

EMPIRICAL ARTICLE

Beyond Usefulness: How Cognitive Evaluations and Relational Perceptions Shape ChatGPT Continued Subscription Intention

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Abstract

Purpose: As generative artificial intelligence increasingly adopts subscription-based business models, understanding why users continue paying for these services has become important. This study examines continued subscription intention for ChatGPT by integrating technical quality, cognitive evaluations, positive relational perceptions, and negative human-AI perceptions within an extended expectation-confirmation model.

Design/methodology/approach: Survey data were collected from 565 Korean users aged 20–45 who were current paid ChatGPT subscribers. The model examines system quality, information content quality, expectation confirmation, perceived usefulness, satisfaction, liking, trust, intimacy, perceived threat, anxiety, and continued subscription intention. Structural equation modeling and bootstrap mediation analysis with 5,000 resamples were used to test the hypothesized direct and indirect relationships.

Findings: System quality and information content quality significantly influence continued subscription intention both directly and indirectly through expectation confirmation, perceived usefulness, and satisfaction. Satisfaction has the strongest direct effect on continued subscription intention. Liking and trust influence continued subscription intention both directly and through satisfaction, whereas intimacy has an indirect-only effect through satisfaction. Perceived threat and anxiety have no significant direct effects on satisfaction or continued subscription intention, and their indirect effects through satisfaction are also nonsignificant.

Originality/value: The study extends the expectation-confirmation model from general technology continuance to paid generative-AI subscription behavior by integrating functional and relational evaluations. It shows that different human-AI relational perceptions have distinct economic consequences: trust and liking can directly support continued payment, whereas intimacy becomes economically consequential mainly when it improves overall satisfaction. The findings also identify a possible boundary condition in which negative human-AI perceptions exert limited influence among current paid users.

KEYWORDS

ChatGPT; continued subscription intention; expectation-confirmation model; human-AI relational perceptions; user satisfaction; generative artificial intelligence

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1 | INTRODUCTION

Against the backdrop of rapid development in generative artificial intelligence (GAI), conversational AI systems represented by ChatGPT have become important media tools through which users obtain information, solve problems, and engage in expressive practices (Huang and Rust 2021, Liu 2024). Unlike traditional information systems, ChatGPT not

only generates content in response to prompts but also presents social cues through natural-language interaction, contextual memory, and responsive communication. These features may lead users to respond to ChatGPT in ways that resemble interpersonal interaction (Nass and Moon 2000, Puntoni et al. 2021). This combination of instrumental and interactive attributes means that explanations of ChatGPT use cannot be limited to technical functionality. They also need to account for the psychological evaluations and relational perceptions that users develop through repeated interaction.

Users aged 20-45 tend to have relatively high digital literacy and active AI-use habits, making them an important user segment for ChatGPT and its paid services. However, the expansion of use scenarios does not automatically translate into stable willingness to continue paying. At the same time, anthropomorphic interaction and personalized responses may encourage liking, trust, and intimacy, while concerns about privacy, information accuracy, technological substitution, and loss of control may trigger perceived threat and anxiety (Gursoy et al. 2019, Hsieh and Lee 2024, Li 2025, Jung et al. 2023, Ngo et al. 2024). Continued payment is therefore not simply a rational judgment about whether the system is useful. It is the result of functional evaluation, positive relational perception, and negative human-AI perception operating together.

Existing studies have mainly used the expectation-confirmation model (ECM) to explain continuance behavior in information systems. ECM proposes that when actual experience meets or exceeds prior expectations, users report higher expectation confirmation and perceived usefulness, which then strengthen satisfaction and subsequent intentions to continue using or paying for a service (Bhattacharjee 2001, Dwivedi et al. 2023). ECM offers an important foundation for understanding post-adoption evaluation among paid ChatGPT users, but it focuses primarily on cognitive paths among system performance, task utility, and satisfaction. It explains less fully the social attributes of conversational AI and the quasi-partner psychological connections these attributes may elicit (Tabone and De Winter 2023).

Human-computer interaction (HCI) research provides a relational perspective that helps address this limitation. While evaluating system quality and information quality, users may also treat AI systems with natural-language capabilities and social cues as interaction partners, developing positive relational perceptions such as liking, trust, and intimacy as well as negative perceptions such as threat and anxiety (Petter et al. 2008, Hsieh and Lee 2024). These perceptions may affect payment decisions directly, or indirectly by changing users' overall satisfaction with the service experience. Incorporating relational perceptions into ECM can therefore provide a more complete explanation of continued payment behavior in conversational AI contexts.

