

New Rooms for Beauty Trial: AR Virtual-Try-On adoption in Beauty & Personal Care Sector

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ABSTRACT

The study aims to examine the consumers' adoption of Augmented Reality (AR) enabled Virtual-try-on (VTO) technology in the beauty and personal care industry using the Technology Acceptance Model (TAM) as a theoretical background. Additionally, it explores the role of value- 'openness to change' in shaping this adoption intention. Furthermore, data were collected from 240 respondents who had prior experience or knowledge of Virtual Try-on (VTO) using a scenario-based survey, revealing factors (e.g., Perceived Ease of Use (PEOU) and Perceived Usefulness (PU), with openness to change as a value throughout the entire framework. The findings reveal that, except for openness to change, the remaining two constructs, PEOU and PU, have a substantial impact on adoption intention, along with reflecting a full mediation effect between openness to change and adoption intention. The study's novelty lies in integrating the 'openness to change' into a TAM framework for understanding the AR-enabled VTO adoption process.

Keywords: Augmented Reality (AR), Virtual Try-On technology (VTO), Beauty & Personal Care Industry, Consumer's Adoption Intention, Technology Acceptance Model (TAM).

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INTRODUCTION

The cosmetics, beauty, and personal care sectors are seeing a fast digital revolution, with artificial intelligence (AI) and machine learning (ML) significantly boosting customer interaction and operational efficiency (Ameen, Hosany and Tarhini, 2021). AI-driven innovations, such as virtual try-on tools, algorithmic product suggestions, augmented reality (AR) beauty apps, and chatbot-assisted consultations, are transforming customer engagement by enabling firms to gain a deeper understanding of consumers in the beauty industry. Today, AI- and AR-enabled virtual try-on tools have assumed roles similar to those of expert dermatologists, enabling consumers to get product recommendations anywhere, anytime. Virtual face scanning and cosmetic try-ons have fundamentally transformed the consumer experience in purchasing skincare products (Burtch, Hong and Pavlou, 2022). Contemporary beauty technology significantly benefits from the progress of augmented reality (AR).

However, consumers have become digitally literate, resulting in the growing popularity of online shopping. Therefore, companies are significantly investing in beauty innovation to upgrade their operations and meet the rising demands of their customers (Zhang *et al.*, 2019). The integration of virtual try-on (VTO) technology has been a

vital factor in this transformation (Fenanda, Triwijayanti and Wahyono, 2024). However, incorporating AR into the VTO makeup application setup allows consumers to envision the output of their product utilization instantly and accurately (Statista, 2021), non-physically applying the products (e.g., Nykaa, L'Oréal).

In the context of beauty and personal care products, the intention to adopt AR-enabled VTO technology has been given limited attention (Nikhashemi S R. *et al.*, 2021). Prior study on online buying indicates that the implementation of Virtual Try-On (VTO) enhances consumers' perceived value, therefore affecting their views towards VTO and their purchase intentions (Zhang *et al.*, 2019; Vishwakarma, Mukherjee and Datta, 2020; Grewal *et al.*, 2021). Despite its benefits, the adoption of AR-enabled VTO remains varied among consumers. Comprehending the psychological and behavioral factors influencing this adoption is vital for retailers aiming to accept such technologies effectively. The Technology Acceptance Model (TAM), created by Davis in 1989, offers a comprehensive theoretical framework for analysing user acceptance of information technology. TAM posits that two fundamental constructs—Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)—directly influence consumers' Behavioural Intention to Use (BITU).

Recent studies have extensively used the Technology Acceptance Model (TAM) for developing technologies, particularly augmented reality (AR) inside retail environments (Javornik, 2016; Holdack *et al.*, 2022). Additionally, researchers have enhanced the model by integrating personal and environmental variables, including openness to change, which signifies a consumer's readiness to embrace new experiences and accept innovations (Devaraj, Easley and CrantJ., 2008). Although existing literature has explored TAM components regarding AR and VTO, there has been no focus on the impact of value openness to change on the adoption intentions of VTO within the realm of the beauty and personal care industry.

2. Review of Literature and Hypotheses Development

2.1 The augmented reality (AR) virtual-try-on technology (VTO)

AR is an interactive technology that integrates real and virtual worlds by superimposing digital features onto the actual world, without replacing it (Smink *et al.*, 2019). Instead, AR enriches the real-world experience by integrating visual elements that users see via a display while engaging with their surroundings (Yim, Chu and Sauer, 2017). According to (Nikhashemi *et al.*, 2021) AR research must distinctly delineate and evaluate the particular attributes and capabilities of the AR technology used. AR, which originated in the 1960s with the effort of Ivan Sutherland (Hung and Che-Wei Chang, 2021), has developed into a functional tool for enhancing user experiences, particularly through applications like Virtual Try-On (VTO). VTO allows consumers to virtually engage with products in a way that mimics real-world use (Vieira *et al.*, 2022). This application often uses a camera to record the user's image, merge it with virtual product data, and present the outcomes on the screen in real time (Hung and Che-Wei Chang, 2021).

In the domain of e-commerce, AR-based VTO has become a valuable instrument, providing immersive and engaging experiences that enhance the online purchasing experience (Sheila Hsuan-Yu Hsu, Tsou and Chen, 2021; Whang *et al.*, 2021). It significantly contributes to bridging the gap between online and in-store buying by offering customers more authentic and immersive product interactions (Blázquez, 2014). Products shown through AR VTO are highly interactive and provide real-time visualization (Smink *et al.*, 2019; Hung and Che-Wei Chang, 2021), often integrating three-dimensional space and physical motions to simulate product use. For instance, include virtual apps for makeup or eyeglasses using face recognition technology (Smink *et al.*, 2019), rendering AR VTO particularly effective for beauty and fashion retail.

2.1 Technology acceptance model (TAM)

Among several acceptance theories, the Technology Acceptance Model (TAM) emerges as a fundamental framework in comprehending the acceptance of new technology (Liu, Wang and Koehler, 2019). Established by Davis in 1989, Figure 1 is a prominent framework for evaluating and forecasting user acceptance of information technology. It focuses on two fundamental constructs: perceived ease of use and perceived usefulness (Chen and

Aklikokou, 2020). Over time, TAM has evolved and been integrated into other models, such as the Value-based Adoption Model (VAM) by (Kim, Chan and Gupta, 2007), Unified Theory of Acceptance and Use of Technology (UTAUT), by (Venkatesh *et al.*, 2003), and UTAUT2 (Venkatesh, Thong and Xu, 2012). Despite the advancements of these extensions, TAM remains a prevalent and pertinent model for examining technology acceptance across various fields (Rauschnabel and Ro, 2021; Holdack *et al.*, 2022).

