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The Formation of Consumer Value under AI-Based Recommendation Content in the Digital Economy

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ABSTRACT

This study investigates how integrated strategic communication influences the process of consensus building and organizational readiness during digital innovation in the retail banking industry. This study examined how the technological attributes of AI-based short-form content recency, reliability, and shareability effect cognitive attributes, specifically convenience and usefulness, and how these cognitive responses subsequently influence satisfaction and repurchase intention. Analyzed differences based on consumers' levels of functional and economic value. A survey was conducted with 400 consumers who had viewed AI-based short-form content and purchased the recommended product, and the research model was validated using exploratory factor analysis, confirmatory factor analysis, structural equation modeling, and multi-group analysis. The results showed that relevance and the possibility of distribution significantly increase perceived convenience ($\beta = 0.366$ and $\beta = 0.600$; $p < 0.001$), while reliability has a positive effect on usefulness ($\beta = 0.266$; $p < 0.001$). Usefulness has a pronounced positive effect on satisfaction ($\beta = 3.378$; $p < 0.001$), which, in turn, significantly increases the intention of repeat purchase ($\beta = 0.921$; $p < 0.001$). The practical significance of the study lies in substantiating the priority of increasing the perceived usefulness and trust in AI content in order to increase loyalty and repeat demand. The prospects for further research are related to expanding the sample to different age and gender groups, comparative analysis of various types of AI algorithms, as well as studying the long-term effects of personalization in the context of digital transformation of consumer markets.

KEYWORDS: Digitalization, Digital Economy, Digital Platform, Marketing, Personalization, Artificial Intelligence, Repeated Consumption

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Формирование потребительской ценности в условиях внедрения AI-рекомендательных технологий в цифровой экономике

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АННОТАЦИЯ

Стремительное развитие технологий искусственного интеллекта трансформирует цифровой маркетинг и механизмы формирования потребительского поведения, особенно в индустрии красоты, где персонализированные рекомендации становятся ключевым инструментом конкурентного преимущества. Целью исследования является анализ структурных взаимосвязей между техническими характеристиками AI-основанного рекомендательного контента, когнитивными оценками пользователей, эмоциональной реакцией и поведенческим результатом, а также выявление различий этих связей в зависимости от уровня воспринимаемой функциональной и экономической ценности. Проанализированы различия в зависимости от уровня функциональной и экономической ценности для потребителей. В исследовании приняли участие 400 потребителей, которые просмотрели краткий контент на основе искусственного интеллекта и приобрели рекомендованный продукт, и модель исследования была подтверждена с помощью исследовательского факторного анализа, подтверждающего факторного анализа, моделирования структурными уравнениями и анализа нескольких групп. Результаты показали, что актуальность и возможность распространения значимо повышают воспринимаемое удобство ($\beta = 0.366$ и $\beta = 0.600$; $p < 0.001$), тогда как надёжность оказывает положительное влияние на полезность ($\beta = 0.266$; $p < 0.001$). Полезность оказывает выраженное положительное влияние на удовлетворённость ($\beta = 3.378$; $p < 0{,}001$), которая, в свою очередь, существенно повышает намерение повторной покупки ($\beta = 0.921$; $p < 0{,}001$). Практическая значимость исследования заключается в обосновании приоритетности повышения воспринимаемой полезности и доверия к AI-контенту для усиления лояльности и повторного спроса. Перспективы дальнейших исследований связаны с расширением выборки на различные возрастные и гендерные группы, сравнительным анализом различных типов AI-алгоритмов, а также изучением долгосрочных эффектов персонализации в условиях цифровой трансформации потребительских рынков.

КЛЮЧЕВЫЕ СЛОВА: цифровизация, цифровая экономика, цифровая платформа, маркетинг, персонализация, искусственный интеллект, повторное потребление

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INTRODUCTION

The rapid advancement of digital technologies has transformed consumers' lifestyles and purchasing behaviors, heightening the importance of emotional satisfaction, personalization, and immediate responsiveness (Seong, 2025). In this trend, artificial intelligence (hereinafter – AI) has gained attention as a core technology capable of delivering personalized experiences. By analyzing individuals' preferences and contextual information based on extensive data, AI provides optimized information in real time, fulfilling consumer expectations and enhancing trust in the brand (Epart, 2025). Particularly, the beauty industry is one of the sectors that has most rapidly adopted hyper-personalization technologies, utilizing AI-based recommendation content to deliver customized product information and user experiences to consumers (Lee, 2023). In the context of the digital economy, AI personalization is becoming a strategic tool for creating competitive advantages. Algorithmic recommendation systems not only improve the accuracy of communication with consumers but also create new mechanisms for distributing attention and value within digital ecosystems. Thus, AI content serves not just as a marketing tool but also as an element of strategic management of consumer experience in a platform-type economy.