Despite the growing body of related research, three gaps remain. First, studies of ChatGPT continuance often emphasize educational applications (Ngo et al. 2024), task performance and professional use (Dwivedi et al. 2023, Tabone and De Winter 2023), and technology acceptance or use intention (Venkatesh et al. 2012, Jung et al. 2023,

Nassir-Deen et al. 2026), with insufficient attention to relational perceptions triggered by anthropomorphic interaction (Nass and Moon 2000, Puntoni et al. 2021, Moussawi et al. 2021, Lissillour and Sahut 2026). Second, although prior work has examined trust (Gefen et al. 2003, Hsieh and Lee 2024), intimacy (Lee and Kwon 2011, Skjuve et al. 2021), threat (Gursoy et al. 2019, Jung et al. 2023), or anxiety (Li 2025), these factors are usually treated as independent add-on variables rather than as part of a systematic framework that simultaneously covers positive relational perceptions and negative human-AI perceptions. Third, although prior studies have shown that technical quality facilitates technology evaluation and continuance (DeLone and McLean 2003, Wixom and Todd 2005, Petter et al. 2008) and that relational perceptions affect intelligent-service use (Moussawi et al. 2021, Hsieh and Lee 2024), little is known about how cognitive evaluations formed by technical quality and relational perceptions generated through human-AI interaction jointly affect satisfaction, or whether satisfaction acts as the central psychological hub through which both sets of factors shape continued subscription intention.

Accordingly, this study focuses on Korean current paid ChatGPT users aged 20-45. Building on ECM and incorporating relational perception variables from HCI research, it develops an integrated cognitive-relational model of subscription continuance intention for ChatGPT. The study examines how system quality and information quality influence continued subscription intention through expectation confirmation, perceived usefulness, and satisfaction; how liking, trust, intimacy, threat, and anxiety affect satisfaction and continued subscription intention; and whether satisfaction mediates and connects the effects of cognitive evaluation and relational perception. The theoretical aim is not merely to add several relational variables to ECM, but to explain how different kinds of human-AI perceptions acquire different economic meanings in a paid service relationship. By doing so, the article tests the applicability of ECM in a GAI subscription context, reveals the mechanisms through which functional evaluation and relational perception jointly shape payment decisions, extends continuance theory to anthropomorphic intelligent interaction, and offers practical guidance for GAI product optimization, paid-service design, trust building, and risk management.

2 | THEORETICAL BACKGROUND AND HYPOTHESES

2.1 | System Quality, Information Content Quality, and Continued Subscription Intention

Continued subscription intention refers to a user's subjective tendency to continue subscribing, renew a paid service, or purchase value-added services after initial technology adoption and actual use experience. Compared with general continuance intention, continued subscription intention implies not only willingness to keep using a technology but also willingness to continue bearing economic costs for its functional

value, content value, and interaction experience. It is therefore a higher-threshold post-adoption decision. Users typically judge whether continued payment is worthwhile by considering system performance, content quality, task support, and the overall use experience (Kim et al. 2007). In the GAI context, ChatGPT offers both free access and paid services with stronger model capability, broader functionality, and greater service stability. Whether users continue paying depends on whether their accumulated experience allows them to perceive value that exceeds free services or alternative products.

The information systems success model identifies system quality and information content quality as key antecedents of technology evaluation and subsequent behavior (DeLone and McLean 2003). System quality reflects operational stability, response speed, ease of use, and interaction fluency, whereas information content quality reflects the accuracy, relevance, completeness, and clarity of the information provided by the system (Wixom and Todd 2005). During ChatGPT use, higher system quality reduces operating costs and the risk of interrupted interaction, while higher information content quality increases the practical usefulness of generated content for learning, work, and creative tasks. Both forms of quality affect users' judgments of ChatGPT's functional value and whether actual experience meets prior expectations (Hsiao and Chen 2016, Gable et al. 2008).

For paid users, system quality and information content quality also have more direct value-judgment implications. When ChatGPT runs stably, responds promptly, and provides accurate and relevant content, users are more likely to believe that the paid service delivers an adequate return on their expenditure, thereby increasing satisfaction and renewal intention. Conversely, system instability, response constraints, or content that fails to meet expectations can weaken users' judgments of the necessity and legitimacy of continued payment (Ngo et al. 2024). System quality and information content quality may therefore affect continued subscription intention indirectly through expectation confirmation and perceived usefulness, while also exerting direct effects on satisfaction and payment decisions. The following hypotheses are proposed:

H1a: System quality positively affects expectation confirmation.

H1b: Information content quality positively affects expectation confirmation.

