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MANAGEMENT

Bridging Augmented Reality Experience and Purchase Intention: Integrating Attitudinal Ambivalence into an Extended TAM

Cynthia Jessica[1,*], Rifelly Dewi Astuti[2]
Universitas Indonesia, Indonesia[1,2]
Corresponding e-mail: cynthia.jessica@ui.ac.id[*]

ABSTRACT

Purpose: This study explores the impact of augmented reality (AR) technology on purchase intention in Indonesia. By integrating the AR experience framework with an extended Technology Acceptance Model (TAM), the research examines how five dimensions of the AR experience—sensory experience (SE), emotional experience (EE), thinking experience (TE), action experience (AE), and related experience (RE)—affect perceived ease of use (PEOU) and perceived usefulness (PU), which subsequently influence purchase intention (PI), with attitudinal ambivalence (AA) as a mediating factor.

Method: A quantitative, cross-sectional survey was conducted with 300 Indonesian respondents, aged 18 to 60, who were recent users of the AR Sephora Virtual Artist. Data were collected through an online questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Result: Findings reveal that the dimensions of the AR experience positively impact PEOU and PU, which subsequently negatively influence AA. PU also directly fosters positive PI, while PEOU does not. Importantly, AA negatively affects PI, underscoring its critical role in consumer decision-making.

Practical Implications for Economic Growth and Development: This research offers valuable insights for retailers to optimize AR implementation, thereby enhancing consumer engagement and driving purchase intention. Improving AR usability and effectiveness can reduce consumer uncertainty, strengthen market adoption, and advance digital commerce in the beauty industry.

Originality/Value: This study uniquely integrates AA into existing AR adoption models and combines the AR experience framework with an extended TAM, providing novel theoretical contributions to AR in retail and insights into consumer behavior.

Keywords: *Augmented Reality, Technology Acceptance Model, Attitudinal Ambivalence, Purchase Intention, Sephora Virtual Artist, Beauty Industry*

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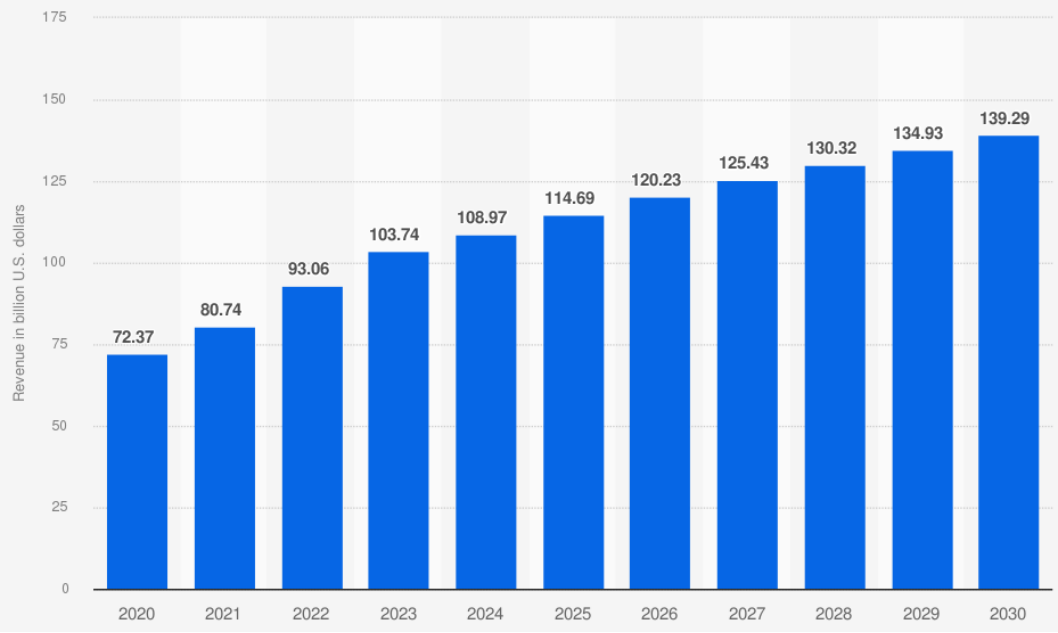
INTRODUCTION

The global retail industry is undergoing a fundamental transformation driven by digital advancements, which profoundly impact the beauty sector. This digital era has not only revolutionized distribution channels but also reshaped the entire beauty industry ecosystem, from product development to consumer interaction. This shift is further amplified by evolving consumer preferences that demand more personalized, interactive, and digitally integrated shopping experiences.

The global cosmetics market demonstrates consistent and significant growth. As illustrated in Figure 1, revenue is projected to increase from $103.74 billion in 2023 to $139.29 billion by

2030, representing a 34.27% rise over seven years (Statista, 2025d). This trend highlights the resilience of the beauty sector and the fundamental changes in consumer preferences. The growth is driven by the democratization of beauty through digitalization, a shift towards digital-first consumers, and technological advancements that enable greater personalization and interactivity. Consumers now seek immersive, educational, and personalized experiences, reflecting the industry's successful adaptation through technology adoption and business model innovation.