Meanwhile, as the shift toward video-centred social media accelerates, short-form content that delivers key messages within a brief time span has become a central mode of consumer communication. Platforms such as TikTok, Instagram Reels, and YouTube Shorts automatically expose beauty-related videos tailored to user preferences through AI recommendation systems. These systems directly influence product awareness and the formation of purchase intentions. In particular, short-form beauty content serves as an effective digital marketing tool that enhances product perception and brand attitudes and drives actual purchases by eliciting strong visual stimulation and emotional engagement (Jung & Kwon, 2025). The integration of AI technologies with short-form content is reshaping consumer experiences in the beauty industry on a new level. However, empirical research examining how the value perceived through AI-based beauty product recommendation content translates into actual satisfaction and repurchase intention remains insufficient. Given that beauty products are consumption goods strongly influenced by individual preferences and emotional satisfaction, it is necessary to closely investigate how consumers' perceptions of functional value (product utility and performance) and economic value (cost-effectiveness) affect their purchasing behavior (Chandra, 2025).

Despite the growing amount of research in the field of AI recommendation systems, existing work tends to consider technological characteristics, cognitive assessments, and behavioral intentions in isolation. There is no integrated model explaining the sequential transformation of technological characteristics of AI content into cognitive assessments, emotional reactions, and subsequent purchasing behavior. Accordingly, this study aims to analyze how the technical characteristics of AI-based beauty product recommendation content recency, reliability, and shareability affect consumers' cognitive attributes (convenience and usefulness), emotional responses (satisfaction), and behavioral outcomes (repurchase intention). Furthermore, by comparing differences in consumer perception structures according to levels of functional value and economic value, this study seeks to provide a comprehensive understanding of how AI-driven personalized marketing influences the formation of value perceptions and behavioral intentions among consumers. Ultimately, by clarifying how AI-based recommendation content connects consumers' thoughts and behaviors, the study aims to offer insights that can inform AI-personalized content strategies and consumer experience design in the beauty industry. From a practical point of view, the research results can be used to develop AI personalization strategies aimed at increasing the economic efficiency of digital marketing, optimizing the customer path and creating sustainable competitive advantages.

LITERATURE REVIEW

AI refers to technologies that mimic human cognition and judgment to solve problems or make autonomous decisions. Across fields such as healthcare, finance, education, and entertainment, AI has enabled personalized services through the integration of big data, machine learning, and deep learning (CSES, 2023). Personalized recommendation systems have evolved based on collaborative filtering and content-based filtering, and more recently, hybrid models combining both approaches have

become mainstream due to their sophistication and contextual relevance (Lee, 2024). The AI-based beauty product recommendation content examined in this study is likewise grounded in a hybrid recommendation framework.

Beyond recommendation algorithms, AI techniques such as sentiment analysis have been applied to beauty product reviews to classify positive and negative consumer opinions using machine learning algorithms (e.g., K-Nearest Neighbor) and text-mining approaches (Wardani et al., 2022). However, these studies mainly focus on improving classification accuracy and do not examine how AI-driven content characteristics influence consumer satisfaction and repurchase intention from an economic and strategic perspective. Recent industry reports also emphasize that AI-driven personalization enhances user experience by integrating behavioral data and contextual signals to optimize real-time content delivery (Epark, 2025). Such developments highlight the growing strategic importance of AI in digital marketing ecosystems.

Short-form content typically consists of videos approximately 15 to 60 seconds in length and has rapidly proliferated as it aligns with mobile-friendly consumption patterns. Platforms such as YouTube (Shorts), Instagram (Reels), and TikTok continuously expose users to beauty-related videos tailored to their preferences through algorithmic recommendations. Accumulating findings indicate that attributes such as informativeness, entertainment, interactivity, and credibility positively influence satisfaction and purchase intention. In particular, the vertical immersive format delivers strong visual stimuli within a short time span, compressing the decision-making process from initial interest to behavioral conversion (Kim, 2025a).

Recency refers to the extent to which information is provided when users need it. In the rapidly changing beauty context, delivering up-to-date information reduces search time and enhances the speed and accuracy of purchase decisions (Kim, 2025b). Reliability refers to the degree to which the information in the content is perceived as factual and free from distortion. When trust is established, acceptance and resonance with the information increase, thereby strengthening consumers' willingness to follow the recommendation and proceed with a purchase (Kim, 2025c).