H1c: System quality positively affects perceived usefulness.

H1d: Information content quality positively affects perceived usefulness.

H1e: System quality positively affects user satisfaction.

H1f: Information content quality positively affects user satisfaction.

H1g: System quality positively affects continued subscription intention.

H1h: Information content quality positively affects continued subscription intention.

2.2 | The Cognitive Path of Expectation Confirmation, Perceived Usefulness, and Satisfaction

Expectancy confirmation theory was proposed by Oliver (1980) to explain the formation of consumer satisfaction. It argues that consumers form expectations before purchasing a product or service and then compare actual performance with those expectations after use. When performance meets or exceeds expectations, users experience positive confirmation; when performance falls short, negative disconfirmation may reduce satisfaction. Bhattacharjee (2001) later developed ECM by shifting attention from initial technology acceptance to post-adoption continuance behavior, emphasizing expectation confirmation, perceived usefulness, and satisfaction as core predictors of continuance intention. The model has been applied to online platforms, mobile services, digital education, and generative AI contexts (Thong et al. 2006, Limayem et al. 2007, Venkatesh et al. 2012, Skjuve et al. 2021).

Within ECM, expectation confirmation is the starting point for post-use cognitive evaluation. When the actual performance of paid ChatGPT meets or exceeds users' expectations, users are more likely to confirm that the service helps them complete tasks such as information retrieval, learning, research, work assistance, and content creation, thereby increasing perceived usefulness. Consistency between experience and initial expectation also directly improves overall satisfaction with the paid service (Bhattacharjee 2001). Perceived usefulness captures the extent to which users believe that ChatGPT improves task efficiency, enhances work quality, or meets practical needs. When users continue to perceive paid services as practically helpful, they are more likely to regard the cost as reasonable and worthwhile, which generates more positive satisfaction judgments (Rawashdeh et al. 2021).

Satisfaction is the user's overall evaluation of previous use experience and an important psychological variable linking experience to subsequent payment decisions (Rawashdeh et al. 2021). Compared with general continuance, continued subscription requires users to reassess the relationship between service benefits and economic costs. Even when users have formed the habit of using ChatGPT, they are more likely to continue subscribing when the actual experience meets expectations and produces sufficient functional value. Expectation confirmation and perceived usefulness therefore provide the cognitive foundation for continued subscription intention mainly by increasing satisfaction. The following hypotheses are proposed:

H2a: Expectation confirmation positively affects perceived usefulness.

H2b: Expectation confirmation positively affects user satisfaction.

H2c: Perceived usefulness positively affects user satisfaction.

H2d: User satisfaction positively affects continued subscription intention.

2.3 | Relational Perceptions in Human-AI Interaction

Media equation theory holds that when computer systems present natural language, social cues, and personified responses, users often transfer social rules from interpersonal communication to human-computer interaction and form attitudes toward systems as if they were social objects (Nass and Moon 2000). ChatGPT's continuous dialogue, contextual adaptation, and anthropomorphic expression may further strengthen such social responses. Users therefore evaluate not only its task performance but also their perceived relationship with the system, forming positive perceptions such as liking, trust, and intimacy and negative human-AI perceptions such as threat and anxiety (Rzepka and Berger 2018, Lissillour and Sahut 2026). These negative perceptions are not assumed to be a simple mirror image of positive relational perceptions. Rather, they capture risk judgments and affective unease that emerge from interaction with an AI system. Incorporating both sets of perceptions into ECM enables a more complete explanation of subscription continuance intention in socially interactive AI contexts.

Liking reflects users' positive affect and overall preference for ChatGPT. When the system responds in a natural, friendly, and needs-consistent way, users are more likely to develop a positive attitude and to maintain the interaction relationship (Gan 2017). Liking can improve users' overall evaluation of the use experience and may also reduce sensitivity to price and alternatives in renewal decisions, thereby increasing continued subscription intention. Trust captures users' belief that ChatGPT is reliable, predictable, and safe to some extent, as well as their willingness to rely on it for advice or task completion under informational uncertainty (Hsieh and Lee 2024). For paid services that require continuous economic commitment, trust reduces concerns about content errors, service instability, and financial loss; it is therefore an important psychological foundation for satisfaction and renewal intention.

Intimacy refers to the psychological closeness and relational connection that users form through repeated interaction. As dialogue frequency increases, use scenarios expand, and the system adapts to users' needs, users may gradually experience familiarity, naturalness, and being understood. Previous research shows that intimacy can strengthen users' attachment to intelligent services and influence continuance behavior by improving the interaction experience and satisfaction (Lee and Kwon 2011). Compared with liking and trust, however, intimacy is more closely tied to relational experience, and its influence may be transmitted mainly through satisfaction rather than directly to continued subscription intention.