The Technology Acceptance Model (TAM) is one of the most prominent and extensively used frameworks for comprehending technology adoption. According to TAM, two primary factors—Perceived Ease of Use (PEOU) and Perceived Usefulness (PU)—substantially affect an individual's Behavioral Intention to Use (BITU) a certain technology. PEOU pertains to “the extent to which a person believes that utilizing a specific system would be effortless,” while PU is defined as “the extent to which a person believes that utilizing a specific system would improve their job effectiveness” (Davis, 1989). These fundamental constructs have been used in several studies, such as the intention to use digital lending (Yadav and Shanmugam, 2024), pre-service teachers (Sánchez-Prieto, Olmos-Migueláñez and García-Peñalvo, 2017) Teachers' adoption of digital technology in education (Scherer, Siddiq and Tondeur, 2019). Recent research (Vishwakarma, Mukherjee and Datta, 2020) has investigated similar themes within the realm of virtual reality and augmented reality, yielding significant perception of consumer behavior and adoption of new technology in immersive environments. In line with previous researchers and applying relevant elements of the TAM framework, this research seeks to deliver a deeper understanding of Virtual Try-On (VTO) adoption by adding the value of openness to change within the entire TAM model in the context of the beauty and personal care industry. However, the conceptual model of the study is given in Figure 2.

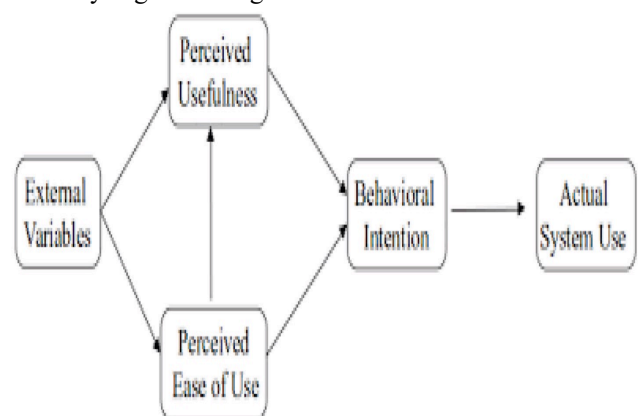


Figure 1. Technology Acceptance Model (TAM) by Davis (1989).

2.3 Hypothesis development and proposed model

2.3.1 Openness to change and adoption intention, perceived ease of use, perceived usefulness

Openness to change is a fundamental personality attribute that signifies an individual's curiosity, creativity, and willingness to embrace new experiences, often associated

with intellect and reasoning (John and Srivastava, 1999; Vieira *et al.*, 2013). It signifies an individual's willingness to embrace innovations and adopt emerging technologies. In the realm of Virtual Try-On (VTO) using Augmented Reality (AR), openness becomes important, enabling users to visualize products such as clothing or makeup in real-time (Yim, Chu and Sauer, 2017). Today, consumers' propensity to adopt new products is often driven by their openness to change, an association that has been supported by previous research across various domains (Mainardes *et al.*, 2017). Studies indicate that openness to change positively affects perceived ease of use (PEOU) and perceived usefulness (PU), the two key components of the Technology Acceptance Model (TAM) (Davis, 1989; Devaraj, Easley and CrantJ., 2008; Svendsen, Johnsen and Vittersø, 2013). Although the direct effect of openness on adoption intention is limited, its effect is often mediated through PEOU and PU (Watjatrakul, 2016). Furthermore, in another study, researchers have demonstrated that people are more likely to embrace innovation and become prompt adopters of technologies (Tuten and Bosnjak, 2001; Constantiou, Damgaard and Knutsen, 2006). Although (Svendsen, Johnsen and Vittersø, 2013) and (Özbek *et al.*, 2014) established a significant association between openness to experience and PEOU, (Uffen, Kaemmerer and Breitner, 2013) established a significant link between openness to experience and PU.

In the context of Virtual Try-On (VTO), people exhibiting strong levels of openness are more inclined to perceive AR-based try-on experiences as captivating and beneficial (Vieira *et al.*, 2022), which in turn increases their willingness to adopt such technologies for online shopping. Despite this, the direct relationship between openness to change and VTO adoption intention remains underexplored. Hence, based on the ongoing discussion, it is clear that there is a need for further empirical research to validate this connection, particularly within the beauty and personal care industry. Thus, this study proposes the following hypotheses:

Hypothesis 1: Openness to change has a significant influence on consumers' adoption intention of VTO.

Hypothesis 2: Openness to change has a significant influence on PEOU.

Hypothesis 3: Openness to change has a significant influence on PU.

2.3.2 Perceived ease of use, perceived usefulness, and adoption intention

PEOU denotes the extent to which potential persons expect the target system to be free of effort (Davis, 1989). Research indicates that perceived ease of use has an effective influence on consumers' intention to embrace new technology (Davis, 1989; Adams, Nelson and Todd, 1992; Chong *et al.*, 2015; Sharma, 2017). In this research, PEOU refers to the extent to which consumers are at ease and willing to embrace the new technology, i.e., virtual-try-on on VTO for buying beauty and personal care products. For consumers to use or access the VTO application, a certain level of awareness and competence is necessary. As such, perceived ease of use becomes a critical factor in shaping

their intention to access and utilize this technology (Alalwan *et al.*, 2016). These relationships have been empirically validated by numerous research studies in diverse domains, for instance, in the context of mobile payments (Kim, Mirusmonov and Lee, 2010; Liebana-Cabanillas, Marinkovic and Kalinic, 2017), internet banking (Chong *et al.*, 2015), and in mobile banking settings (Hanafizadeh *et al.*, 2014; Alalwan *et al.*, 2016; Sharma, 2017).

In addition, based on the TAM framework and its modifications, it has also been shown that PEOU, PU have a pivotal role in shaping users' behavioral intentions toward technology adoption (Davis, 1989). According to TAM, individuals are more inclined to adopt and use technology if they perceive it as beneficial in enhancing their tasks or activities. Extending this logic to the realm of Virtual Try-On (VTO), consumers are anticipated to exhibit increased purchase intentions when they believe that utilizing VTO facilitates their shopping experience, aids in decision-making, or streamlines the product evaluation process. Empirical evidence from prior research in diverse technological contexts, such as e-commerce platforms and mobile applications, affirms the positive relationship between perceived usefulness and purchase intention (Venkatesh and Davis, 2000; Chen, Gillenson and Sherrell, 2002; Gefen, Karahanna and Straub, 2003; Zhang, Ahmad, A., Azman and Mingxia, 2023). Hence, it becomes reasonable to hypothesize that perceived ease of use and perceived usefulness positively influence adoption intention in the context of VTO.

Hypothesis 4: PEOU has a significant influence on the adoption intention of VTO.

Hypothesis 5: PU has a significant influence on the adoption intention of VTO.

