaluations before adopting new technologies. Furthermore, this study extends TAM by incorporating perceived realism, perceived enjoyment, and trust as additional constructs to better capture consumers' acceptance of AI-powered virtual try-on technology in online fashion commerce.

Hypothesis Development

Perceived Realism and Perceived Usefulness

Perceived realism reflects consumers' perceptions that AI-powered virtual try-on technology accurately represents product appearance, fit, and visual characteristics, thereby reducing uncertainty during online shopping. Higher levels of realism enable consumers to better evaluate fashion products before purchase, increasing the perceived benefits of using the technology. Previous studies have shown that realistic visualization improves shopping efficiency, strengthens confidence in product evaluation, and enhances the usefulness of virtual try-on systems (Kim *et al.*, 2026; Sony and Suresh, 2026). Furthermore, advancements in AI and computer vision have significantly improved the realism and effectiveness of virtual try-on applications, making them more valuable for online fashion consumers (Farid and Pawar, 2026; Khalid and Gong, 2026). Therefore, higher perceived realism is expected to enhance consumers' perceived usefulness of AI-powered virtual try-on technology.

H_1: *Perceived realism positively and significantly affects perceived usefulness.*

Perceived Realism and Trust

Trust plays a critical role in reducing consumers' uncertainty when purchasing fashion products online. Because consumers cannot physically examine products before purchase, realistic visualization generated by AI-powered virtual try-on technology becomes an important source of confidence. When virtual representations accurately reflect actual product characteristics, consumers are more likely to believe that the technology provides reliable information for decision making. Sony and Suresh (2026) found that visual realism significantly enhances consumer trust in virtual try-on applications. Similarly, Kim *et al.* (2026) reported that consumers expect accurate fit representation and reliability cues before relying on virtual try-on technology. Consequently, realistic visualization is expected to strengthen consumer trust toward AI-powered virtual try-on technology.

H_2: *Perceived realism positively and significantly affects trust.*

Perceived Enjoyment and Attitude Toward Virtual Try-On Technology

Perceived enjoyment refers to the extent to which consumers experience pleasure and enjoyment while using AI-powered virtual try-on technology. Beyond its functional benefits, virtual try-on offers interactive and immersive experiences that make online shopping more engaging. Previous studies have demonstrated that hedonic value, immersion, and enjoyable interactions positively influence consumers' psychological responses toward virtual try-on technology (Mishra, Saxena and Jain, 2025). Likewise, Baber, Baber and Narula (2026) found that immersive AR experiences enhance favorable consumer responses by increasing engagement and positive evaluations. Accordingly, consumers who perceive virtual try-on technology as enjoyable are more likely to develop positive attitudes toward its use.

H_3: *Perceived enjoyment positively and significantly affects attitude toward virtual try-on technology.*

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Perceived Usefulness and Attitude Toward Virtual Try-On Technology

The Technology Acceptance Model (TAM) proposes that perceived usefulness is one of the primary determinants of users' attitudes toward adopting new technologies (Davis Jr, 1986; Davis, 1989). When consumers believe that AI-powered virtual try-on technology improves shopping performance, facilitates product evaluation, and supports better purchase decisions, they are more likely to develop favorable attitudes toward the technology. Recent studies on AI-enabled retail and fashion e-commerce consistently confirm that perceived usefulness significantly contributes to positive consumer evaluations and technology acceptance (Alameri *et al.*, 2026; Hien *et al.*, 2026; Wu *et al.*, 2026). Therefore, perceived usefulness is expected to positively influence consumers' attitudes toward virtual try-on technology.

***H_4**: Perceived usefulness positively and significantly affects attitude toward virtual try-on technology.*

Trust and Purchase Intention

Trust represents consumers' confidence that AI-powered virtual try-on technology provides accurate, reliable, and dependable information during online shopping. In fashion e-commerce, trust becomes particularly important because consumers cannot directly inspect product quality before making purchasing decisions. Previous studies have consistently demonstrated that trust is a key determinant of behavioral intention in AI-enabled retail environments (ElSayad and Mamdouh, 2026). Similarly, Sony and Suresh (2026) found that trust significantly increases consumers' purchase intentions when using virtual try-on technology, even exhibiting a stronger influence than perceived usefulness. Therefore, higher consumer trust is expected to encourage stronger purchase intentions toward fashion products supported by AI-powered virtual try-on technology.