Human-AI interaction may also produce negative human-AI perceptions. Perceived threat reflects users' belief that ChatGPT may pose potential risks to personal privacy, information security, work competence, or autonomous decision-making. Anxiety refers to tension, worry, and psychological discomfort during interaction with AI (Li 2025). These constructs are grouped in the broader human-AI perception framework because they arise from users' ongoing encounters with an

anthropomorphic AI service, but they are conceptually different from liking, trust, and intimacy. Liking, trust, and intimacy describe approach-oriented relational evaluations, whereas perceived threat and anxiety describe risk perceptions and negative affective reactions. In addition, perceived threat is a broad construct in this study: its items cover personal privacy, cognitive dependence, employment displacement, and information-security or decision-making risks. Recognizing this breadth prevents the model from implying that positive and negative perceptions are symmetrical categories. When users believe ChatGPT may disclose personal data, provide inaccurate information, or exert excessive influence over them, they may develop psychological defensiveness and lower satisfaction with the paid service. Continued subscription requires relatively stable value judgments, and threat and anxiety may increase perceived risk in payment decisions, reducing users' willingness to maintain long-term subscriptions.

Korean users aged 20-45 tend to have strong digital technology competence while remaining sensitive to algorithmic risk, information privacy, and the social implications of AI. Existing studies in the Korean context also often treat the MZ generation as an important group for understanding ChatGPT use intention (Jung et al. 2023). These users may develop trust, liking, and intimacy because ChatGPT provides efficiency and companionship, while also remaining alert to data use and AI-related risks. This produces a relational tension in which approach and defense coexist. Based on this reasoning, the following hypotheses are proposed:

H3a: Liking positively affects user satisfaction.

H3b: Liking positively affects continued subscription intention.

H3c: Trust positively affects user satisfaction.

H3d: Trust positively affects continued subscription intention.

H3e: Intimacy positively affects user satisfaction.

H3f: Intimacy positively affects continued subscription intention.

H3g: Perceived threat negatively affects user satisfaction.

H3h: Perceived threat negatively affects continued subscription intention.

H3i: Anxiety negatively affects user satisfaction.

H3j: Anxiety negatively affects continued subscription intention.

2.4 | The Integrated Mechanism of Cognitive Evaluation and Relational Perception

Since the release of ChatGPT, GAI has gradually become an important technological infrastructure for learning, work, and everyday information practices. Existing studies have examined ChatGPT user behavior mainly from the perspectives of technology adoption, educational application, task performance, and innovative use (Ngo et al. 2024, Ashfaq et al. 2020). However, why users are willing to continue paying after forming actual use experience remains underexplained by frameworks that integrate functional value and relational experience. Traditional ECM emphasizes the cognitive path formed by expectation confirmation, perceived usefulness, and satisfaction, while the language interaction and anthropomorphic features of GAI mean that users also develop

relational perceptions such as liking, trust, intimacy, threat, and anxiety (Luger and Sellen 2016, Ashfaq et al. 2025). A focus on technical performance or task utility alone is insufficient to explain why users continue to invest economically in an intelligent system that combines instrumental and interactive attributes.

This study therefore uses ECM as the theoretical backbone, treats system quality and information content quality as technical antecedents, regards expectation confirmation and perceived usefulness as cognitive evaluation variables, and introduces positive relational perceptions and negative human-AI perceptions formed during human-AI interaction (Skjuve et al. 2021, Ashfaq et al. 2025). These two sets of factors are not assumed to interact statistically. Rather, they may jointly shape user satisfaction. Technical quality shapes satisfaction by confirming expectations and increasing task value; positive relational perception increases satisfaction by improving interaction experience; and perceived threat and anxiety may weaken satisfaction through risk awareness and psychological discomfort. Satisfaction then integrates these evaluations into an overall judgment about whether paid ChatGPT is worth continued investment and, together with direct paths, explains continued subscription intention. The integration of ECM and relational perception is therefore theoretically meaningful because it distinguishes between experiential attachment and economic commitment. Trust may translate relatively directly into continued payment because it reduces uncertainty in an ongoing service relationship, whereas intimacy may improve the felt quality of interaction without independently justifying subscription costs. In other words, system quality and information content quality answer whether the paid service is stable, accurate, and effective. Expectation confirmation and perceived usefulness answer whether the actual experience meets expectations and generates real task value. Liking, trust, and intimacy reflect whether users are willing to maintain a positive interaction relationship with ChatGPT, whereas threat and anxiety capture negative evaluations of privacy risk, information distortion, technological substitution, and system uncontrollability. Users synthesize these functional evaluations and relational experiences into satisfaction and then decide whether to continue bearing subscription costs. Satisfaction is therefore not a single cognitive outcome, but a key psychological hub connecting technical quality, positive relational perception, and continued subscription intention. Whether negative human-AI perceptions enter this satisfaction mechanism requires empirical testing.