Figure 1. Global Cosmetics Market Revenue during 2020 to 2030



Source: Statista (2025d)

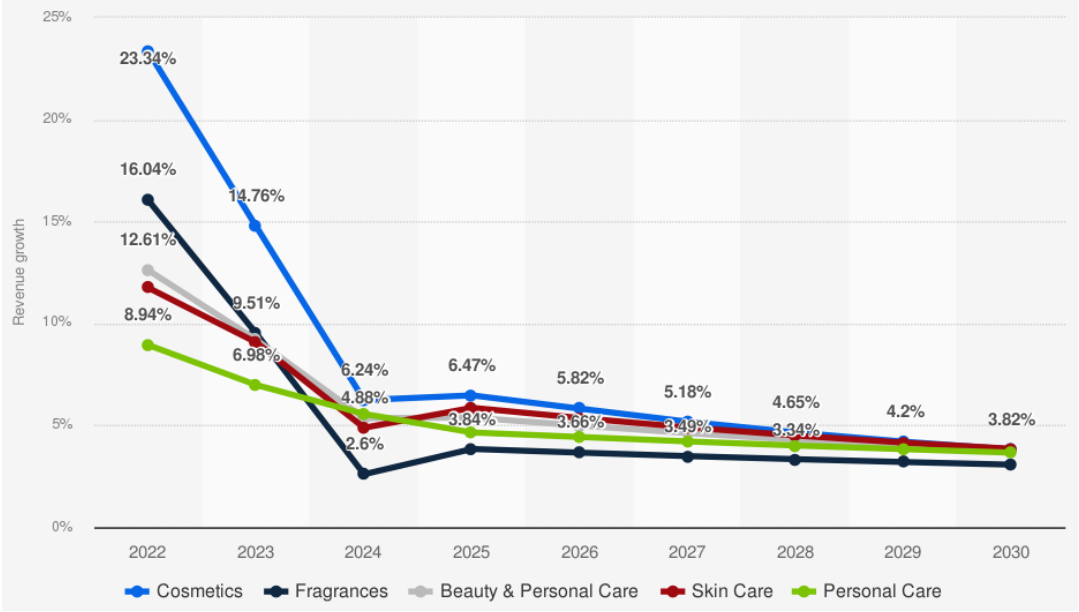
Amidst this digital transformation, AR has emerged as a pivotal technology that bridges online and offline shopping experiences in the beauty industry. AR offers innovative solutions to challenges such as the inability to directly try products, introducing new variables in consumer interaction. Global mobile AR users are projected to grow from 983 million in 2023 to 1,187 million by 2028, a 20.75% increase, signifying broader acceptance and a fundamental shift in the adoption of digital innovations (ARtillery Intelligence, 2024). This growth is driven by advancements in smartphones, improved AR quality, and evolving consumer desires for integrated digital and physical shopping experiences. According to Statista (2024), global AR business-to-consumer (B2C) revenue is projected to increase from $4.44 billion in 2023 to $8.03 billion by 2029, underscoring AR's evolution into a critical component of retailers' digital strategies that significantly influences purchasing decisions. Specifically, AR in the beauty sector has transformed the crucial ability to try products before purchase, thereby reducing uncertainty and increasing consumer confidence through real-time visualization.

In Indonesia, the dynamic growth of digital technology provides a strong foundation for the adoption of AR in the beauty industry. The country's digital infrastructure has developed significantly, with the number of internet users increasing from 194.61 million in 2023 to a projected 257.68 million by 2029 (Statista, 2025b). This represents a 32.4% increase over six years, indicating accelerated digital adoption and creating a conducive environment for AR technology. Additionally, Indonesia's competitive position in global e-commerce reinforces this trend; the Compound Annual Growth Rate (CAGR) is projected to be 9.57% for 2024-2029, surpassing that of global and mature markets (Statista, 2025c). This performance highlights the substantial market potential and increasing maturity of Indonesia's digital

ecosystem. E-commerce growth is driven by demographic changes and fundamental shifts in consumer behavior, reflecting a move toward a digital-first approach, increased trust in online transactions, and a readiness for technological innovations. This dynamic creates ideal momentum for the development and implementation of AR in Indonesian retail, forming a solid foundation for beauty retailers like Sephora.

The dynamics of growth in the Indonesian beauty industry reflect significant changes in local consumer preferences. Figure 2 illustrates the development of the Indonesian beauty market, with the cosmetics segment experiencing the most dynamic growth at 23.34% in 2022, significantly outpacing perfumes (16.04%) and skincare (8.94%) (Statista, 2025a). This robust growth indicates a strong consumer preference and a shift in how Indonesian consumers engage with beauty products, highlighting increased beauty awareness, a developing digital beauty culture, and more sophisticated purchasing behaviors. In line with these trends, the Indonesian beauty tech market is also showing promising growth, with projected revenue increasing from $140.27 million in 2023 to $203 million in 2030, representing a 44.7% increase (Statista, 2025e). This trend signifies substantial investment and a fundamental shift in the industry's ecosystem, reflecting consumer openness to digital innovations and the industry's confidence in tech sustainability.

Figure 2. Growth of Indonesia's Beauty & Personal Care Segment during 2022 to 2030



Source: Statista (2025a)

Despite global growth in AR, Indonesia experiences a gap in AR adoption within the beauty retail sector. This underscores the need to understand the factors influencing AR acceptance, particularly through the lens of the Technology Acceptance Model (TAM). Analyzing characteristics of the Indonesian market, such as social influence and personalization preferences, is crucial for developing effective marketing strategies and product development, enabling companies like Sephora to capitalize on this transformative trend. TAM has undergone several revisions to improve its predictive capabilities. Zhang et al. (2023) extended TAM by integrating attitudinal ambivalence (AA) as a mediating variable. According to Zhang et al. (2023), AA is a psychological state in which individuals experience simultaneous positive and negative feelings toward an object. In the context of new technology adoption, this ambivalence can arise from the conflict between the attraction to benefits and concerns about perceived risks, ultimately influencing purchase intention (PI).