Shareability refers to the extent to which content can be easily transmitted and disseminated among users. Short, impactful formats encourage engagement and drive virality, thereby accelerating brand awareness and product learning (Park, 2024). Convenience refers to the experience of perceiving the search and usage processes as simple and low-effort. Personalized recommendations reduce the time and effort costs for users, thereby increasing continued usage, satisfaction, and readiness to purchase (Sim & Yoon, 2020). Usefulness refers to the extent to which the provided information is evaluated as genuinely helpful for achieving one's goals. Facilitating product understanding and simplifying comparisons of alternatives enhances confidence in purchase decision-making (Lee, 2021).

Perceived value is understood as consumers' overall assessment of the balance between the benefits and costs experienced when using a product or service. It is not merely satisfaction relative to price but is formed by considering the utility gained from product use along with the time, psychological, and monetary costs incurred during the process. In this study, perceived value is categorized into functional value and economic value. Functional value refers to value based on product performance and utility, whereas economic value refers to value based on price fairness and non-monetary costs, such as time and effort. Functional value is primarily shaped by trust in product quality and performance, while economic value is reinforced by perceptions of efficiency and rational decision-making. Both dimensions contribute to purchase intention by reducing information search costs and increasing decision confidence, although their relative influence may vary depending on consumers' value orientation (Lee, 2021). Prior studies further indicate that functional and economic value may exert differential effects on satisfaction and repurchase intention, particularly in personalized digital environments (Chandra, 2025). In addition, research on brand experience suggests that positive evaluative perceptions can strengthen brand loyalty and brand equity, highlighting the broader strategic importance of value-based consumer judgments (Athira et al., 2024).

Purchase intention refers to the behavioral willingness to buy a specific product, and it becomes stronger as the burden of information search decreases in personalized short-form recommendation environments. External cues, such as price, quality, and packaging, interact with individual psycholog-

ical factors, while content attributes, such as reliability, usefulness, and convenience, reduce decision-making uncertainty and accelerate purchase decisions (Li, 2025; Khanh et al., 2026). Previous studies conducted in crisis contexts have also confirmed that satisfaction significantly mediates the effects of social influence, price value, and convenience on repurchase intention among Generation Z consumers (Thuc, 2023). These findings suggest that even under uncertain economic conditions, satisfaction remains a critical determinant of behavioral continuity, highlighting its strategic importance in digital consumption environments.

RESEARCH METHODS

The survey for this study was conducted over approximately three weeks, from August 10 to August 30, 2025, through the online platform Tally.so. Among the 443 collected responses, 43 insincere or invalid responses were excluded, and a total of 400 responses were used for the final analysis. The survey targeted female consumers in their 10s to 50s who had watched AI-based short-form content (Instagram Reels, TikTok, YouTube Shorts, etc.) and had purchased beauty products within the past six months.

The questionnaire used in this study comprised 50 items covering demographic characteristics, content attributes (recency, reliability, shareability, convenience, and usefulness), perceived value (functional and economic), satisfaction, and purchase intention. All items were adapted from prior research and reconstructed to suit the study's purpose, and a 7-point Likert scale was employed (1 = strongly disagree, 7 = strongly agree).

Content attributes were composed of five factors centred on the technical characteristics of AI-based short-form recommendation content. Recency refers to how quickly and appropriately information is provided at the needed moment, and reliability indicates the extent to which the information is perceived as factual and free from distortion. Shareability represents the degree to which content is easily disseminated among users, convenience refers to the ease experienced during the search and usage processes, and usefulness signifies the extent to which the content is helpful in actual decision-making (Kim & Kim, 2024).

Perceived value refers to consumers' assessment of the balance between the utility and costs they perceive, and it was categorized into functional value and economic value. Functional value was measured to evaluate whether the product's performance and quality meet expectations, while economic value was constructed to assess the rationality of the benefits relative to the costs paid (Jeon & Heo, 2022). Satisfaction refers to the overall psychological fulfilment experienced after purchasing the product, and purchase intention signifies the behavioural willingness to repurchase the same product or recommend it to others (Tian, 2022).

The data collected was analyzed using SPSS 30.0 and AMOS 21. First, a frequency analysis was conducted to examine the general characteristics of the sample, followed by an exploratory factor analysis (EFA) and reliability analysis to verify the measurement items' structure and internal consistency. Subsequently, confirmatory factor analysis (CFA) was performed to assess convergent and discriminant validity. The construct reliability (CR) exceeded 0.7, and the average variance extracted (AVE) exceeded 0.5, confirming overall validity. Structural equation modelling (SEM) was then applied to evaluate model fit, and key fit indices, including CMIN/DF, GFI, AGFI, CFI, and RMSEA, met the recommended criteria. Finally, multi-group analysis (MGA) was conducted to verify the moderating effects of functional value and economic value (high vs. low). Respondents were divided into two groups based on mean scores, and structural differences according to value levels were examined by comparing path coefficients.