From the cognitive path perspective, system quality and information content quality may indirectly increase satisfaction through expectation confirmation and perceived usefulness (Hsu and Lin 2023). When paid ChatGPT operates stably, responds promptly, and generates content with high accuracy and relevance, users are more likely to believe that the actual experience meets or exceeds expectations and to perceive that the service helps with learning, work, and content creation. Higher expectation confirmation and perceived usefulness then produce more positive overall satisfaction. Satisfaction may also mediate the effects of expectation confirmation and perceived usefulness on continued subscription intention: users' judgments about confirmation and task value

need to be translated into a positive overall use experience before they further strengthen renewal intention (Huang and Lee 2022).

From the relational perception perspective, liking, trust, and intimacy may influence continued subscription intention both directly and indirectly through satisfaction (Moussawi et al. 2021, Skjuve et al. 2021). Positive liking toward ChatGPT can improve the interaction experience and may create a favorable attitude toward maintaining the service relationship. Trust in the system can reduce concerns about uncertainty and potential risk in payment decisions, making it especially relevant to continued economic commitment. Familiarity and psychological closeness generated through repeated interaction can also raise users' evaluation of the overall service experience, but intimacy may depend on satisfaction before it becomes behaviorally consequential. In contrast, threat and anxiety may weaken satisfaction and lower continued subscription intention. However, because current paid users may weigh functional gains against potential risks, the direction and significance of negative human-AI perceptions still require empirical examination.

In addition to these mediation relationships, system quality and information content quality may affect continued subscription intention through the sequential process of expectation confirmation, perceived usefulness, and satisfaction (Skjuve et al. 2021). The logic is that technical quality first affects whether actual experience meets expectations; expectation confirmation then reinforces users' judgments of ChatGPT's task value; and perceived usefulness further increases satisfaction, which is associated with continued subscription intention. The following hypotheses are therefore proposed:

H4a: Expectation confirmation and perceived usefulness mediate the effects of system quality and information quality on satisfaction.

H4b: Satisfaction mediates the effects of expectation confirmation and perceived usefulness on subscription continuance intention.

H4c: Satisfaction mediates the effects of positive relational perceptions on subscription continuance intention.

H4d: Satisfaction mediates the effects of negative human-AI perceptions on subscription continuance intention.

H4e: Expectation confirmation, perceived usefulness, and satisfaction sequentially mediate the effects of system and information quality on subscription continuance intention.

3 | METHOD

3.1 | Research Model

Based on ECM and media equation theory, this study develops an integrated cognitive-relational model of ChatGPT subscription continuance intention. System quality and information quality are treated as technical antecedents that influence expectation confirmation, perceived usefulness, satisfaction, and subscription continuance intention. Expectation confirmation and perceived usefulness constitute the cognitive evaluation path, whereas liking, trust, and intimacy represent positive