***H_5**: Trust positively and significantly affects purchase intention.*

Attitude Toward Virtual Try-On Technology and Purchase Intention

Attitude toward virtual try-on technology reflects consumers' overall positive or negative evaluation of using AI-powered virtual try-on applications during online shopping. According to the Technology Acceptance Model, favorable attitudes toward a technology encourage stronger behavioral intentions to use that technology (Davis, 1989; Venkatesh and Davis, 2000). Recent studies on AI adoption and fashion e-commerce also indicate that positive attitudes significantly predict consumers' intentions to adopt AI-enabled shopping technologies (Alameri *et al.*, 2026; Hien *et al.*, 2026). Therefore, consumers who develop positive attitudes toward AI-powered virtual try-on technology are more likely to demonstrate stronger purchase intentions in online fashion commerce.

***H_6**: Attitude toward virtual try-on technology positively and significantly affects purchase intention.*

RESEARCH METHODS

This study employed a quantitative research approach to examine consumer acceptance of AI-powered virtual try-on technology in online fashion commerce. A cross-sectional survey design was adopted to collect empirical data from consumers who had experience shopping for fashion products through online fashion platforms and were familiar with virtual try-on technology.

The target population consisted of consumers who had previously purchased fashion products online and had experience using or interacting with AI-powered virtual try-on technology. A purposive sampling technique was employed to ensure that respondents met the predefined selection criteria. Specifically, respondents were required to (1) be at least 17 years old, (2) have purchased fashion products through Shopee Fashion, Zalora, official fashion

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brand websites, or other online fashion platforms within the last 12 months, and (3) have used or experienced AI-powered virtual try-on technology before completing the questionnaire. A total of 500 valid responses were collected and included in the final analysis.

Data were collected using a structured online questionnaire administered through Google Forms (Google, no date). The questionnaire consisted of two sections. The first section collected respondents' demographic information, including gender, age, education level, occupation, monthly income, online shopping frequency, and the online fashion platform most frequently used (i.e., Shopee Fashion, Zalora, official fashion brand websites, or other online fashion platforms) (Rambe, 2017; Daguimol, 2023; Kamaliah, 2025).

The second section measured the research constructs, namely perceived realism, perceived usefulness, perceived enjoyment, trust, attitude toward virtual try-on technology, and purchase intention. All measurement items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Data analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.0. This analytical approach was employed to evaluate the proposed research model and test the hypothesized relationships among the study constructs.

Table 1. Respondent Profile

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	221	44,2
	Female	279	55,8
Age (years)	17–25	168	33,6
	26–35	214	42,8
	36–45	84	16,8
	>45	34	6,8
Education Level	High school	109	21,8
	Diploma	52	10,4
	Bachelor's degree	271	54,2
	Postgraduate	68	13,6
Occupation	Student	93	18,6
	Government employee	48	9,6
	Private employee	216	43,2
	Entrepreneur	87	17,4
	Others	56	11,2
Monthly Income	< IDR 3 million	119	23,8
	IDR 3–5 million	164	32,8
	IDR 5–10 million	143	28,6
	> IDR 10 million	74	14,8
Online Shopping Frequency	1–2 times/month	156	31,2
	3–5 times/month	207	41,4
	6–10 times/month	89	17,8
	>10 times/month	48	9,6
Most Frequently Used Online Fashion Platform	Shopee Fashion	279	55,8
	Zalora	104	20,8
	Official fashion brand websites	71	14,2
	Other online fashion platforms	46	9,2

Source: Processed Data (2026)

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DATA ANALYSIS RESULTS & DISCUSSION

Measurement Model Assessment

Outer Loadings

Table 2 presents the outer loading values for all measurement indicators. The results indicate that all indicators have loading values ranging from 0,777 to 0,864; exceeding the recommended threshold of 0,700 (Haryono, 2016). These findings demonstrate that all indicators adequately represent their respective latent constructs and satisfy the indicator reliability requirement.