The structural model of this study specifies that the technical characteristics of AI-based short-form recommendation content (recency, reliability, and shareability) influence consumers' cognitive characteristics (convenience and usefulness), which, in turn, lead to satisfaction and repurchase intention. Additionally, a moderation model was tested to examine whether these causal relationships differ depending on the levels of functional value and economic value (see Figure 1).

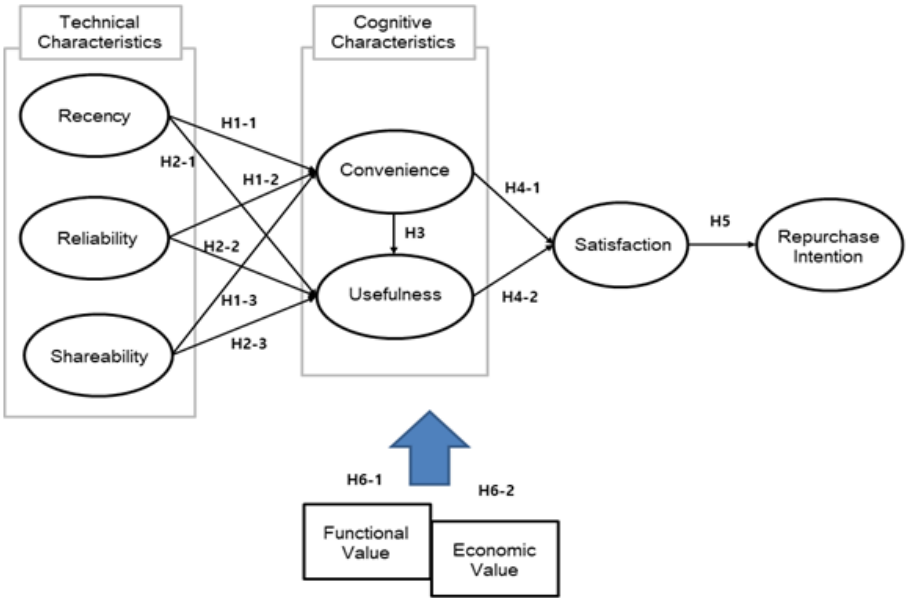

Figure 1. Research model

This study aims to examine the structural relationships in which the technical characteristics of AI-based beauty product recommendation content influence users' cognitive factors, emotional responses, and behavioral outcomes, based on prior research. In addition, the following hypotheses were established to further analyze whether these relationships differ depending on levels of functional value and economic value. Based on prior research, the following hypotheses are proposed.

H1. The technical characteristics of AI-based beauty product recommendation content will positively affect users' perceived convenience.

H1-1. Recency will positively affect convenience.

H1-2. Reliability will positively affect convenience.

H1-3. Shareability will enhance convenience.

H2. The technical characteristics of AI-based beauty product recommendation content will positively affect users' perceived usefulness.

H2-1. Recency will positively affect usefulness.

H2-2. Reliability will positively affect usefulness.

H2-3. Shareability will positively affect usefulness.

H3. Convenience will positively affect usefulness.

H4. The more users perceive AI-based beauty product recommendation content as convenient and useful, the higher their satisfaction with the recommended product will be.

H4-1. Convenience will positively affect satisfaction.

H4-2. Usefulness will positively affect satisfaction.

H5. Satisfaction with the product recommended via AI-based beauty product recommendation content will positively affect repurchase intention.

H6. The relationships among the characteristics of AI-based beauty product recommendation content, satisfaction, and repurchase intention will differ depending on consumers' perceived value levels.

H6-1. Differences will exist in these relationships depending on the level of functional value (high/low).

H6-2. Differences will exist in these relationships depending on the level of economic value (high/low).

RESULTS

The survey participants in this study were 400 consumers who had viewed AI-based short-form content and purchased beauty products within the past six months (Table 12). By age group, individuals in their 20s (35.3%) and 30s (32.3%) accounted

for the majority, indicating that generations familiar with digital environments and short-form content formed the core of the sample. Regarding occupation, office workers represented the largest proportion at 44.5%, followed by students (21.3%), full-time homemakers (13.3%), and freelancers (12.3%). Monthly income was highest in the 2–3 million KRW range (29.5%), followed by 1–2 million KRW (26.8%) and 3–4 million KRW (16.5%).

Regarding platform usage, 37.3% of respondents reported using both Instagram Reels and YouTube Shorts, the highest proportion, while the combined use of TikTok and other platforms was also substantial at 19.8%. These results suggest that short-form content consumption is expanding as a multi-platform behavior rather than being limited to a single service. As shown in Table 1, items with factor loadings below 0.6 were removed through the exploratory factor analysis (EFA).