Previous studies have extensively explored the impact of AR on consumer behavior and PI (Whang et al., 2021; Xu et al., 2023; Yim et al., 2017). Yim et al. (2017) highlighted AR's effectiveness through interactivity and vividness, while Whang et al. (2021) specifically examined its effect on beauty product PI, focusing on consumer control. However, despite these valuable contributions, there remains a notable research gap, particularly in the dynamic Indonesian market. Existing models often do not fully capture the nuanced interplay of diverse AR experience dimensions, perceived usability factors, and complex psychological states like AA, especially within the context of beauty retail in emerging economies. As noted by Guo and Zhang (2024), perceived risk can strongly influence AA, while Zhang et al. (2023) found that AA can mediate the effects of perceived usefulness (PU), perceived ease of use (PEOU), and risk on PI. In the Indonesian beauty context, consumers may be drawn to AR's visualization but may also be concerned about accuracy, creating internal conflict that impacts purchasing. This research is relevant as Indonesia, with above-average e-commerce compound annual growth rate (CAGR), could serve as a benchmark for AR implementation in beauty for other emerging markets. The gap between substantial market potential and low AR adoption rates can be explained by AA.

This study aims to bridge this gap by uniquely integrating the comprehensive AR experience framework with an extended Technology Acceptance Model (TAM), explicitly incorporating AA as a mediating factor to provide a more holistic understanding of AR adoption and its influence on PI in Indonesia.

Hypotheses Development

This research develops a comprehensive theoretical model by integrating AR experience concepts with the TAM to analyze the influence of Sephora Virtual Artist AR technology on consumer purchase intention (PI) in Indonesia. The model synthesizes AR experience variables proposed by Guo and Zhang (2024), including sensory experience (SE), emotional experience (EE), thinking experience (TE), action experience (AE), and related experience (RE), with the extended TAM introduced by Zhang et al. (2023), which incorporates attitudinal ambivalence (AA) as a mediator. This approach provides a multivariate framework to understand how AR user experiences interact with core TAM constructs and ultimately affect purchase intention, considering the unique dynamics of the Indonesian market.

AR Experience Dimensions and Perceived Ease of Use

A positive SE with AR technology is hypothesized to enhance its perceived ease of use (PEOU). Rich visual and sensory elements in AR, such as high-quality product visualization, reduce cognitive effort and make the technology feel more intuitive (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Whang et al., 2021; Xu et al., 2023). The immersive virtual try-on feature allows users to directly observe product effects, aligning with the theory of experiential consumption (Holbrook & Hirschman, 1982, as cited in Zhang et al., 2023). This experience increases the perception of ease of use, as defined by Davis (1989, as cited in Guo & Zhang, 2024). Similarly, positive EE during AR interaction is expected to enhance PEOU. Enjoyable, entertaining, and engaging AR experiences foster a stronger connection with the technology, reducing psychological barriers and enhancing the perception of ease (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Whang et al., 2021b; Xu et al., 2023; Yim et al., 2017). When users derive pleasure and satisfaction from the AR experience, they tend to perceive the technology as less complex and more straightforward to operate (Davis, 1989, as cited in Guo & Zhang, 2024).

TE which involves cognitive processing and a deeper understanding of AR features that facilitate systematic evaluation and comparison, contributes to PEOU by making the technology's operation more logical and straightforward (Guo & Zhang, 2024; Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Whang et al., 2021; Xu et al., 2023b; Yim et al., 2017). The direct physical interaction and control afforded by AE within AR—such as

seamless manipulation, gesture control, and system responsiveness—make AR feel more natural and easy to operate (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Xu et al., 2023). This hands-on experience reduces perceived effort and facilitates motor learning, enhancing the sense of control and ease, consistent with the TAM's focus on effortlessness (Davis, 1989; Venkatesh et al., 2003, as cited in Guo & Zhang, 2024).

Finally, the social support, shared knowledge, and community interaction derived from RE are proposed to alleviate perceived complexities, making the AR application seem easier to adopt and navigate among peers. Based on these rationales, the following hypotheses are proposed:

H1: Sensory experience has a positive effect on perceived ease of use.

H2: Emotional experience has a positive effect on perceived ease of use.

H3: Thinking experience has a positive effect on perceived ease of use.

H4: Action experience has a positive effect on perceived ease of use.

H5: Related experience has a positive effect on perceived ease of use.

AR Experience Dimensions and Perceived Usefulness

A compelling SE in AR, offering realistic and accurate product visualizations, significantly enhances perceived usefulness (PU) by reducing uncertainty and enabling informed decisions, thereby demonstrating clear practical value (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Xu et al., 2023; Yim et al., 2017). Positive EE during AR interactions, such as feelings of joy and excitement, cultivate a belief in the technology's value, reinforcing its perceived utility for achieving shopping goals effectively (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Xu et al., 2023; Yim et al., 2017). Furthermore, TE that enables systematic product evaluation and comparison via AR allows consumers to appreciate the practical benefits, thus increasing perceived usefulness by optimizing their decision-making process (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Xu et al., 2023; Yim et al., 2017). An engaging AE, characterized by interactive try-ons and seamless manipulation, directly demonstrates the functional advantages of AR in facilitating realistic product interaction, reinforcing its usefulness (Bulearca & Tamarjan, 2010; Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Xu et al., 2023). Lastly, a positive RE, through social interaction and shared insights about the AR application, validates the practical utility and relevance of the AR application within a social context, bolstering its perceived usefulness for consumers' shopping journeys (McLean & Wilson, 2019; Park & Yoo, 2020; Xu et al., 2023; Yim et al., 2017). Therefore, it is hypothesized that:

H6: Sensory experience has a positive effect on perceived usefulness.

H7: Emotional experience has a positive effect on perceived usefulness.

H8: Thinking experience has a positive effect on perceived usefulness.

H9: Action experience has a positive effect on perceived usefulness.

H10: Related experience has a positive effect on perceived usefulness.