Table 2. Outer Loadings

	Attitude Toward Virtual Try-On (ATT)	Perceived Enjoyment (PE)	Perceived Realism (PR)	Perceived Usefulness (PU)	Purchase Intention (PI)	Trust (TR)
ATT2	0,777					
ATT3	0,791					
ATT4	0,784					
ATT5	0,783					
PE1		0,852				
PE2		0,840				
PE3		0,860				
PE4		0,830				
PE5		0,831				
PI1					0,801	
PI2					0,808	
PI3					0,819	
PI4					0,780	
PI5					0,796	
PR1			0,837			
PR2			0,861			
PR3			0,862			
PR4			0,864			
PR5			0,861			
PU1				0,779		
PU2				0,801		
PU3				0,820		
PU4				0,818		
PU5				0,796		
TR1						0,796
TR2						0,802
TR3						0,800
TR4						0,818
TR5						0,801

Source: Processed Data (2026)

Reliability and Convergent Validity

The reliability and convergent validity results are presented in Table 3. Cronbach's Alpha values range from 0,791 to 0,910, while Composite Reliability values range from 0,864 to 0,933, indicating satisfactory internal consistency reliability. Furthermore, all Average

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Variance Extracted (AVE) values range from 0,614 to 0,735, exceeding the recommended threshold of 0,500 (Haryono, 2016; Hair Jr *et al.*, 2021; Hair Jr. *et al.*, 2021). Therefore, all constructs are considered reliable and possess adequate convergent validity.

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude Toward Virtual Try-On (ATT)	0,791	0,791	0,864	0,614
Perceived Enjoyment (PE)	0,898	0,899	0,924	0,710
Perceived Realism (PR)	0,910	0,910	0,933	0,735
Perceived Usefulness (PU)	0,862	0,862	0,901	0,645
Purchase Intention (PI)	0,860	0,862	0,899	0,642
Trust (TR)	0,863	0,864	0,901	0,645

Source: Processed Data (2026)

Discriminant Validity

Discriminant validity was evaluated using the Heterotrait-Monotrait Ratio (HTMT), as presented in Table 4. All HTMT values are below the recommended threshold of 0,900, indicating that each construct is empirically distinct from the others (Haryono, 2016; Hair Jr *et al.*, 2021; Hair Jr. *et al.*, 2021). Accordingly, the discriminant validity requirement has been successfully achieved.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	Attitude Toward Virtual Try-On (ATT)	Perceived Enjoyment (PE)	Perceived Realism (PR)	Perceived Usefulness (PU)	Purchase Intention (PI)	Trust (TR)
Attitude Toward Virtual Try-On (ATT)						
Perceived Enjoyment (PE)	0,551					
Perceived Realism (PR)	0,281	0,038				
Perceived Usefulness (PU)	0,441	0,036	0,738			
Purchase Intention (PI)	0,582	0,296	0,478	0,454		
Trust (TR)	0,298	0,072	0,725	0,586	0,547	

Source: Processed Data (2026)

Collinearity Assessment

Collinearity was assessed using the variance inflation factor (VIF). As shown in table 5, all VIF values range from 1,534 to 2,577; which are well below the recommended threshold of 5,000 (Haryono, 2016; Hair Jr *et al.*, 2021; Hair Jr. *et al.*, 2021). Therefore, multicollinearity is not a concern in the measurement model.

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Table 5. Outer VIF Values

	VIF
ATT2	1,534
ATT3	1,605
ATT4	1,575
ATT5	1,566
PE1	2,308
PE2	2,219
PE3	2,494
PE4	2,166
PE5	2,211
PI1	1,857
PI2	1,912
PI3	1,958
PI4	1,779
PI5	1,800
PR1	2,250
PR2	2,577
PR3	2,497
PR4	2,574
PR5	2,539
PU1	1,738
PU2	1,878
PU3	1,990
PU4	1,998
PU5	1,811
TR1	1,873
TR2	1,866
TR3	1,812
TR4	1,951
TR5	1,865

Source: Processed Data (2026)

Structural Model Assessment

Coefficient of Determination

The explanatory power of the structural model was evaluated using the Adjusted R Square, as presented in Table 6. The adjusted R^2 value for Perceived Usefulness is 0,427; indicating that 42,7% of the variance in perceived usefulness is explained by perceived realism. The adjusted R^2 value for Trust is 0,413; indicating that 41,3% of the variance in trust is explained by perceived realism. Furthermore, Attitude Toward Virtual Try-On has an adjusted R^2 value of 0,346; suggesting that 34,6% of its variance is jointly explained by perceived usefulness and perceived enjoyment. Finally, the adjusted R^2 value for Purchase Intention is 0,362; indicating that 36,2% of its variance is explained by attitude toward virtual try-on technology and trust. Overall, the proposed model demonstrates moderate explanatory power.