2.3.3 The mediating effect of perceived ease of use and perceived usefulness

The Technology Acceptance Model is a recognised framework for the acceptance of technology. TAM employs two information technology centres to forecast people's intentions and usage. A meta-analysis of the technology acceptance model recognized two significant components of an extrinsic variable, i.e., PEOU and PU. Nonetheless, each of these notions has different applications and metrics (Legris, Ingham and Collette, 2003). Previous research studies have assessed the mediating relations of these two core constructs of the technology acceptance model with intention (Ramayah and May-Chiun, 2007; Moslehpour *et al.*, 2018). Consequently, prior research (Davis, 1989) has assured that constructs PEOU and PU may serve as a mediator link in actual system usage. However, to the best of our knowledge, there is no empirical research study that has examined the mediating effect of the two constructs between openness to change and adoption intention of virtual-try-on VTO technology in the context of beauty and personal care products. Thus, the study proposes the following hypothesis.

Hypothesis 6: PEOU mediates the relationship between openness to change and adoption intention.

Hypothesis 7: PU mediates the relationship between openness to change and adoption intention.

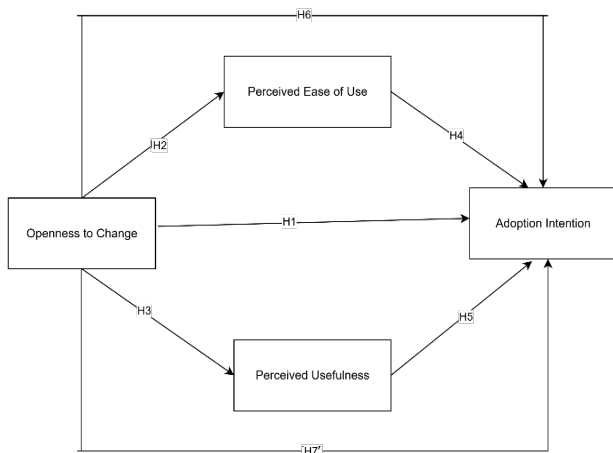


Figure 2. Conceptual Model

Source(s) Created by author

3. Materials and methods

3.1 Survey instrument

The authors developed a self-administered survey comprising two sections. In the initial part, a screening question was used to assess consumer awareness or knowledge of AR-enabled VTO technology in the beauty and personal care industry, allowing only participants who met these criteria to proceed to the survey. Non-respondents could be eliminated at the initial stage. Then, after information regarding their demographics: age, gender, educational level, and occupation was included. For the second part, all participants were asked to fill in the questions regarding their adoption of Virtual Try-On (VTO) for beauty and personal care products. To validate the proposed research model, the authors employed a 5-point Likert scale, ranging from ‘1’ (Strongly Agree) to ‘5’ (Strongly Disagree); all scales were adapted from relevant literature and previous studies (Table 1). The questionnaires were validated through a pilot test with 60 respondents. The results showed that all measurement items met the reliability criteria, with a valid Cronbach’s alpha value, except for two items in the PU3 and AI4 scales due to poor cross-loading, as shown in Table 3. Therefore, the final proposed model consists of 14 items.

Table 1. Scale Development for Survey

Constructs	No. of Items	Source
Openness to Change (OTC)	3	(Claudy, Garcia and O’Driscoll, 2015; Gupta and Arora, 2017)
Perceived Ease of Use (PEOU)	5	(Alharbi, S. and Drew, 2014)
Perceived Usefulness (PU)	3	(Davis, 1989)
Adoption Intention (AI)	3	(Gupta and Arora, 2017)

Source(s) Created by author

3.2. Sample and data collection

To meet our research objective, we selected respondents with AR-enabled VTO technology awareness or exposure towards beauty and personal care products among consumers approached in Delhi. Out of 300 individuals approached in Delhi shopping malls, 240 valid responses were included in the final analysis, with the rest being discarded due to incompleteness or redundancy. Before beginning the survey, the respondents were briefed about the aim of the study. Their consent was taken regarding their wish to proceed with the survey. Additionally, they were informed that their responses and identity were confidential and that they were allowed to quit the survey at any time. According to (Hair, Ringle and Sarstedt, 2011), a sample size of 200–500 respondents is adequate to represent the entire population in management research. The sample size recommended for structural equation modelling (SEM) is 10 to 15 cases per parameter (Hair *et al.*, 2019). This study comprises 14 indicators with 4 constructs. Thus, the recommended sample size as per the rule of thumb is 14*10 = 140 respondents. However, a total of 240 responses were taken to run Structural Equation Modeling (SEM) in SmartPLS.

3.3 Demographic result

The survey results show a great difference in the characteristics of the survey sample. Participants were relatively young, with the highest ratio of users falling in the age group of 18-24 years (79.6%), 25-34 years accounting for 19.2%, while the 35-44-year group stood at 1.2% only. However, it has been found that the male proportion was significantly higher, with 55.2 %, than that of females, with 44.8 %. Regarding education status, the group of users was graduates, accounting for 44.4 %, followed by post-graduates with 39.8 %. Among 240 people who participated in the survey reflected that the majority of users had an annual income of less than 2 lakhs (65.6%), followed by the 2-5 lakhs income group with 15.8 %. Therefore, the details of the participants are given in Table 2.

3.4. Common method bias (CMB)

The Variance Inflation Factor (VIF) score of the measurement and structural model was used to evaluate the Common Method Bias (CMB). All VIF values for all latent constructs were below the 3 thresholds (Kock, 2015; Podsakoff *et al.*, 2024), according to the results. This suggests that for this study, CMB is not an issue. The findings showed that multicollinearity in our dataset was not significantly problematic. Both models have VIF scores that are less than 5 (Kock, 2015). As a result, both models are free of CMB.

Table 2. Participants’ Demographic Characteristics Source(s) Created by author

Demographic	Group	Number	(%)
Age	18- 24	192	79.6
	25-34	46	19.2
	35-44	3	1.2
Gender	Male	133	55.2
	Female	108	44.8
Education status	High School	13	5.4
	Graduation	107	44.4
	Post-Graduation	96	39.8
	PhD and others	25	10.4
Annual Income	less than 2 lakhs	158	65.6
	2- 5 lakhs	38	15.8
	5-7 lakhs	20	8.3
	7- 10 lakhs	8	3.3
	Above 10 lakhs	17	7.1
<i>Total</i>		<i>240</i>	<i>100</i>

4. Results

PLS-SEM (Partial Least Squares-Structural Equation Modeling) was used to assess the conceptual model due to its compatibility for predictive analysis and dealing with complex models with small-to-moderate sample sizes (Hair, Howard and Nitzl, 2020). SMARTPLS 4 software was used to conduct the analysis. Although CMB was tested using values of inner VIF, all variables reported VIFs below the suggested threshold value of 3.3 (ranging from 1.76 to 2.41), delineating no substantial CMB problems (Kock, 2015; Podsakoff *et al.*, 2024). The results of the measurement model are presented in the subsequent sections, followed by the analysis of the structural model.