Perceived Ease of Use and Perceived Usefulness

A foundational tenet of the TAM posits that the perceived ease of using a technology directly influences its perceived usefulness (Davis, 1989, as cited in Guo & Zhang, 2024). When an AR application, such as Sephora Virtual Artist, is intuitive and straightforward to navigate, users are more likely to leverage its features successfully and without frustration. This recognition enhances their appreciation of the application's practical benefits in improving their shopping experience. The ease of interaction reduces cognitive load, allowing users to fully realize the utility that the AR tool offers, such as accurate virtual try-ons and enhanced

product information, which leads to a stronger perception of its overall usefulness (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020).

H11: Perceived ease of use has a positive effect on perceived usefulness.

Perceived Ease of Use, Perceived Usefulness, and Attitudinal Ambivalence

AA occurs when individuals simultaneously hold conflicting positive and negative evaluations toward an object or technology (Davis, 1989; Venkatesh et al., 2003, as cited in Zhang et al., 2023). In the context of AR, a higher PEOU can significantly mitigate this ambivalence. When the technology is simple, effortless, and intuitive to use, the positive feelings associated with smooth interaction tend to outweigh potential negative concerns, leading to a more consistent and favorable attitude (Kang et al., 2017; McLean & Wilson, 2019; Park & Yoo, 2020; Vahdat et al., 2021; Zhang et al., 2023). Similarly, a strong PU of the AR application is suggested to result in lower AA. If consumers perceive significant benefits from using AR, the positive evaluation of these benefits can diminish any lingering doubts, negative feelings, or perceived drawbacks (Hao et al., 2017; Kang et al., 2017; McLean & Wilson, 2019; Wang et al., 2017; Zhang et al., 2023), fostering a more resolute and positive overall attitude toward the technology (Davis, 1989; Venkatesh & Davis, 2000, as cited in Zhang et al., 2023).

H12: Perceived ease of use has a negative effect on attitudinal ambivalence.

H13: Perceived usefulness has a negative effect on attitudinal ambivalence.

Perceived Ease of Use, Perceived Usefulness, and Purchase Intention

Both PEOU and PU are well-established direct determinants of behavioral intention, including PI, within the TAM framework (Davis, 1989, as cited in Zhang et al., 2023). When consumers find an AR application easy to use, the reduced effort, enhanced confidence, and seamless experience directly translate into a greater willingness to purchase products through or influenced by the AR tool (McLean & Wilson, 2019; Park & Yoo, 2020; Wang et al., 2016, 2017; Xu et al., 2023; Zhang et al., 2023). This indicates that a user-friendly interface facilitates the conversion from exploration to transactional intent. Furthermore, if consumers perceive AR as a valuable tool that effectively assists them in making better purchasing decisions—such as providing realistic product previews, personalized recommendations, or a sense of confidence in product fit—this perceived utility directly strengthens their intention to make a purchase. The clearer the benefits, the stronger the motivation to act (McLean & Wilson, 2019; Park & Yoo, 2020).

H14: Perceived usefulness has a positive effect on purchase intention.

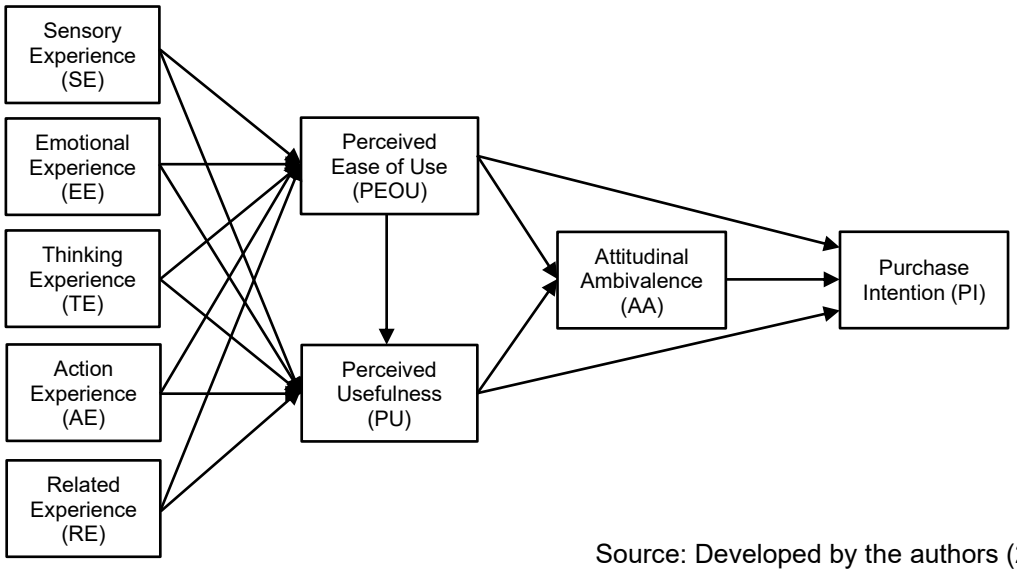
H15: Perceived ease of use has a positive effect on purchase intention.

Attitudinal Ambivalence and Purchase Intention

AA is a critical psychological state that can significantly hinder behavioral outcomes, including PI. When consumers experience conflicting positive and negative feelings or internal uncertainty regarding the AR technology or the products viewed through it, this cognitive dissonance creates a barrier to clear decision-making (Conner et al., 2003; Hänze, 2001; Kang et al., 2017; Russell et al., 2011; Thompson et al., 1995; Zhang et al., 2023). The presence of ambivalence indicates a lack of clear commitment and resolve, making consumers less likely to convert their interest into an actual purchase. Therefore, reducing AA is crucial for fostering stronger and more confident purchase intentions.

H16: Attitudinal ambivalence has a negative effect on purchase intention.