Table 1. EFA results for recency, reliability, and shareability

Item	Factor 1	Factor 2	Factor 3
Reliability_5	0.871	0.125	0.218
Reliability_4	0.866	0.083	0.231
Reliability_1	0.839	0.086	0.305
Recency_3	0.067	0.877	0.11
Recency_1	0.1	0.876	0.175
Recency_2	0.113	0.875	0.177
Shareability_1	0.266	0.145	0.854
Shareability_2	0.241	0.198	0.836
Shareability_5	0.25	0.159	0.778

Note: compiled by authors

The variables Reliability_5 (0.871), Reliability_4 (0.866), and Reliability_1 (0.839) have high factor loadings on the first factor and low cross-loadings (<0.31), confirming their stable membership in a single design domain. The factor characterizes the perception of the accuracy and reliability of recommendations. Recency_3 (0.877), Recency_1 (0.876), and Recency_2 (0.875) indicators form the second factor, with high loadings and minimal cross-loadings with other components, indicating clear discriminant validity. The variables Shareability_1 (0.854), Shareability_2 (0.836), and Shareability_5 (0.778) demonstrate high loadings on the third factor and moderately low cross-loadings (<0.27), confirming the independence of this measurement. This factor describes the content's social and communication functionality.

The remaining variables satisfied the recommended thresholds, thereby confirming convergent validity. In addition, ERA results for convenience, usefulness, functional value, and economic value are presented in Table 2.

Table 2. EFA results for convenience, usefulness, functional value and economic value

Item	Factor 1	Factor 2	Factor 3	Factor 4
Usefulness_2	0.841	0.259	0.197	0.157
Usefulness_1	0.836	0.258	0.159	0.167
Usefulness_3	0.817	0.242	0.163	0.136
Usefulness_5	0.706	0.346	0.235	0.126
Convenience_3	0.313	0.738	0.209	0.048
Convenience_1	0.299	0.719	0.125	0.237
Convenience_2	0.155	0.714	0.162	0.25
Convenience_4	0.155	0.685	0.273	0.143
Convenience_5	0.306	0.661	0.145	0.113
EconomicValue_1	0.185	0.166	0.813	0.109
EconomicValue_2	0.186	0.176	0.788	0.194

EconomicValue_4	0.179	0.249	0.758	0.288
EconomicValue_3	0.173	0.261	0.664	0.393
FunctionalValue_2	0.139	0.195	0.224	0.835
FunctionalValue_1	0.13	0.16	0.203	0.833
FunctionalValue_3	0.265	0.243	0.386	0.656

Note: compiled by authors

The results of exploratory factor analysis confirm the presence of four independent latent structures corresponding to the theoretical research model: convenience, usefulness, functional value and economic value. The first factor combines utility indicators, with factor loadings ranging from 0.706 to 0.841, indicating high internal consistency and convergent validity. The second factor is composed of convenience variables with loadings of 0.661–0.738. Despite moderate cross-loadings, the dominant values are concentrated on the corresponding factor, confirming its empirical stability. The third factor is represented by indicators with loadings of 0.664–0.813. The main coefficients significantly exceed the cross-loadings, indicating acceptable discriminant validity, although one indicator shows a moderate overlap with the functional value factor. The fourth factor combines indicators of functional value, characterized by high loads of 0.656–0.835, which confirms their uniformity and conceptual independence.

EFA results for satisfaction and repurchase intention shows Table 3.

Table 3. EFA results for satisfaction and repurchase intention

Item	Factor 1	Factor 2
Repurchase Intention_1	0.859	0.255
Repurchase Intention_2	0.854	0.317
Repurchase Intention_4	0.848	0.324
Repurchase Intention_3	0.812	0.385
Satisfaction_5	0.236	0.812
Satisfaction_2	0.252	0.811
Satisfaction_4	0.366	0.808
Satisfaction_3	0.42	0.77

Note: compiled by authors

The first factor comprises indicators of repeat purchase intention, with high factor loadings of 0.812–0.859. At the same time, the cross-loadings on the second factor remain significantly lower than those on the main factor, indicating a clear factor affiliation and high convergent validity of the construct. The second factor combines satisfaction indicators with loads of 0.770–0.812. Despite moderate cross-loadings across individual indicators, the dominant loadings are concentrated on the corresponding factor, confirming the empirical independence of this measurement.

The composite reliability (CR) values ranged from 0.771 to 0.886, and the average variance extracted (AVE) values ranged from 0.523 to 0.722, all of which met the recommended thresholds (CR ≥ 0.70, AVE ≥ 0.50) (Table 4).