4.1 Results of measurement model

We conducted tests to evaluate the measurement model, focusing on the outer loading, composite reliability (CR), average variance extracted (AVE), and discriminant validity, following the guidelines by (Hair *et al.*, 2019). The findings of the results are presented in Table 3. All of the factor loadings for the construct exceed the threshold values. Both composite reliability (CR) and Cronbach's alpha surpass the 0.7 benchmark, confirming strong internal consistency. The average variance extracted (AVE) > 0.5 indicates convergent validity (Sarstedt, Ringle and Hair, 2017). However, discriminant validity was assessed using both Fornell and Larcker's criterion and the Heterotrait-Monotrait (HTMT) ratio criteria. As presented in Table 4, the square root of each variable's AVE is greater than its correlation with other variables in the model. Furthermore, Table V shows that all Heterotrait-Monotrait values are below the 0.90 threshold, indicating satisfactory discriminant validity across constructs (Sarstedt, Ringle and Hair, 2017). The detailed results of the measurement model assessment are reported in Tables 3, 4, and 5.

Table 3: Measurement Model Result

Research Constructs	Items	Factor loadings	α	CR	AVE
Adoption Intention	AI1. I will use the Virtual Try On feature for beauty & personal care products	0.863	0.858	0.913	0.779
	AI2. I can see myself using the Virtual Try On feature for beauty & personal care products in the future	0.9			
	AI3. I intend to use the Virtual-Try-On feature for beauty & personal care products.	0.884			
	AI 4. I will recommend others to use the Virtual Try On feature for beauty & personal care products. *	-			
Openness to Change	OTC1. I like surprises, and I am always looking for new things to do	0.856	0.828	0.897	0.744
	OTC2. I look for adventure and like to take risks.	0.863			
	OTC3. I'm open to new experiences.	0.869			
Perceived Ease of Use	PEOU1. I think using the Virtual Try On feature for beauty & personal care products is easy.	0.827	0.819	0.892	0.734
	PEOU2. I find the Virtual Try On feature easy to learn and understand for beauty & personal care products	0.844			
	PEOU3. I can use the Virtual Try On feature without assistance.	0.838			
	PEOU4. I do not need more effort to understand the process of using the Virtual Try On feature	0.831			
	PEOU5. This Virtual Try On feature is user-friendly.	0.852			
Perceived Usefulness	PU1. Using the Virtual Try On feature for beauty & personal care products can save money.	0.859	0.819	0.892	0.734
	PU2. Using this Virtual Try On feature improves the quality of my shopping.	0.867			
	PU3. Using the Virtual Try On feature makes the shopping process faster. *	-			
	PU4. The Virtual-Try On feature removes barriers in space and time to buy beauty & personal care products.	0.845			

Note(s)* AI4 and PU3 deleted, α - Cronbach's alpha; CR- Composite Reliability; AVE: Average Variance Extracted
Source(s) Created by author

Table 4: Fornell-Larcker Criterion

Constructs	1
1. Adoption Intention	0.882
2. Openness to Change	0.637
3. Perceived Ease of Use	0.751
4. Perceived Usefulness	0.719

Source(s) Created by author

Table 5: Heterotrait-Monotrait (HTMT) Ratio

Constructs	Adoption Intention	Perceived Ease of Use	Perceived Usefulness
1. Adoption Intention			
2. Openness to Change	0.755		
3. Perceived Ease of Use	0.857		
4. Perceived Usefulness	0.857	0.798	

Source(s) Created by author

4.2 Structural model results

After verifying the measurement model’s reliability and validity, the robustness and quality of the structural model were evaluated to test the hypotheses (Sarstedt, Ringle and Hair, 2017; Hair *et al.*, 2019). The results suggest that, except for openness to change to adoption intention ($\beta = 0.099$, p value 0.097), which is insignificant, the rest all the other paths have a significant association, as shown in Table 6 & Figure 3. The path analysis of openness to change yields a value of ($\beta = 0.743$, p value 0.000) for perceived ease of use and ($\beta = 0.603$, p value 0.000) for perceived usefulness. The perceived ease of use and perceived usefulness path coefficients towards adoption intention are ($\beta = 0.426$, p value 0.000) and ($\beta = 0.368$, p value 0.000), respectively. All hypotheses, except H1, are supported by the data.

Table 6. Result of hypothesis testing

Hypotheses	β Value	T statistics	P values	Remark
Openness to Change -> Adoption Intention	0.099	1.660	0.097	Rejected
Openness to Change -> Perceived Ease of Use	0.743	18.545	0.000	Accepted
Openness to Change -> Perceived Usefulness	0.603	11.913	0.000	Accepted
Perceived Ease of Use -> Adoption Intention	0.426	5.793	0.000	Accepted
Perceived Usefulness -> Adoption Intention	0.368	5.687	0.000	Accepted

Source(s) Created by author

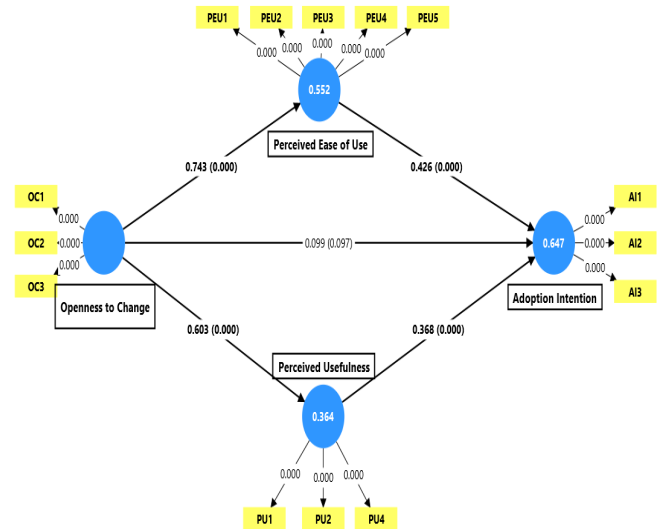


Figure 3. Smartpls output

The mediation test was performed for this study to check its strength. The study utilises the SmartPLS 4 software. The mediation result was assessed using the Variance Accounted For (VAF) method. The output of the mediation analysis is presented in Table 7.

Based on VAF, the result of PEOU as a mediator between openness to change and adoption intention (H6) is 0.59, which depicts that there is a full mediation within the constructs. Also, there is full mediation between openness to change and adoption intention with perceived usefulness (H7) as a mediator, yielding 0.44. However, from the result, it can be concluded that both perceived ease of use and perceived usefulness as mediators have a full mediation among the aforesaid constructs (Hair *et al.*, 2019).