Figure 3. Research Framework



Source: Developed by the authors (2025)

METHOD

This quantitative, cross-sectional study investigates the influence of Sephora Virtual Artist AR technology on consumer PI in Indonesia. The quantitative nature of the study enables objective hypothesis testing of the TAM relationships, while the cross-sectional design effectively captures variable relationships at a single point in time (Cooper & Schindler, 2014).

Primary data, essential for measuring TAM variables, was collected directly through structured Google Form questionnaires. Each variable, including SE, EE, TE, AE, RE, PEOU, PU, AA, and PI was assessed using four items on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), adapted from various studies, as shown in Table 1. Secondary data from academic journals and industry reports provided theoretical grounding (Cooper & Schindler, 2014). Purposive and snowball sampling targeted 300 Indonesian respondents aged 18 to 60 years who are recent users of the AR Sephora Virtual Artist.

Data analysis will include descriptive statistics. Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 will be employed to test the hypotheses, which is suitable for latent variables and complex models. The analysis will encompass Measurement Model Evaluation (assessing reliability and validity through outer loadings, composite reliability, Cronbach's alpha, average variance extracted (AVE), Fornell-Larcker criterion, and HTMT) and Structural Model Evaluation (examining path coefficients, R^2, f^2, and Q^2). Hypothesis testing will utilize bootstrapping with 5,000 subsamples at $\alpha = 0.05$. The mediating effects of AA and the overall predictive power of the model (R^2 and Q^2) will also be assessed (Hair et al., 2022).

Table 1. Variables Measurement

Variable	Code	Statement
Sensory Experience (SE) (McLean & Wilson, 2019)	SE1	The AR Sephora Virtual Artist feature provides an appealing visual display of products.
	SE2	The AR Sephora Virtual Artist feature presents products in a realistic 3D view.
	SE3	The AR Sephora Virtual Artist feature allows me to see product details clearly.

Variable	Code	Statement
	SE4	The AR Sephora Virtual Artist feature provides an experience of trying products as if in real life.
Emotional Experience (EE) (Park & Yoo, 2020)	EE1	I feel happy using the AR Sephora Virtual Artist feature.
	EE2	I feel excited when using the AR Sephora Virtual Artist feature.
	EE3	Using the AR Sephora Virtual Artist feature is very entertaining.
	EE4	I enjoy the process of trying products through the AR Sephora Virtual Artist feature.
Thinking Experience (TE) (Yim et al., 2017)	TE1	The AR Sephora Virtual Artist feature helps me understand products better.
	TE2	The AR Sephora Virtual Artist feature makes it easier for me to evaluate a product.
	TE3	The AR Sephora Virtual Artist feature helps me imagine the outcome of using a product.
	TE4	The AR Sephora Virtual Artist feature supports my decision-making process.
Action Experience (AE) (McLean & Wilson, 2019)	AE1	The AR Sephora Virtual Artist feature is easy to use.
	AE2	The AR Sephora Virtual Artist feature allows me to try various products quickly.
	AE3	I can quickly master how to use the AR Sephora Virtual Artist feature.
	AE4	The AR Sephora Virtual Artist feature provides an efficient shopping experience.
Related Experience (RE) (Park & Yoo, 2020)	RE1	The AR Sephora Virtual Artist feature aligns with my shopping needs.
	RE2	The AR Sephora Virtual Artist feature helps me interact with products.
	RE3	The AR Sephora Virtual Artist feature suits my shopping style.
	RE4	The AR Sephora Virtual Artist feature allows me to share and interact with other Sephora users who also use this feature.
Perceived Ease of Use (PEOU) (Venkatesh & Davis, 2000)	PEOU1	It is very easy for me to use the AR Sephora Virtual Artist feature.
	PEOU2	The operation method of AR Sephora Virtual Artist is easy to understand.
	PEOU3	AR Sephora Virtual Artist is easy to use.
	PEOU4	I can easily use AR Sephora Virtual Artist according to my needs.
Perceived Usefulness (PU) (Davis, 1989)	PU1	AR Sephora Virtual Artist enhances my shopping effectiveness.
	PU2	AR Sephora Virtual Artist improves my shopping productivity.
	PU3	AR Sephora Virtual Artist helps me make better shopping decisions.

Variable	Code	Statement
	PU4	AR Sephora Virtual Artist is useful for my shopping process.
Attitudinal Ambivalence (AA)	AA1	I feel uncertain about the AR Sephora Virtual Artist feature.
	AA2	I have difficulty determining a definite stance toward the AR Sephora Virtual Artist feature.
	AA3	I am not entirely sure (interested but also hesitant) about purchasing a product after trying it through the AR Sephora Virtual Artist feature.
	AA4	I find it difficult to decide whether the AR Sephora Virtual Artist feature truly helps or not in the shopping process.
Purchase Intention (PI) (Whang et al., 2021b)	PI1	I intend to buy a product after trying it on AR Sephora Virtual Artist
	PI2	I will recommend products I try on AR Sephora Virtual Artist to others.
	PI3	I plan to buy the product I tried on AR Sephora Virtual Artist soon.
	PI4	I feel more confident purchasing products after trying them through AR Sephora Virtual Artist.

Source: Developed by the authors (2025)

RESULT AND DISCUSSION

Respondents' Profiles & Usage Pattern

Table 2 presents a comprehensive overview of the respondents' profiles and their usage patterns of the Sephora Virtual Artist augmented reality feature.