Table 4. EFA results for satisfaction and repurchase intention

Path			Standardized Loading	Measurement Error	CR	AVE
Recency_1	<---	Recency	0.862	0.199	0.886	0.722
Recency_2	<---		0.852	0.256		
Recency_3	<---		0.796	0.353		

Reliability_1	<---	Reliability	0.837	0.536	0.813	0.592
Reliability_4	<---		0.838	0.525		
Reliability_5	<---		0.861	0.414		
Shareability_1	<---	Shareability	0.852	0.526	0.766	0.523
Shareability_2	<---		0.849	0.447		
Shareability_5	<---		0.739	0.844		
Convenience_1	<---	Convenience	0.806	0.359	0.771	0.529
Convenience_2	<---		0.715	0.558		
Convenience_3	<---		0.749	0.616		
Usefulness _1	<---	Usefulness	0.876	0.329	0.876	0.639
Usefulness _2	<---		0.891	0.301		
Usefulness _3	<---		0.826	0.466		
Usefulness _5	<---		0.767	0.507		
Satisfaction _2	<---	Satisfaction	0.738	0.652	0.838	0.565
Satisfaction _3	<---		0.880	0.352		
Satisfaction _4	<---		0.866	0.402		
Satisfaction _5	<---		0.745	0.611		
Repurchase Intention _1	<---	Repurchase Intention	0.824	0.625	0.865	0.616
Repurchase Intention _2	<---		0.856	0.423		
Repurchase Intention _3	<---		0.886	0.406		
Repurchase Intention _4	<---		0.886	0.406		

Note: compiled by authors

The highest loadings are observed in the Usability construct (0.767–0.891) and the Repurchase Intention (0.824–0.886), indicating their stable latent structures. In general, the results confirm the correct separation of satisfaction and repeat purchase intention as two interrelated but conceptually distinct latent constructs, as specified in the theoretical research model. As a result of the confirmatory factor analysis (CFA), the standardized factor loading ranged from 0.715 to 0.893. Most constructs also demonstrated clear discriminant validity, as the square roots of their AVEs exceeded their inter-construct correlations (Table 5).

Table 5. Discriminate validity test results

Category	Recency	Reliability	Shareability	Convenience	Usefulness	Satisfaction	Repurchase Intention
Recency	0.850	-	-	-	-	-	-
Reliability	0.294	0.770	-	-	-	-	-
Shareability	0.436	0.631	0.723	-	-	-	-
Convenience	0.74	0.466	0.71	0.727	-	-	-
Usefulness	0.535	0.708	0.806	0.716	0.799	-	-
Satisfaction	0.324	0.85	0.65	0.499	0.698	0.752	-
Repurchase Intention	0.271	0.97	0.643	0.458	0.659	0.757	0.785

Note: compiled by authors

The results of the discriminant validity check are presented according to the Fornell–Larker criterion. The diagonal elements of the matrix (highlighted values) reflect the square root of AVE for each construct and in all cases exceed 0.72, which indicates sufficient convergent validity. The results of the assessment of the structural model's compliance with empirical data are presented in Table 6.

Table 6. Model fit indices of the research model

Category	χ^2 (CMIN)	df	CMIN/ DF	GFI	AGFI	CFI	RMSEA	P-value
Research Model	445.496	228	1.954	0.916	0.89	0.971	0.049	0

Note: compiled by authors

The chi-square statistic was $\chi^2 = 445.496$ with 228 degrees of freedom, and the CMIN/DF value of 1.954 met the recommended threshold (≤ 3). In addition, the GFI (0.916), CFI (0.971), and RMSEA (0.049) all satisfied the recommended criteria. The RMSEA value of 0.049 does not exceed 0.05, indicating good model fit.

According to the path analysis results, recency and shareability had significant positive effects on convenience ($\beta = 0.366$, $\beta = 0.600$, $p < .001$), while reliability positively influenced usefulness ($\beta = 0.266$, $p < .001$). In addition, convenience had a strong positive effect on usefulness ($\beta = 0.832$, $p < .001$), and usefulness significantly affected satisfaction ($\beta = 3.378$, $p < 0.001$), which in turn positively influenced repurchase intention ($\beta = 0.921$, $p < 0.001$). In contrast, the paths from reliability → convenience, recency → usefulness, and shareability → usefulness were not significant. Moreover, the path from convenience → satisfaction showed a negative effect ($\beta = -2.662$, $p < .001$), indicating that convenience alone does not directly lead to satisfaction (Table 7).