Table 7. Mediation Analysis

Mediating variable	Direct Effect	Indirect Effect	Total Effect	VAF	Result
OTC->PEOU->AI	0.099	0.316	0.637	0.59	Full Mediation
OTC->PU->AI	0.099	0.222	0.637	0.44	Full Mediation

Note(s) Openness to change (OTC), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Adoption Intention (AI)

Source(s) Created by author

5. Discussion and implications

5.1 Discussion

The study aims to examine the adoption of Augmented Reality (AR) enabled Virtual Try-On (VTO) in the beauty and personal care sector. It provides a comprehensive model capable of evaluating consumers' adoption intentions for AR-enabled VTO technology in beauty and personal care products, using the Technology Acceptance Model (TAM). Additionally, within the framework of the model, the effect

of perceived ease of use and perceived usefulness, along with the value of openness to change, on the adoption intention of Indian consumers towards virtual-try-on technology in the beauty and personal care industry is studied. However, the findings of the study align with those of previous studies, where TAM, with its constructs, has significantly contributed to AR adoption intention (Şahin *et al.*, 2021; Ibrahim *et al.*, 2024)

Interestingly, our study found that consumers' values in the adoption intention based on the model analysis indicate that H1, the value of “openness to change,” did not significantly affect consumer adoption intention for using virtual-try-on technology for beauty and personal care products, similar to the previous study conducted in the field of education (Şahin *et al.*, 2021), found no relation between openness to change and adoption intention to use information technologies in higher education amid the pandemic. Also, in the study by (Wu and Yu, 2025), an insignificant relationship was derived between openness to experience and adoption intention towards an intelligent messaging service. In our study, it signifies that consumers are still not so much open to change or experience augmented reality (AR) enabled virtual-try-on (VTO) technology towards beauty or personal care products, which in turn has resulted in no relation between the two constructs. Though no studies have incorporated the impact of “openness to change” on “adoption intention” using the TAM model framework towards the beauty and personal care industry. Moreover, openness to change was found to have a significant effect on perceived ease of use and perceived usefulness; H2 and H3 were supported in our study. The findings of the study remain consistent with the previous research conducted by (Ibrahim *et al.*, 2024). On validating the Technology Acceptance Model in the context of Artificial Intelligence (AI) by integrating Big Five personality Traits and AI mindsets, a significant relationship was found between openness to change, perceived ease of use, and perceived usefulness. Also, in another study on mobile banking adoption by (Agyei *et al.*, 2020), derived a significant relationship between the aforementioned constructs.

Another finding, H4 and H5 were also supported in our study, which reflects that perceived ease of use and perceived usefulness have a positive impact on adoption intention of virtual-try-on technology towards beauty and personal care products, which resonates with the findings with (Siagian *et al.*, 2022), explained that perceived ease of use and perceived usefulness have a positive impact on behavioral intention, tested on trust in digital payment platforms. Although the study on mobile banking adoption by (Agyei *et al.*, 2020), suggested that both constructs have a positive influence on behavioral intention. More likely, our study has also confirmed the same.

Finally, the study examined the mediation effect, H6 & H7 of constructs perceived ease of use and perceived usefulness between openness to change and consumers' adoption intention of using virtual-try-on technology for beauty and personal care products. These findings are consistent with the study conducted on e-Purchase intention of Taiwanese consumers (Moslehpour *et al.*, 2018). Though

our study found that perceived ease of use mediates 59% of perceived usefulness, which is mediated by 44%. Similarly, consistent with the existing research study, we found a positive mediation effect of perceived ease of use and perceived usefulness between openness to change and consumers' adoption intention of virtual-try-on technology.

5.2 Theoretical implications

This research advances the theoretical understanding of Augmented-Reality (AR) enabled Virtual Try-On (VTO) technology by exploring its influence on consumers' adoption intentions, particularly within the context of emerging economies. Drawing on the Technology Acceptance Model (TAM) proposed by Davis (1989), the study introduces a novel element—the value of openness to change within the entire TAM model framework. While prior studies have focused on factors such as perceived ease of use, perceived usefulness, and other demographics, this study emphasizes how openness to change translates into adoption intentions of using virtual-try-on technology for beauty and personal care products. The findings confirm that perceived ease of use, perceived usefulness positively influence adoption intention toward VTO, while openness to change has an insignificant impact on adoption intention. The core constructs of the TAM model, i.e., perceived ease of use and perceived usefulness as mediators, were also tested between openness to change and adoption intention, which showed a full mediation effect between the two constructs. This expanded model offers deeper insight into consumers' adoption intention of VTO for beauty and personal care products. Furthermore, the study addresses a notable gap in the literature regarding VTO research in developing markets, offering empirical support for the role of VTO in enhancing customer engagement and adoption intention. For retailers operating in emerging economies, the results underscore the strategic importance of investing in interactive technologies like VTO to boost competitiveness and economic performance through enhanced consumer experiences and increased adoption rates.

5.3 Practical implications

The research concludes that Augmented-Reality (AR) enabled Virtual Try-On (VTO) technology plays a vital role in shaping marketing and branding strategies for beauty and personal care products, emphasizing the need for businesses to enhance consumers' attitudes toward technology to stimulate their adoption intentions. By offering a personalized and interactive virtual experience, VTO allows customers to virtually try on products from home and receive tailored recommendations based on their preferences—aligning with the growing trend of hyper-personalization in consumer experiences. To maximize the impact of VTO, businesses should focus on improving technological quality and creating seamless, engaging customer interactions across all touchpoints, such as community platforms that foster consumers' openness to experience a large variety of products from their comfort place, foster brand engagement, and help identify customer needs. Additionally, in an era where product authenticity is

increasingly valued, VTO can be leveraged to provide immersive previews of a product's design, appearance, and functionality. This not only boosts consumers' confidence but also supports marketing efforts, such as pre-campaign testing, where brands can gauge user response to new products before full-scale launches. Moreover, VTO opens up opportunities for effective cross-selling and upselling strategies by suggesting complementary items based on customer selections. For instance, when a user tries on a beauty product via VTO, the system can recommend suitable personal care products like shoes or skin care range, or hair care range, thereby enhancing the shopping experience while subtly encouraging higher-value purchases. These strategic implementations of VTO collectively contribute to more favorable consumer attitudes toward the technology, increased engagement, and ultimately, stronger adoption intentions.