Table 2. Respondents' Profiles & Usage Pattern

Characteristics	Category	Number of Respondents	Percentage
Gender	Male	85	28.33%
	Female	215	71.67%
AR Usage Frequency (last 1 month)	< 3	124	41.33%
	3-5	107	35.67%
	6-8	42	14.00%
	> 8	27	9.00%
Average Monthly Spending at AR Sephora Virtual Artist	< IDR500,000	98	32.67%
	IDR500,001 - IDR1,000,000	113	37.67%
	IDR1,000,001 - IDR2,000,000	54	18.00%
	IDR2,000,001 - IDR5,000,000	28	9.33%
	> IDR5,000,000	7	2.33%
Purpose	Personal use	202	67.,33%
	Gift	43	14.33%
	Both	55	18.33%

Characteristics	Category	Number of Respondents	Percentage
Product	Makeup	237	79.00%
	Skincare	183	61.00%
	Haircare	69	23.00%
	Bodycare	37	12.33%
	Fragrance	127	42.33%
	Others	28	9.33%
AR Apps	Sephora	300	100.00%
	L'Oreal	72	24.00%
	TikTok	156	52.00%
	Shopee	183	61.00%
	Tokopedia	147	49.00%
	Others	38	12.67%

Source: Processed data (2025)

Based on Table 2, Indonesian Sephora Virtual Artist users are predominantly female and derive significant value from augmented reality (AR). Optimizing this experience requires segmented AR features: value comparisons for low-to-medium spenders and advanced personalization for high spenders. Enhanced visualization accuracy for makeup and skincare, as well as innovative methods for non-visual products, are crucial. Additionally, Sephora must prioritize seamless integration of AR with transactions to maintain its competitive edge in this maturing market.

Measurement Model Evaluation

Table 3 presents the results of the Measurement Model Evaluation, specifically detailing the validity and reliability tests conducted on the constructs and their corresponding indicators.

Table 3. Measurement Model Evaluation (Validity and Reliability Test)

Variable	Indicator	Factor Loading	AVE	Cronbach's Alpha	Composite Realibility
SE	SE1	0.700	0.612	0.868	0.910
	SE2	0.848			
	SE3	0.862			
	SE4	0.703			
EE	EE1	0.885	0.763	0.863	0.907
	EE2	0.861			
	EE3	0.868			
	EE4	0.879			
TE	TE1	0.714	0.770	0.896	0.928
	TE2	0.930			
	TE3	0.908			
	TE4	0.937			
AE	AE1	0.840	0.718	0.893	0.730
	AE2	0.882			
	AE3	0.881			
	AE4	0.781			
RE	RE1	0.850	0.689	0.847	0.713

Variable	Indicator	Factor Loading	AVE	Cronbach's Alpha	Composite Realibility
	RE2	0.864			
	RE3	0.873			
	RE4	0.725			
PU	PU1	0.937	0.764	0.861	0.906
	PU2	0.993			
	PU3	0939			
	PU4	0.939			
PEOU	PEOU1	0.991	0.750	0.863	0.909
	PEOU2	0.741			
	PEOU3	0.707			
	PEOU4	0.876			
AA	AA1	0.778	0.762	0.863	0.909
	AA2	0.890			
	AA3	0.789			
	AA4	0.792			
PI	PI1	0.838	0.707	0.898	0.930
	PI2	0.873			
	PI3	0.786			
	PI4	0.863			

Source: Processed data (2025)

The results demonstrated excellent convergent validity, as factor loadings were predominantly above 0.8 and all Average Variance Extracted (AVE) values exceeded 0.6, confirming that the indicators effectively represent the latent variables (Hair et al., 2022). Similarly, reliability tests indicated strong internal consistency, with Cronbach's Alpha ranging from 0.847 to 0.898 and Composite Reliability ranging from 0.713 to 0.930, both significantly exceeding the 0.7 threshold (Hair et al., 2022). This establishes a robust foundation for structural model analysis.

Structural Model Evaluation

The evaluation of the structural model assessed the predictive capability and relevance of the research model using R^2, f^2, and Q^2. Table 4 displays the results of the R-Squared and Adjusted R-Squared tests for the structural model. According to Table 4, the R^2 values for the endogenous variables ranged from 0.522 to 0.723, indicating moderate to substantial explanatory power (Hair et al., 2022). AA had the highest R^2 value of 0.723, demonstrating strong predictability (Rigdon, 2012). Additionally, PEOU and PI exhibited moderate to substantial R^2 values (approximately 0.61), consistent with TAM frameworks. The small differences between R^2 and Adjusted R^2 suggest no significant overfitting.

Table 4. R-Squared and Adjusted R-Squared

Variable	R-Squared	Adjusted R-Squared	Category
AA	0.723	0.683	Moderate
PEOU	0.612	0.607	Moderate
PU	0.522	0.510	Moderate
PI	0.610	0.607	Moderate

Source: Processed data (2025)

Table 5 presents the results of the F-Square (f^2) structural model test, which quantifies the effect size of each predictor variable on the endogenous variables. The effect size (f^2) analysis revealed that PU had the largest contribution (f^2 = 1.172), followed by AA (f^2 = 0.378), both indicating a large effect. PI showed a medium effect (f^2 = 0.047), while PEOU had a small effect (f^2 = 0.007). These results suggest that PU and AA are more dominant in shaping PI (Hair et al., 2019).

Table 5. F-Squared

Variable	F-Squared	Effect
AA	0.378	Large
PEOU	0.007	Small
PU	1.172	Large
PI	0.047	Medium

Source: Processed data (2025)

Table 6 presents the results of the Q-Square (Q^2) structural model test, which evaluates the model's predictive relevance for the endogenous variables. The predictive relevance (Q^2) tests indicated that all endogenous variables had positive values ranging from 1.685 to 2.108, confirming very high predictive relevance (Hair et al., 2019). The sequence of Q^2 values was consistent with R^2, demonstrating strong overall model quality (Shmueli et al., 2016). In summary, the research model exhibited good predictive capability and high empirical relevance.