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Table 6. R Square

	R Square	R Square Adjusted
Attitude Toward Virtual Try-On (ATT)	0,349	0,346
Perceived Usefulness (PU)	0,428	0,427
Purchase Intention (PI)	0,365	0,362
Trust (TR)	0,414	0,413

Source: Processed Data (2026)

Predictive Relevance

Predictive relevance was assessed using the blindfolding procedure. As shown in Table 7 and Figure 1, the Q^2 values for Attitude Toward Virtual Try-On (0,211), Perceived Usefulness (0,273), Purchase Intention (0,231), and Trust (0,264) are all greater than zero. These findings indicate that the proposed structural model possesses satisfactory predictive relevance.

Table 7. Q Square

	SSO	SSE	Q^2 (=1-SSE/SSO)
Attitude Toward Virtual Try-On (ATT)	2000,000	1578,818	0,211
Perceived Enjoyment (PE)	2500,000	2500,000	
Perceived Realism (PR)	2500,000	2500,000	
Perceived Usefulness (PU)	2500,000	1817,043	0,273
Purchase Intention (PI)	2500,000	1921,956	0,231
Trust (TR)	2500,000	1839,211	0,264

Source: Processed Data (2026)

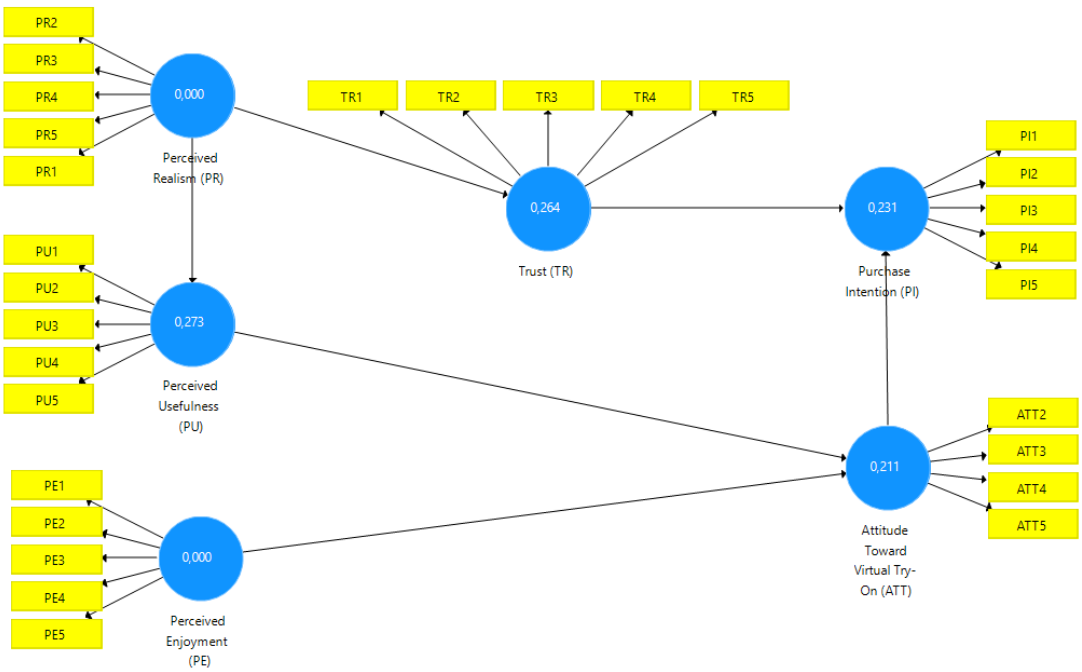

Figure 1. Blindfolding
Source: Processed Data (2026)

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Hypothesis Testing

The structural relationships among the research constructs were evaluated using the bootstrapping procedure in SmartPLS 3.0. As presented in Table 8, all proposed hypotheses are supported because the path coefficients are positive, the t-statistics exceed the recommended threshold of 1,960, and the p-values are below 0,050 (Haryono, 2016; Hair Jr *et al.*, 2021; Hair Jr. *et al.*, 2021).