6. Limitations and directions for future research

Besides its contributions, this study possesses several limitations. Firstly, the sample is restricted to Indian consumers residing in the Delhi region, which may limit the generalizability of the findings. Future research should consider expanding the geographical scope to gain a more comprehensive understanding of the adoption of AR-enabled VTO technology for shopping for beauty and personal care products. Secondly, the sample is predominantly composed of Gen Z respondents, who represent 79% of the participants. The study also found a slightly higher adoption intention among males (55%) compared to females (44%). Future research could focus on a more stable sample across diverse age categories and genders to provide more representative insights. Lastly, participants were recruited primarily through visits to shopping malls in Delhi, which may introduce self-selection bias. This approach likely attracted individuals already interested or who have prior experience with VTO technology, potentially skewing the results. As a result, the findings may not fully reflect the attitudes of the wider Indian population, particularly those less engaged with technology or virtual product experiences. To improve generalizability, future research should utilize more diverse and inclusive sampling methods.

7. Conclusion

While previous studies have explored the factors influencing attitudes toward Virtual Try-On (VTO) and their effects on purchasing intentions, our research is among the few that specifically examine consumer adoption intention of VTO for beauty and personal care products within emerging economies. Grounded in the Technology Acceptance Model (TAM) (Davis, 1989). Our findings reveal that perceived ease of use (PEOU) and perceived usefulness (PU) positively influence consumers' adoption intention (AI). Additionally, openness to change (OTC) has a significant positive effect on both PEOU and PU, though its direct impact on AI is insignificant. Notably, both PEOU and PU act as mediators in the relationship between OTC and AI. These insights not only shed light on the underexplored role of technological adoption for VTO but

also extend the TAM framework by positioning openness to change as a core consumer value within the adoption model. Based on these findings, our study offers practical implications for businesses, highlighting how VTO can be leveraged to enhance marketing strategies, improve customer experience, and ultimately increase consumer adoption...

REFERENCE

1. Adams, D. A., Nelson, R. R. and Todd, P. A. (1992) 'Perceived usefulness, ease of use and usage of information technology: A replication', *MIS Quarterly*, 16(2), pp. 227–247. Available at: [10.2307/249577](https://doi.org/10.2307/249577).
2. Agyei, J. et al. (2020) 'Mobile Banking Adoption: Examining the Role of Personality Traits', *SAGE Open*, 10(2). doi: [10.1177/2158244020932918](https://doi.org/10.1177/2158244020932918).
3. Alalwan, A. A. et al. (2016) 'Consumer adoption of mobile banking in Jordan: Examining the role of usefulness, ease of use, perceived risk and self-efficacy', *Journal of Enterprise Information Management*, 29(1), pp. 118–139. Available at: <https://doi.org/10.1108/JEIM-04-2015-0035>.
4. Alharbi, S. and Drew, S. (2014) 'Using the Technology Acceptance Model in Understanding Academics' Behavioural Intention to Use Learning Management Systems', *International Journal of Advanced Computer Science and Applications*, 5, pp. 143–155. Available at: <http://dx.doi.org/10.14569/IJACSA.2014.050120>.
5. Ameen, N., Hosany, S. and Tarhini, A. (2021) 'Consumer interaction with cutting-edge technologies: Implications for future research', *Computers in Human Behavior*, 120. Available at: <https://doi.org/10.1016/j.chb.2021.106761>.
6. Blázquez, M. (2014) 'The role of technology in enhancing the customer experience', *International Journal of Electronic Commerce*, 18(4). Available at: <https://doi.org/10.2753/JEC 1086-4415180404>.
7. Burtch, G., Hong, Y. and Pavlou, P. A. (2022) 'The role of trust in privacy calculus: How privacy concerns and trust shape technology acceptance', *Information Systems Research*, 33. Available at: <https://doi.org/10.1287/isre.2022.1049>.
8. Chen, L. and Aklikokou, A. K. (2020) 'Determinants of E-government adoption: Testing the mediating effects of perceived usefulness and perceived ease of use', *International Journal of Public Administration*, 43(10). Available at: <https://doi.org/10.1080/01900692.2019.1660989>.
9. Chen, L., Gillenson, M. L. and Sherrell, D. L. (2002) 'Enticing online consumers: An extended technology acceptance perspective', *Information & Management*, 39(8), pp. 705–719. Available at: [https://doi.org/10.1016/s0378-7206\(01\)00127-6](https://doi.org/10.1016/s0378-7206(01)00127-6).