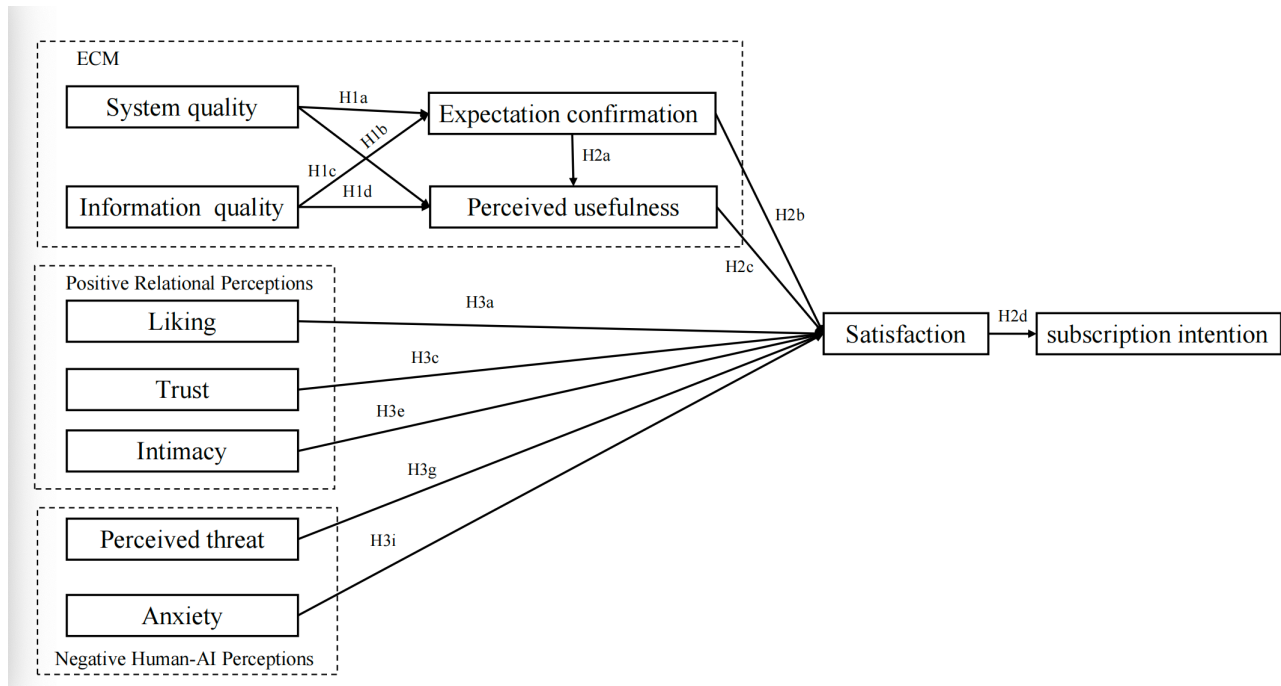


FIGURE 1 Research model

Note. To maintain visual clarity, the figure presents the principal mediated pathways. The structural model additionally estimates direct paths from system quality, information quality, liking, trust, intimacy, perceived threat, and anxiety to subscription continuance intention, as specified in H1g–H1h and H3b, H3d, H3f, H3h, and H3j. It also estimates direct paths from system quality and information quality to satisfaction (H1e–H1f). Control variables are omitted from the figure but included in the statistical analysis.

relational perceptions and perceived threat and anxiety represent negative human-AI perceptions. These relational variables are hypothesized to affect both satisfaction and subscription continuance intention. Satisfaction is positioned as an integrative post-use evaluation through which cognitive and relational factors may further influence users' willingness to maintain a paid subscription.

3.2 | Participants and Data Collection

The study surveyed Korean users aged 20–45 who were current paid subscribers to ChatGPT at the time of the survey. To ensure consistency between the sample and the concept of continued subscription intention, the questionnaire began with screening questions on age, residence, paid subscription status, and ChatGPT use experience. Only respondents who reported an active paid ChatGPT subscription and sufficient experience evaluating its functions and service quality were retained. Former subscribers who had cancelled their paid subscription before the survey were not included in the final sample. Accordingly, current subscription status was not used as a control variable. The sample covered users of different genders, ages, and educational backgrounds in metropolitan areas including Seoul and Busan.

The survey was conducted through the Korean online platform Naver Form from May 15 to June 5, 2025. Naver Form was used only as the questionnaire platform. Recruitment notices were distributed through

Korean online communities and social-media channels related to university study, workplace productivity, digital tools, and AI use. The recruitment message stated the academic purpose of the study and invited only Korean users aged 20–45 with an active paid ChatGPT subscription to participate. No monetary incentive was offered. Eligibility was verified through screening questions before respondents entered the main questionnaire, and inconsistent answers about paid status or use experience led to exclusion. Because online questionnaires do not provide a complete sampling frame, the study combined purposive sampling with quota sampling, setting approximate quotas by gender and age group to avoid overrepresentation of a single demographic group. The intended quota was close to parity by gender and between the 20–29 and 30–45 age groups; collection was monitored during the survey period and recruitment emphasis was adjusted when one subgroup approached its quota earlier than others. Before the formal survey, five experts in AI communication, HCI, and information systems reviewed the questionnaire content. A pretest was then conducted with 100 eligible Korean MZ-generation users, and the questionnaire was refined based on feedback regarding localization and semantic clarity. After collection, the data were strictly screened and cleaned according to predefined criteria. Invalid questionnaires were removed when respondents did not meet the active paid-subscription criterion, completed the questionnaire in less than one-third of the pilot median completion time, gave straight-line responses across long item blocks, failed attention-check items, or provided logically inconsistent answers. After

screening, 565 valid questionnaires remained for quantitative analysis of the measurement and structural models.