Perceived realism has a positive and significant effect on perceived usefulness (O = 0,654; T = 25,457; p = 0,000) and trust (O = 0,643; T = 26,460; p = 0,000). In addition, perceived enjoyment (O = 0,466; T = 13,976; p = 0,000) and perceived usefulness (O = 0,364; T = 10,683; p = 0,000) significantly influence attitude toward virtual try-on technology. Furthermore, attitude toward virtual try-on technology (O = 0,387; T = 10,961; p = 0,000) and trust () = 0,378; T = 10,740; p = 0,000) significantly influence purchase intention. Therefore, H1, H2, H3, H4, H5, and H6 are supported.

Table 8. Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Perceived Realism (PR) -> Perceived Usefulness (PU)	0,654	0,657	0,026	25,457	0,000
Perceived Realism (PR) -> Trust (TR)	0,643	0,647	0,024	26,460	0,000
Perceived Enjoyment (PE) -> Attitude Toward Virtual Try-On (ATT)	0,466	0,470	0,033	13,976	0,000
Perceived Usefulness (PU) -> Attitude Toward Virtual Try-On (ATT)	0,364	0,364	0,034	10,683	0,000
Trust (TR) -> Purchase Intention (PI)	0,378	0,380	0,035	10,740	0,000
Attitude Toward Virtual Try-On (ATT) -> Purchase Intention (PI)	0,387	0,389	0,035	10,961	0,000

Source: Processed Data (2026)

Discussion

The findings of this study support the extended Technology Acceptance Model (TAM) in explaining consumer acceptance of AI-powered virtual try-on technology in online fashion commerce. Unlike the original TAM, which primarily emphasizes perceived usefulness and perceived ease of use as determinants of technology acceptance (Davis Jr, 1986; Davis, 1989), this study incorporates perceived realism, perceived enjoyment, and trust to better capture consumers' evaluations of AI-powered virtual try-on applications. The significant relationships observed in the structural model indicate that the proposed extension successfully explains consumers' purchase intentions toward AI-powered virtual try-on technology.

The results reveal that perceived realism significantly influences perceived usefulness (O = 0,654; T = 25,457; p = 0,000), supporting H1. This finding suggests that consumers perceive AI-powered virtual try-on technology as more useful when the virtual visualization accurately represents the actual appearance, fit, and characteristics of fashion products. The result is consistent with Kim *et al.* (2026), who argued that realistic visualization improves consumers' ability to evaluate products before purchase. Similarly, Sony and Suresh (2026) reported that

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visual realism enhances the effectiveness of virtual try-on systems by reducing uncertainty during online shopping. Moreover, (Farid and Pawar, 2026; Khalid and Gong, 2026) emphasized that advances in AI and computer vision technologies have substantially improved the realism of virtual try-on applications, thereby increasing their practical value for consumers. These findings also reinforce the TAM proposition that consumers are more likely to adopt technologies they perceive as beneficial (Davis, 1989).

The findings further demonstrate that perceived realism positively affects trust (O = 0,643; T = 26,460; p = 0,000), supporting H2. This indicates that realistic product visualization strengthens consumers' confidence in AI-powered virtual try-on technology. When virtual representations closely resemble actual products, consumers are more likely to trust the technology and rely on it during purchase decision-making. This result supports Sony and Suresh (2026), who found that realism is a major determinant of consumer trust in virtual try-on applications. Likewise, Kim *et al.* (2026) highlighted that consumers expect accurate visualization and reliable product representation before relying on AI-based fashion technologies. Therefore, improving visualization realism not only enhances functional value but also builds consumer trust in AI-powered shopping experiences.

The analysis also indicates that perceived enjoyment significantly influences attitude toward virtual try-on technology (O = 0,466; T = 13,976; p = 0,000), confirming H3. This finding implies that enjoyable and immersive shopping experiences encourage consumers to develop positive attitudes toward AI-powered virtual try-on applications. Interactive visualization and engaging virtual experiences increase consumers' emotional responses during online shopping. This finding is consistent with Mishra, Saxena and Jain (2025), who reported that hedonic value and immersion positively influence consumer responses toward virtual try-on technology. Similarly, Baber, Baber and Narula (2026) demonstrated that immersive augmented reality experiences increase consumer engagement and favorable evaluations of virtual shopping technologies.