10. Chong, A. Y. L. et al. (2015) 'Predicting RFID adoption in healthcare supply chain from the perspectives of users', *International Journal of Production Economics*, 159(66–75). Available at: <https://doi.org/10.1016/j.ijpe.2014.09.034>.
11. Claudy, M. C., Garcia, R. and O'Driscoll, A. (2015) 'Consumer resistance to innovation—a behavioral reasoning perspective', *Journal of the Academy of Marketing Science*, 43(4), pp. 528–544. doi: 10.1007/s11747-014-0399-0.
12. Constantiou, I. D., Damsgaard, J. and Knutsen, L. (2006) 'Exploring perceptions and use of mobile services: User differences in an advancing market', *International Journal of Mobile Communications*, 4(3), pp. 231–247. Available at: 10.1504/IJMC.2006.008940.
13. Davis, F. D. (1989) 'Perceived usefulness, perceived ease of use, and user acceptance of information technology.', *MIS Quarterly*, 13(3). Available at: <https://doi.org/10.2307/249008>.
14. Devaraj, S., Easley, R. F. and Crant, M. (2008) 'How Does Personality Matter? Relating the Five-Factor Model to Technology Acceptance and Use', *Information Systems Research*, 19. Available at: 10.1287/isre.1070.0153.
15. Fenanda, Z. I., Triwijayanti, A. and Wahyono, S. (2024) 'Analysis of the effect of using virtual tryon based on artificial intelligence and augmented reality on facial beauty products on purchase intention with electronic word of mouth as a mediation variable (consumer perspective of e-commerce in Indonesia)', *Journal of Sustainable Technology and Applied Science (JSTAS)*, 5. Available at: 10.36040/jstas.v5i1.9344.
16. Gefen, D., Karahanna, E. and Straub, D. W. (2003) 'Trust and tam in online shopping: AN integrated model.', *MIS Quarterly: Management Information Systems*, 1(51–90). Available at: <https://doi.org/10.2307/30036519>.
17. Grewal, D. et al. (2021) 'No Retailing and emergent technologies', *Journal of Business Research*, 134, pp. 198–202. Available at: <https://doi.org/10.1016/j.jbusres.2021.05.004>.
18. Gupta, A. and Arora, N. (2017) 'Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory', *Journal of Retailing and Consumer Services*, 36(August 2016), pp. 1–7. doi: 10.1016/j.jretconser.2016.12.012.
19. Hair, J. F. et al. (2019) 'When to use and how to report the results of PLS-SEM', *European Business Review*, 31(1), pp. 2–24. doi: 10.1108/EBR-11-2018-0203.
20. Hair, J. F., Howard, M. C. and Nitzl, C. (2020) 'Assessing measurement model quality in PLS-SEM using confirmatory composite analysis', *Journal of Business Research*, 109(November 2019), pp. 101–110. doi: 10.1016/j.jbusres.2019.11.069.
21. Hair, J. F., Ringle, C. M. and Sarstedt, M. (2011) 'PLS-SEM: Indeed a silver bullet', *Journal of Marketing Theory and Practice*, 19(2), pp. 139–152. doi: 10.2753/MTP1069-6679190202.
22. Hanafizadeh, P. et al. (2014) 'Mobile-banking adoption by Iranian bank clients', *Telematics and Informatics*, 31(1), pp. 62–78. Available at: <https://doi.org/10.1016/j.tele.2012.11.001>.
23. Holdack et al. (2022) 'The role of perceived enjoyment and perceived informativeness in assessing the acceptance of AR wearables', *Journal of Retailing and Consumer Services*, 65. Available at: <https://doi.org/10.1016/j.jretconser.2020.102259>.
24. Hung, S.-W. and Che-Wei Chang, Y.-C. M. (2021) 'A new reality: Exploring continuance intention to use mobile augmented reality for entertainment purposes', *Technology in Society*, 67. Available at: <https://doi.org/10.1016/j.techsoc.2021.101757>.
25. Ibrahim, F. et al. (2024) 'The technology acceptance model and adopter type analysis in the context of artificial intelligence', *Frontiers in Artificial Intelligence*, 7(January), pp. 1–14. doi: 10.3389/frai.2024.1496518.
26. Javornik, A. (2016) 'Augmented reality: Research agenda for studying the impact of its media characteristics on consumer behaviour', *Journal of Retailing and Consumer Services*, 30. Available at: <https://doi.org/10.1016/j.jretconser.2016.02.004>.
27. John, O. P. and Srivastava, S. (1999) 'The Big Five Trait taxonomy: History, measurement, and theoretical perspectives', *Handbook of personality: Theory and research*, 2. Available at: 10.4236/jbbs.2016.69036.
28. Kim, C., Mirusmonov, M. and Lee, I. (2010) 'No An empirical examination of factors influencing the intention to use mobile payment', *Computers in Human Behavior*, 26(3), pp. 310–322. Available at: <https://doi.org/10.1016/j.chb.2009.10.013>.
29. Kim, H.-W., Chan, H. C. and Gupta, S. (2007) 'Value-based adoption of mobile internet: An empirical investigation.', *Decision Support Systems*, 43(1). Available at: <https://doi.org/10.1016/j.dss.2005.05.009>.
30. Kock, N. (2015) 'Common method bias in PLS-SEM: A full collinearity assessment approach', *International Journal of e-Collaboration*, 11(4), pp. 1–10. Available at: 10.4018/ijec.2015100101.
31. Legris, P., Ingham, J. and Collette, P. (2003) 'No Why do people use information technology? A critical review of the technology acceptance model', *Information & Management*, 40(3), pp. 191–204. Available at: [http://doi.org/10.1016/S0378-0A7206\(01\)00143-4](http://doi.org/10.1016/S0378-0A7206(01)00143-4).
32. Liebana-Cabanillas, F., Marinkovic, V. and Kalinic, Z. (2017) 'A SEM-neural network approach for

- predicting antecedents of m-commerce acceptance', *Information, International Journal of Management*, 37, pp. 14–24. Available at: <https://doi.org/10.1016/j.ijinfomgt.2016.10.008>.
33. Liu, H., Wang, L. and Koehler, M. J. (2019) 'Exploring the intention-behavior gap in the technology acceptance model', *British Journal of Educational Technology*, 50(5), pp. 2536–2556. Available at: [10.1111/bjet.12824](https://doi.org/10.1111/bjet.12824).
34. Mainardes, E. W. et al. (2017) 'Influences on the intention to buy organic food in an emerging market', *Marketing Intelligence and Planning*, 35(7), pp. 858–876. Available at: <https://doi.org/10.1108/%0AMIP-04-2017-0067>.
35. Moslehpour, M. et al. (2018) 'e-purchase intention of Taiwanese consumers: Sustainable mediation of perceived usefulness and perceived ease of use', *Sustainability (Switzerland)*, 10(1). doi: [10.3390/su10010234](https://doi.org/10.3390/su10010234).
36. Nikhashemi, S. R. et al. (2021) 'Journal of Retailing and Consumer Services Augmented reality in smart retailing: A (n) (A) Symmetric Approach to continuous intention to use retail brands ' mobile AR apps', *Journal of Retailing and Consumer Services*, 60(June 2020), p. 102464. doi: [10.1016/j.jretconser.2021.102464](https://doi.org/10.1016/j.jretconser.2021.102464).
37. Nikhashemi S R. et al. (2021) 'Augmented reality in smart retailing: A (n) (A) symmetric approach to continuous intention to use retail brands' mobile AR apps', *Journal of Retailing and Consumer Services*, 60. Available at: <https://doi.org/10.1016/j.jretconser.2021.102464>.
38. Özbek, V. et al. (2014) 'The impact of personality on technology acceptance: A study on smart phone users', *Procedia—Social and Behavioral Sciences*, 150, pp. 541–551. Available at: <https://doi.org/10.1016/j.sbspro.2014.09.073>.
39. Podsakoff, P. M. et al. (2024) 'Common Method Bias: It's Bad, It's Complex, It's Widespread, and It's Not Easy to Fix', *Annual Review of Organizational Psychology and Organizational Behavior*, 11, pp. 17–61. Available at: <https://doi.org/10.1146/annurev-orgpsych-110721-%0A040030>.
40. Ramayah, T. and May-Chiun, M. C. (2007) 'No Impact of shared beliefs on "perceived usefulness" and "ease of use" in the implementation of an enterprise resource planning system', *Management Research News*, 30(6), pp. 420–431. Available at: <http://doi.org/10.1108/01409170710751917>.
41. Rauschnabel, P. A. and Ro, Y. K. (2021) 'Augmented reality smart glasses: An investigation of technology acceptance drivers', *International Journal of Technology Marketing*, 11(2). Available at: <https://doi.org/10.1504/IJTMKTkt.2016.075690>.
42. Şahin, F. et al. (2021) 'Şahin, F., Doğan, E., İlic, U., & Şahin, Y. L. (2021). Factors influencing instructors' intentions to use information technologies in higher education amid the pandemic. *Education and Information Technologies*, 26(4), 4795–4820. <https://doi.org/10.1007/s10>', *Education and Information Technologies*, 26(4), pp. 4795–4820. doi: [10.1007/s10639-021-10497-0](https://doi.org/10.1007/s10639-021-10497-0).
43. Sánchez-Prieto, J. C., Olmos-Migueláñez, S. and García-Peñalvo, F. J. (2017) 'MLearning and preservice teachers: An assessment of the behavioral intention using an expanded TAM model', *Computers in Human Behavior*, 72. Available at: <https://doi.org/10.1016/j.chb.2016.09.061>.
44. Sarstedt, M., Ringle, C. M. and Hair, J. (2017) 'Partial Least Squares Structural Equation Modeling', *Handbook of Market Research*. Available at: [10.1007/978-3-319-05542-8_15-1](https://doi.org/10.1007/978-3-319-05542-8_15-1).
45. Scherer, R., Siddiq, F. and Tondeur, J. (2019) 'No The technology acceptance model (TAM): A metaanalytic structural equation modeling approach to explaining teachers' adoption of digital technology in education', *Computers & Education*, 128. Available at: <https://doi.org/10.1016/j.compedu.2018.09.009>.
46. Sharma, S. K. (2017) 'Integrating cognitive antecedents into TAM to explain mobile banking behavioral intention: A SEM-neural network modeling', *Information Systems Frontiers*, 1, pp. 1–13. Available at: [10.1007/s10796-017-9775-x](https://doi.org/10.1007/s10796-017-9775-x).
47. Sheila Hsuan-Yu Hsu, Tsou, H.-T. and Chen, J.-S. (2021) 'yes, we do. Why not use augmented reality?' Customer responses to experiential presentations of AR-based applications', *Journal of Retailing and Consumer Services*, 62(5). Available at: <https://doi.org/10.1016/j.jretconser.2021.102649>.
48. Siagian, H. et al. (2022) 'The effect of perceived security, perceived ease of use, and perceived usefulness on consumer behavioral intention through trust in digital payment platform', *International Journal of Data and Network Science*, 6(3), pp. 861–874. doi: [10.5267/j.ijdns.2022.2.010](https://doi.org/10.5267/j.ijdns.2022.2.010).
49. Smink, A. R. et al. (2019) 'Try Online Before you Buy: How does Shopping with Augmented Reality affect Brand Responses and Personal Data Disclosure', *Electronic Commerce Research and Applications*, p. 100854. doi: [10.1016/j.elerap.2019.100854](https://doi.org/10.1016/j.elerap.2019.100854).
50. Statista (2021) 'Number of mobile augmented reality (AR) active users worldwide from 2019 to 2024'. Available at: <https://bit.ly/3uOIHaW>.
51. Svendsen, G. B., Johnsen, J. A. K. and Vittersø, J. (2013) 'Personality and technology acceptance: The influence of personality factors on the core constructs of the Technology Acceptance Model', *Behaviour & Information*