3.3 | Measurement

The study measured 11 latent variables: system quality, information content quality, expectation confirmation, perceived usefulness, satisfaction, liking, trust, intimacy, perceived threat, anxiety, and continued subscription intention. All items were adapted from established scales and modified for the specific context of paid ChatGPT use. A seven-point Likert scale was used, where 1 indicated strongly disagree and 7 indicated strongly agree. Representative items are described in the text, and the full measurement items and sources are provided in Appendix A.

System quality and information content quality. System quality measured users' perceptions of ChatGPT's response speed, operational stability, ease of use, and interaction fluency. Information content quality measured users' perceptions of the accuracy, relevance, completeness, and clarity of ChatGPT-generated content. These items were mainly based on DeLone and McLean's information systems success model and subsequent scale revisions (DeLone and McLean 2003, Gable et al. 2008, Urbach and Müller 2012). Representative system quality items included: 'ChatGPT runs stably,' 'ChatGPT responds to my questions promptly,' and 'ChatGPT is convenient to operate and interact with.' Representative information content quality items included: 'The information provided by ChatGPT is relevant to my needs,' 'The content generated by ChatGPT is clear and easy to understand,' and 'The information provided by ChatGPT is generally accurate and reliable.' In terms of construct distinction, information content quality captures users' subjective evaluation of the accuracy, relevance, completeness, and clarity of generated content, whereas trust emphasizes whether users are willing to rely on the system under uncertainty and potential risk. The scale design therefore avoided using the same or highly similar items to measure both information accuracy and trust.

Expectation confirmation, perceived usefulness, and satisfaction. The measures of expectation confirmation, perceived usefulness, and satisfaction were mainly based on Bhattacharjee's ECM and related research on information systems continuance (Bhattacharjee 2001, Bhattacharjee and Premkumar 2004, Rawashdeh et al. 2021). Expectation confirmation reflected the extent to which users believed that paid ChatGPT met or exceeded their prior expectations after use. Representative items included: 'The actual performance of paid ChatGPT meets my expectations,' 'The functions provided by paid ChatGPT basically meet my expectations,' and 'Overall, the experience of using paid ChatGPT is better than or consistent with my previous expectations.' Perceived usefulness items included: 'Paid ChatGPT improves my task efficiency,' 'Paid ChatGPT helps improve my learning or work performance,' and 'Using paid ChatGPT has practical value for me.' Satisfaction items included: 'Overall, I am satisfied with paid ChatGPT,' 'Choosing to use paid ChatGPT was the right decision,' and 'The overall experience of paid ChatGPT satisfies me.'

Positive relational perceptions. Liking, trust, and intimacy measured positive psychological and relational evaluations formed through continued interaction with ChatGPT (Hsieh and Lee 2024, Lee and Kwon 2011, Gan 2017, Gefen et al. 2003). Representative liking items included: 'I have a positive liking for ChatGPT,' 'I enjoy interacting with ChatGPT,' and 'Overall, ChatGPT leaves a good impression on me.' Trust captured whether users believed that ChatGPT could provide service in a relatively reliable, predictable, and safe manner and whether they were willing to rely on it under uncertainty. Representative items included: 'Even when ChatGPT's answers involve some uncertainty, I am still willing to refer to its suggestions after verification,' 'I believe ChatGPT can help me complete tasks in a relatively reliable way,' and 'In most cases, I think paid ChatGPT is trustworthy.' Intimacy captured psychological closeness, familiarity, and relational connection in ongoing human-AI interaction. Representative items included: 'I feel a certain degree of closeness when interacting with ChatGPT,' 'Long-term use has made ChatGPT feel familiar to me,' and 'I sometimes feel that ChatGPT understands my needs.' The formal questionnaire measured interaction naturalness, familiarity, and closeness separately to avoid combining judgments such as 'natural and close' in a single item.

Negative human-AI perceptions. Perceived threat and anxiety measured users' risk judgments and negative psychological reactions when using paid ChatGPT (Li 2025, Jung et al. 2023). This label is used to clarify that the two constructs are related to human-AI interaction but are not symmetrical opposites of liking, trust, and intimacy. Representative perceived threat items included: 'I worry that ChatGPT may collect or use my personal information improperly,' 'I worry that over-reliance on ChatGPT may weaken my independent judgment,' and 'I believe the widespread use of ChatGPT may threaten some jobs.' The perceived-threat scale therefore covers multiple levels of concern, including personal privacy, cognitive dependence, societal employment consequences, and information-security or decision-making risks. Representative anxiety items included: 'I sometimes feel uneasy when using ChatGPT,' 'I feel anxious when I cannot judge whether ChatGPT's answer is correct,' and 'I feel worried when I think ChatGPT may produce erroneous or uncontrollable results.'