The results further reveal that perceived usefulness positively affects attitude toward virtual try-on technology (O = 0,364; T = 10,683; p = 0,000), supporting H4. Consumers who believe that AI-powered virtual try-on technology facilitates product evaluation and improves shopping performance tend to develop more favorable attitudes toward its use. This finding is fully consistent with the Technology Acceptance Model proposed by (Davis Jr, 1986; Davis, 1989), which identifies perceived usefulness as one of the primary determinants of technology acceptance. Moreover, recent studies by (Alameri *et al.*, 2026; Hien *et al.*, 2026; Wu *et al.*, 2026) similarly concluded that perceived usefulness remains a fundamental predictor of consumer acceptance in AI-enabled digital commerce.

Furthermore, trust significantly influences purchase intention (O = 0,378; T = 10,740; p = 0,000), confirming H5. Consumers are more likely to purchase fashion products when they believe that AI-powered virtual try-on technology provides accurate, reliable, and dependable product information. Because online fashion shopping involves considerable uncertainty regarding product fit and appearance, trust becomes an essential factor influencing purchasing decisions. This finding supports ElSayad and Mamdouh (2026), who identified trust as an important predictor of behavioral intention in AI-enabled retail. Likewise, Sony and Suresh (2026) found that trust exerts a significant positive influence on consumers' purchase intentions when using virtual try-on technology.

Finally, the results demonstrate that attitude toward virtual try-on technology positively affects purchase intention (O = 0,387; T = 10,961; p = 0,000), supporting H6. This finding indicates that consumers who hold favorable attitudes toward AI-powered virtual try-on technology are more likely to purchase fashion products through online platforms. The result

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is consistent with the Technology Acceptance Model, which proposes that positive attitudes toward technology strengthen behavioral intention (Davis, 1989; Venkatesh and Davis, 2000). Furthermore, (Alameri *et al.*, 2026; Hien *et al.*, 2026) similarly reported that positive attitudes significantly encourage consumers to adopt AI-enabled shopping technologies. Therefore, fostering positive consumer attitudes through useful, realistic, and enjoyable virtual try-on experiences can substantially increase purchase intention in online fashion commerce.

Overall, the findings confirm that extending TAM with perceived realism, perceived enjoyment, and trust provides a more comprehensive explanation of consumer acceptance of AI-powered virtual try-on technology. Among the proposed relationships, perceived realism exhibits the strongest effects on both perceived usefulness and trust, highlighting the critical importance of realistic AI-generated visualization in shaping consumers' cognitive evaluations and purchase decisions within online fashion commerce.

CONCLUSION

This study examined consumer acceptance of AI-powered virtual try-on technology in online fashion commerce by extending the Technology Acceptance Model (TAM) with perceived realism, perceived enjoyment, and trust. The findings indicate that all proposed hypotheses are supported. Perceived realism significantly enhances perceived usefulness and trust, while perceived enjoyment and perceived usefulness positively influence consumers' attitudes toward virtual try-on technology. Furthermore, trust and attitude toward virtual try-on technology significantly increase consumers' purchase intention. These findings confirm that extending TAM provides a more comprehensive understanding of consumer acceptance of AI-powered virtual try-on technology. In particular, perceived realism emerges as the most influential antecedent, emphasizing the importance of realistic AI-generated visualization in shaping consumers' cognitive evaluations and purchase decisions.

From a managerial perspective, online fashion retailers should prioritize the development of highly realistic AI-powered virtual try-on features to improve consumers' perceptions of usefulness and trust. Retailers should also design engaging and interactive virtual shopping experiences that enhance consumer enjoyment and foster positive attitudes toward the technology. Investments in advanced artificial intelligence, computer vision, and augmented reality technologies that deliver accurate product visualization can strengthen consumer confidence, improve shopping experiences, and ultimately increase purchase intention. Consequently, integrating AI-powered virtual try-on technology into digital commerce strategies may provide fashion retailers with a sustainable competitive advantage.

Despite its contributions, this study has several limitations. First, the study employed a cross-sectional design, which limits the ability to observe changes in consumer perceptions and behavior over time. Second, the research focused exclusively on consumers of online fashion commerce, thereby limiting the generalizability of the findings to other retail sectors. Third, the proposed model examined only perceived realism, perceived enjoyment, perceived usefulness, trust, attitude, and purchase intention. Future research is encouraged to incorporate additional variables, such as perceived ease of use, perceived risk, technology readiness, AI anxiety, or social influence, to provide a more comprehensive understanding of consumer acceptance of AI-powered virtual try-on technology across different industries and cultural contexts.

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