Table 6. Q-Squared

Variable	SSO	SSE	Q-Squared	Category
AA	0.323	0.319	2.108	Good
PEOU	0.342	0.338	1.936	Good
PU	0.365	0.359	1.756	Good
PI	0.378	0.363	1.685	Good

Source: Processed data (2025)

Hypotheses Testing

Hypotheses testing revealed specific relationships between variables. The findings of this study provide crucial insights into the adoption of augmented reality (AR) technology in the Indonesian beauty retail sector, specifically regarding the Sephora Virtual Artist. Table 7 summarizes the comprehensive results of the hypothesis testing conducted in this research.

Table 7. Hypotheses Testing Result

Direction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Conclusion
SE → PEOU	0.151	0.144	0068	2.234	0.026	Accepted
EE → PEOU	0.267	0.267	0.113	2.370	0.018	Accepted
TE → PEOU	-0.071	-0.076	0.073	0.977	0.329	Rejected
AE → PEOU	0.092	0.101	0.094	0.978	0.328	Rejected
RE → PEOU	0.397	0.394	0.070	5.644	0.000	Accepted
SE → PU	0.162	0.291	0.050	5.104	0.000	Accepted
EE → PU	0.196	0.192	0.061	4.610	0.000	Accepted
TE → PU	0.199	0.202	0.106	1.872	0.062	Rejected
AE → PU	-0.074	-0.075	0.121	0.613	0.540	Rejected

Direction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Conclusion
RE → PU	-0.045	-0.048	0.092	0.489	0.625	Rejected
PEOU → PU	0.458	0.461	0.066	6.903	0.000	Accepted
PEOU → AA	-0.627	0.310	0.078	0.243	0.005	Accepted
PU → AA	-0.214	0.549	0.119	4.122	0.002	Accepted
PEOU → PI	0.033	0.032	0.035	0.916	0.360	Rejected
PU → PI	0.199	0.195	0.075	2.663	0.008	Accepted
AA → PI	-0.667	0.431	0.084	7.873	0.000	Accepted

Source: Processed data (2025)

The findings reveal that a substantial number of the hypothesized correlations are statistically significant, providing clear guidance on user perceptions and intentions. Specifically, sensory experience (SE; H1: β = 0.151, p = 0.026, Accepted), emotional experience (EE; H2: β = 0.267, p = 0.018, Accepted), and related experience (RE; H5: β = 0.397, p = 0.000, Accepted) all demonstrate a significant positive effect on perceived ease of use (PEOU). This suggests that a rich sensory and emotional experience, coupled with familiarity from past related technologies, makes a system feel inherently easier to use. Conversely, thinking experience (TE; H3: β = -0.071, p = 0.329, Rejected) and action experience (AE; H4: β = 0.092, p = 0.328, Rejected) do not significantly influence PEOU.

Regarding perceived usefulness (PU), both SE (H6: β = 0.162, p = 0.000, Accepted) and EE (H7: β = 0.196, p = 0.000, Accepted) contribute positively and significantly, indicating that stimulating senses and positive emotions are crucial for perceived utility. However, TE (H8: β = 0.199, p = 0.062, Rejected), AE (H9: β = -0.074, p = 0.540, Rejected), and RE (H10: β = -0.045, p = 0.625, Rejected) do not show a statistically significant direct impact on PU. Consistent with the Technology Acceptance Model (TAM), PEOU significantly and positively affects PU (H11: β = 0.458, p = 0.000, Accepted), affirming that an easy-to-use system is more likely to be perceived as useful.

Furthermore, both PEOU (H12: β = -0.627, p = 0.005, Accepted) and PU (H13: β = -0.214, p = 0.002, Accepted) significantly and negatively influence attitudinal ambivalence (AA), suggesting that greater PEOU and PU help reduce consumer indecision. While PEOU (H14: β = 0.033, p = 0.360, Rejected) does not directly affect purchase intention (PI), PU (H15: β = 0.199, p = 0.008, Accepted) directly and positively impacts PI. Crucially, AA (H16: β = -0.667, p = 0.000, Accepted) significantly and negatively affects PI, underscoring its role as a key psychological barrier in the consumer decision-making process for AR adoption.

Discussion

Regarding the influence of AR experience dimensions on PEOU, the findings indicate that SE positively contributes to users perceiving AR technology as easy to use. This result aligns with previous studies by Guo and Zhang (2024), Park and Yoo (2020), and McLean and Wilson (2019). The rich visual feedback from SE facilitates realistic virtual try-ons, inherently simplifying interaction and reducing cognitive effort for users. Similarly, EE significantly impacts PEOU. This finding is consistent with prior research by Guo and Zhang (2024), McLean and Wilson (2019), Park and Yoo (2020), and Whang et al. (2021), suggesting that positive emotional responses during AR interactions, such as enjoyment and engagement, foster a stronger connection with the technology. This connection reduces psychological barriers and enhances the perception that the technology is less complex and more straightforward to operate.

Furthermore, RE significantly enhances PEOU, aligning with prior research that emphasizes social factors (Guo & Zhang, 2024; Zhang et al., 2023; Whang et al., 2021). This suggests that social support and shared knowledge from others' AR interactions contribute to users

feeling more confident and less overwhelmed by the technology's complexity. However, TE and AE did not significantly affect PEOU in this study. These findings contrast with some previous literature (Guo & Zhang, 2024; Zhang et al., 2023) and may indicate that for the Sephora Virtual Artist, cognitive evaluation processes or physical interaction aspects such as gesture control are not universally perceived as simplifying the use of the technology. This may be due to specific user expectations or current technological limitations related to these dimensions.