- Technology, 32(4). Available at: <https://doi.org/10.1080/0144929X.2011.553740>.
52. Tuten, T. L. and Bosnjak, M. (2001) 'Understanding differences in web usage: The role of need for cognition and the five factor model of personality', *Social Behavior and Personality: An International Journal*, 29(4), pp. 391–398. Available at: <https://doi.org/10.2224/sbp.2001.29.4.391>.
53. Uffen, J., Kaemmerer, N. and Breitter, M. H. (2013) 'Personality traits and cognitive determinants—An empirical investigation of the use of smartphone security measures.', *Journal of Information Security*, 4(4), pp. 203–212. Available at: [10.4236/jis.2013.44023](https://doi.org/10.4236/jis.2013.44023).
54. Venkatesh, N., Thong, N. and Xu, N. (2012) 'Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology', *MIS Quarterly*, 36(1). Available at: <https://doi.org/10.2307/41410412>.
55. Venkatesh, V. et al. (2003) 'User acceptance of information technology: Toward a unified view', *MIS Quarterly*, 27(3). Available at: <https://doi.org/10.2307/30036540>.
56. Venkatesh, V. and Davis, F. D. (2000) 'A theoretical extension of the technology acceptance model: Four longitudinal field studies', *Management Science*, 46(2), pp. 186–204. Available at: <https://doi.org/10.1287/mnsc.46.2.186.11926>.
57. Vieira, L. M. et al. (2013) 'An analysis of value in an organic food supply chain', *British Food Journal*, 115(10), pp. 454–472. Available at: <https://doi.org/10.1108/BFJ-06-2011-0160>.
58. Vieira, V. A. et al. (2022) 'Values, Augmented reality generalizations: A meta-analytical review on consumer-related outcomes and the mediating role of hedonic and utilitarian values', *Journal of Business Research*, 151. Available at: <https://doi.org/10.1016/j.jbusres.2022.06.030>.
59. Vishwakarma, P., Mukherjee, S. and Datta, B. (2020) 'Travelers' intention to adopt virtual reality: A consumer value perspective', *Journal of Destination Marketing & Management*, 17. Available at: <https://doi.org/10.1016/j.jdmm.2020.100456>.
60. Watjatrakul, B. (2016) 'Online learning adoption: effects of neuroticism, openness to experience, and perceived values', *Interactive Technology and Smart Education*, 13(3). Available at: <https://doi.org/10.1108/ITSE-06-2016-0017>.
61. Whang, J. Bin et al. (2021) 'The effect of augmented reality on purchase intention of beauty products', *Journal of Business Research*, 139(9). Available at: <https://doi.org/10.1016/j.jbusres.2021.04.057>.
62. Wu, J. and Yu, Z. (2025) 'Research on Adoption Intention Toward Intelligent Messaging Service: From Self-Determination Theory Perspective', *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), p. 83. doi: 10.3390/jtaer20020083.
63. Yadav, M. and Shanmugam, S. (2024) 'No Factors Influencing Behavioral Intentions to Use Digital Lending: An Extension of TAM Model', *Jindal Journal of Business Research*, 1(14). Available at: [10.1177/22786821231211411](https://doi.org/10.1177/22786821231211411).
64. Yim, M. Y., Chu, S. and Sauer, P. L. (2017) 'ScienceDirect Is Augmented Reality Technology an Effective Tool for E-commerce? An Interactivity and Vividness Perspective', 39, pp. 89–103. doi: [10.1016/j.intmar.2017.04.001](https://doi.org/10.1016/j.intmar.2017.04.001).
65. Zhang, T. et al. (2019) 'The role of virtual try-on technology in online purchase decision from consumers' aspect', *Internet Research*, 29. Available at: [10.1108/intr-12-2017-0540](https://doi.org/10.1108/intr-12-2017-0540).
66. Zhang, Y., Ahmad, A., Azman, N. and Mingxia, W. (2023) 'The effect of perceived usefulness, perceived ease of use, and social influence toward purchase intention mediated by trust in live streaming platform', *Journal of Law and Sustainable Development*, 11(9). Available at: <https://doi.org/10.55908/sdgs.v11i9.1284>.