Table 7. Path analysis results of the research model

Path			Estimate	S.E.	C.R.	p
Convenience	<---	Recency	0.366	0.045	7.332	0***
Convenience	<---	Reliability	0.067	0.04	1.016	0.31
Convenience	<---	Shareability	0.6	0.04	8.628	0***
Usefulness	<---	Recency	-0.022	0.02	-1.461	0.144
Usefulness	<---	Reliability	0.266	0.044	5.45	0***
Usefulness	<---	Shareability	0.015	0.019	0.664	0.507
Usefulness	<---	Convenience	0.832	0.103	12.134	0***
Satisfaction	<---	Convenience	-2.662	0.738	-4.249	0***
Satisfaction	<---	Usefulness	3.378	0.488	5.42	0***
Repurchase Intention	<---	Satisfaction	0.921	0.096	13.744	0***
*p<0.05, **p<0.01, ***p<0.001						

Note: compiled by authors

To test the hypotheses put forward and evaluate the directions of cause-and-effect relationships between latent variables, the structural model was evaluated using the SEM method. The model confirms the significant roles of reliability and usefulness in the formation of satisfaction and repeated-purchase intention, with partial confirmation of the hypotheses regarding convenience. As can be seen from Figure 1, the technical characteristics of AI content have different effects on users' cognitive assessments.

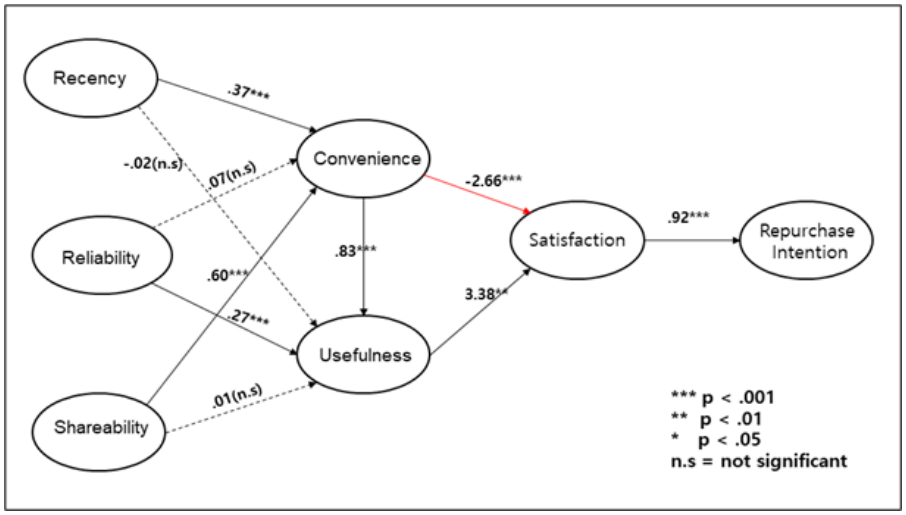

Figure 2. Path analysis of the research model

Recency did not exert a direct effect on satisfaction or repurchase intention; however, it indirectly influenced both outcomes through convenience and usefulness. The indirect effects were negative (β = -0.021, β = -0.028, p < 0.01), suggesting that information overload may induce content fatigue, thereby weakening satisfaction. In contrast, usefulness strongly affected repurchase intention through satisfaction, and convenience produced a positive indirect effect only when converted into usefulness. Overall, usefulness functioned as the key mediating variable, empirically confirming that consumers' satisfaction and behavioral intentions are reinforced when they experience content they perceive as genuinely helpful (Table 8).

Table 8. Mediation effect analysis results of the research mode

Category		Shareability	Reliability	Recency	Convenience	Usefulness	Satisfaction	Repurchase Intention
Convenience	Total Effect	0.344	0.04	0.327	0	0	0	0
	Direct Effect	0.344	0.04	0.327	0	0	0	0
	Indirect Effect	0	0	0	0	0	0	0
Usefulness	Total Effect	0.443	0.29	0.379	1.251	0	0	0
	Direct Effect	0.013	0.239	-0.03	1.251	0	0	0
	Indirect Effect	0.431	0.051	0.409	0	0	0	0
Satisfaction	Total Effect	0.094	0.641	-0.021**	0.176	2.647	0	0
	Direct Effect	0	0	0	-3.136	2.647	0	0
	Indirect Effect	0.094	0.641	-0.021**	3.311	0	0	0
Repurchase Intention	Total Effect	0.125	0.847	-0.028**	0.233	3.502	1.323	0
	Direct Effect	0	0	0	0	0	1.323	0
	Indirect Effect	0.125	0.847	-0.028**	0.233	3.502	0	0
*p<0.05, **p<0.01, ***p<0.001								

Note: compiled by authors

In this study, functional value and economic value were treated as moderating variables, and differences in relationships were examined across levels of each factor. Both constructs were measured using a 7-point Likert scale, and items grouped under the same factor through factor analysis were used to test the moderate effects. Functional value consisted of three items related to quality, functionality, and practicality, with a mean value of 3.55. Economic value was composed of four items reflecting price rationality, value perception, psychological satisfaction, and cost-effectiveness, with a mean value of 3.82.

Based on these results, each factor was divided into low and high groups using the mean value as the cut-off point, and multi-group analysis was conducted.