The study also reveals significant impacts of AR experience dimensions on PU. A compelling SE positively influences PU. This aligns with previous studies by Guo and Zhang (2024), Park and Yoo (2020), and Whang et al. (2021), indicating that realistic visualizations reduce uncertainty and enable more informed decisions, thereby demonstrating practical value. Positive EE also significantly enhances PU, consistent with research by Guo and Zhang (2024), Xu et al. (2023), and Venkatesh and Bala (2008). This suggests that feelings of joy and confidence during AR interactions reinforce the belief that the technology is a valuable tool for effectively achieving shopping goals. Moreover, TE strongly contributes to PU, aligning with Guo and Zhang (2024), Park and Yoo (2020), and McLean and Wilson (2019), suggesting that cognitive engagement facilitated by AR—such as systematic product evaluation and comparison—helps consumers recognize the practical benefits of the technology for optimal purchasing decisions. An engaging AE also positively affects PU, consistent with Guo and Zhang (2024), Park and Yoo (2020), and McLean and Wilson (2019), as interactive try-ons and seamless manipulation directly demonstrate the functional advantages of AR in reducing uncertainty and enhancing decision-making. In contrast, RE did not significantly influence PU. This finding contrasts with prior literature (Guo & Zhang, 2024; Park & Yoo, 2020) and suggests that while social aspects may enhance ease of use, they do not necessarily translate into a stronger perception of AR's practical utility for individual decision-making in the beauty retail context for Indonesian consumers.

Consistent with the fundamental tenets of the TAM, PEOU positively influences PU. This finding aligns with previous studies by Guo and Zhang (2024), Park and Yoo (2020), and McLean and Wilson (2019). This implies that when the Sephora Virtual Artist AR is intuitive and straightforward to navigate, users can more effectively leverage its features, thereby recognizing and appreciating its practical benefits in enhancing their shopping experience and leading to a clearer understanding of its utility.

The study further highlights the crucial role of perceived technology attributes in mitigating consumer uncertainty. Both PEOU and PU were found to negatively influence AA. This result aligns with previous studies by Zhang et al. (2023) and Vahdat et al. (2021), implying that when AR technology is perceived as easy to use and highly useful, consumers experience reduced internal conflict and indecision. Clear utility and effortless interaction significantly contribute to forming more consistent and positive attitudes toward the AR application, thereby diminishing any conflicting evaluations that might arise.

The results also confirm that PEOU did not significantly enhance PI; this finding is not aligned with studies by Guo and Zhang (2024) and Zhang et al. (2023). This indicates that for the AR Sephora Virtual Artist, while ease of use is crucial for initial adoption and continued engagement, utility outweighs mere ease in driving direct buying intent. On the other hand, PU significantly impacts PI, consistent with the broader TAM literature and aligned with previous studies by Guo and Zhang (2024), Zhang et al. (2023), and Venkatesh and Bala (2008). This implies that an intuitive and straightforward AR experience that minimizes effort directly translates into a greater willingness to purchase products influenced by the AR tool, as ease of interaction reduces barriers to adoption.

Finally, the study confirms that AA negatively affects PI. This finding aligns with previous research by Guo and Zhang (2024), Zhang et al. (2023), and Festinger (1957). This suggests that when consumers experience conflicting positive and negative feelings toward the AR technology or the products viewed through it, this internal uncertainty creates a substantial barrier to decision-making. Therefore, reducing AA is paramount for converting consumer

interest into actual purchasing behavior, as it signals a lack of clear commitment necessary for strong purchase intent.

CONCLUSION

This study aimed to unravel the intricate impact of Sephora Virtual Artist AR technology on consumer PI in Indonesia, diligently identifying key adoption factors through an extended TAM.

The findings illuminate that SE, EE, and RE significantly enhance PEOU of AR. This suggests that visually appealing, emotionally engaging, and familiar digital interactions make the technology feel more intuitive for users. Furthermore, SE and EE powerfully drive PU, indicating that realistic visuals and positive feelings directly contribute to consumers perceiving the AR tool as beneficial for their shopping. Crucially, as a cornerstone of TAM, PEOU consistently boosts PU, reinforcing that an easy-to-use system is more likely to be seen as valuable. Both PEOU and PU effectively diminish AA, meaning that when consumers find AR easy and useful, their internal conflicts or mixed feelings about the technology are reduced. While PU directly propels PI, a pivotal discovery is the strong negative influence of AA on PI, underscoring its role as a significant barrier. This highlights that unresolved internal conflict can deter purchasing, even if the technology is perceived as useful. Interestingly, TE, AE, and RE did not directly impact PU, nor did TE or AE directly affect PEOU, suggesting their influence might be indirect or less prominent in this specific context. Moreover, PEOU did not directly influence PI, indicating that for beauty products, utility outweighs mere ease in driving direct buying intent. The model's predictive power was confirmed as adequate, providing a robust framework for these insights.

These results offer potent practical implications for beauty retailers navigating the digital landscape. To truly captivate consumers and boost sales, businesses must prioritize enhancing the sensory and emotional aspects of their AR applications. Brands must also strategically communicate AR's practical utility, clearly demonstrating how it saves time, reduces guesswork, and enhances decision-making, thereby reducing consumer uncertainty. Actively mitigating AA through transparent information and building trust in virtual representations is paramount for converting interest into actual purchases. This approach will not only enhance consumer engagement but also strengthen market adoption, ultimately contributing significantly to the advancement of digital commerce and economic growth within the beauty industry.

For future endeavors, researchers should embrace longitudinal studies to capture evolving perceptions and long-term AR adoption patterns, providing a dynamic understanding of consumer behavior over time. Exploring additional factors such as trust, perceived risk, social influence, and personal innovativeness will offer a more holistic view of PI. Employing mixed methods can yield richer, more nuanced insights into user interactions and psychological responses. Furthermore, investigating actual purchase behavior post-AR use, rather than just intention, will provide concrete evidence of its economic impact. Conducting cross-industry comparisons will further enrich our understanding of this transformative technology's versatility and specific value propositions across different sectors.

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