The results indicated partial moderating effects on both functional and economic values, suggesting that the perception structure varied by value level. In the high functional value group, the paths from recency to convenience, reliability to usefulness, and shareability to usefulness were relatively stronger, indicating that quality-oriented consumers perceive the technical completeness and reliability of content as utility. In contrast, the low functional value group showed a simplified structure in which shareability and convenience directly led to satisfaction (Table 9).

Table 9. Comparison of path estimates by functional value level

Category			Estimate	
			Low	High
Recency	→	Convenience	0.345**	0.625**
Reliability	→	Convenience	0.116	0.056
Shareability	→	Convenience	0.381**	0.209**
Recency	→	Usefulness	0.011	0.072
Reliability	→	Usefulness	0.118***	0.371***
Shareability	→	Usefulness	0.024***	0.344***
Convenience	→	Usefulness	1.112***	0.273***
Convenience	→	Satisfaction	-7.268	0.019
Usefulness	→	Satisfaction	6.443	0.544
Satisfaction	→	Repurchase Intention	1.058	1.148
*p<0.05, **p<0.01, ***p<0.001				

Note: compiled by authors

The results of the multi-group analysis according to economic value levels revealed significant differences between the two groups in the paths of recency → usefulness, convenience → usefulness, convenience → satisfaction, and satisfaction → repurchase intention. The low economic value group perceived recency as practical value and showed a strong influence on usefulness; however, this effect was weakened in the high economic value group. In contrast, in the high group, convenience had a positive effect on usefulness but a negative effect on satisfaction, while the path from satisfaction to repurchase intention was strengthened. In other words, consumers with low economic value tended to emphasize the "novelty" of information, whereas those with high economic value were more likely to consider efficiency and satisfaction experience as key criteria for purchase decisions (Table 10).

Table 10. Comparison of path estimates by economic value level

Category			Estimate	
			Low	High
Recency	→	Convenience	0.429	0.315
Reliability	→	Convenience	0.022	-0.061
Shareability	→	Convenience	0.394	0.4
Recency	→	Usefulness	0.235***	-0.084***
Reliability	→	Usefulness	0.378	0.365
Shareability	→	Usefulness	0.167	0.025
Convenience	→	Usefulness	0.322***	1.284***
Convenience	→	Satisfaction	-0.068***	-1.592***
Usefulness	→	Satisfaction	0.777	1.387
Satisfaction	→	Repurchase Intention	0.84***	1.745***

Note: compiled by authors

The results of hypothesis testing showed that, of the 12 hypotheses, seven were supported and five were rejected. Recency and shareability had significant effects on convenience, while reliability significantly influenced usefulness. Convenience also showed a positive effect on usefulness and was therefore supported. In addition, usefulness had a significant effect on satisfaction, and satisfaction significantly influenced repurchase intention, confirming these paths as core relationships within the research model. In contrast, convenience demonstrated a negative effect on satisfaction, suggesting that simple convenience does not necessarily lead directly to satisfaction. Finally, functional and economic value differed across certain paths, indicating partial moderating effects.

CONCLUSIONS

This study identified the structural relationships through which the technical characteristics (recency, reliability, and shareability) and cognitive characteristics (convenience and usefulness) of AI-based beauty product recommendation short-form content influence consumer satisfaction and repurchase intention. In addition, differences in perception according to consumers' perceived value levels (functional value and economic value) were empirically examined. The results showed that recency and shareability had positive effects on convenience, while reliability was a key factor influencing perceived usefulness. This suggests that, in the context of AI-based beauty product recommendation, short-form content and convenience may be perceived not as distinctive values but as basic system features that consumers expect by default. Furthermore, differences in structural paths were observed according to levels of functional and economic value, indicating that consumers' value orientations influence how the same content is interpreted and evaluated. Consumers with higher functional value tended to evaluate content based on technical completeness and reliability, whereas those with higher economic value formed satisfaction and repurchase intentions based on efficiency and practicality.

Overall, this study confirms that AI-based beauty product recommendation short-form content follows a sequential structure, extending from technical characteristics to cognitive evaluation and ultimately to emotional and behavioral outcomes. Future research should expand sample diversity, adopt longitudinal research designs, and explore other product categories and platforms to enhance generalizability. These findings suggest that AI-based recommendation short-form content serves as a key mechanism linking consumers' cognitive evaluations to behavioral intentions.

AUTHOR CONTRIBUTIONS

Conceptualization and theory: JL and YS; research design: GL; data collection: YS; analysis and interpretation: GL and YS; writing draft preparation: GL and YS; supervision: GL and YS; correction of article: GL and YS; proofread and final approval of article: GL and YS. All authors have read and agreed to the published version of the manuscript.

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