Continued subscription intention. Continued subscription intention reflected users' subjective tendency to continue subscribing, renew, or preferentially choose paid ChatGPT based on prior paid use experience. Because continued subscription intention differs from general continuance intention and recommendation intention, the items explicitly referred to renewal, subscription, and economic investment. Five items were used: 'I am willing to continue subscribing to paid ChatGPT in the future,' 'When my current subscription expires, I am willing to renew paid ChatGPT,' 'Even if I need to keep paying, I am still willing to use paid ChatGPT,' 'Among similar AI products, I would prioritize continuing to pay for ChatGPT,' and 'In the future, I am willing to maintain or increase my investment in paid ChatGPT.'

3.4 | Questionnaire Translation and Pretest

Because the scales were mainly adapted from English-language literature and the respondents were Korean users, the study used a translation-back-translation procedure to ensure semantic equivalence across language versions. First, researchers familiar with information systems research and proficient in both English and Korean translated the original English items into Korean. Subsequently, independent English-Korean bilingual researchers who had not seen the original scales back-translated the Korean items into English. The research team compared the original and back-translated versions and resolved semantic discrepancies through discussion. During language conversion, the study considered not only literal equivalence but also the actual context in which Korean users use ChatGPT and paid services. It avoided overly technical, abstract, or ambiguous terms. After initial translation, expert review and a small-scale pretest were used to examine content validity, comprehensibility, and item distinctiveness. The pretest showed that Cronbach's alpha for all variables reached acceptable standards and that the exploratory factor structure was broadly consistent with theoretical expectations. The formal questionnaire was finalized accordingly.

3.5 | Common Method Bias Control

Because the independent variables, mediators, and dependent variable were collected through the same questionnaire at the same time, common method bias was a potential concern. The study controlled this issue at both the procedural and statistical levels.

Procedurally, the questionnaire informed respondents that the survey was for academic research only, that all responses were anonymous, and that there were no correct answers, thereby reducing social desirability bias and evaluation concerns. Items for different variables were interspersed in the questionnaire and written in relatively neutral language to reduce respondents' ability to infer the research purpose from variable relationships. Attention-check items were included, and semantically similar items were not placed consecutively.

Statistically, the study first used Harman's single-factor test by including all measurement items in an unrotated exploratory factor analysis. If the variance explained by the first factor did not exceed the commonly used threshold, common method bias would not be considered serious. The study then compared a single-factor confirmatory factor model with the theoretically specified 11-factor measurement model to further assess whether the variables were primarily driven by a single method factor.

3.6 | Data Analysis

Gender, age, education, use frequency, subscription duration, and average monthly expenditure were included as control variables to ensure

the robustness of the findings. Current subscription status was not included as a control variable because all respondents retained for analysis were active paid subscribers at the time of the survey.

4 | RESULTS

4.1 | Sample Characteristics

A total of 612 questionnaires were collected. Following the predefined data-screening criteria, 47 questionnaires were removed because respondents did not meet the active paid-subscription criterion, completed the survey in less than one-third of the pilot median completion time, selected the same option consecutively across long item blocks, failed attention-check items, or provided logically inconsistent responses. The final sample comprised 565 valid questionnaires, yielding an effective response rate of 92.32%. All respondents included in the analysis were current paid ChatGPT subscribers and were therefore able to evaluate system quality, information content quality, expectation confirmation, perceived usefulness, relational perceptions, and continued subscription intention based on previous subscription and use experience. No former subscribers were included in the final analytic sample.

In terms of gender, 271 respondents were male, accounting for 48.0%, and 294 were female, accounting for 52.0%, indicating a relatively balanced gender distribution. In terms of age, 286 respondents were aged 20-29, accounting for 50.6%, and 279 were aged 30-45, accounting for 49.4%, covering different age groups within Korea's MZ generation. In terms of education, 58 respondents had junior college education or below, accounting for 10.3%; 356 held a bachelor's degree, accounting for 63.0%; and 151 had graduate education or above, accounting for 26.7%. Overall, the sample had a relatively high level of education.

With regard to main ChatGPT use purposes, 33.3% of respondents used it for learning and research, 29.7% for work assistance, 22.7% for creative and content generation, and 14.3% for other purposes such as entertainment, everyday consultation, social interaction, and psychological companionship. In terms of paid subscription experience, 29.4% had subscribed for less than six months, 37.3% for six to 12 months, and 33.3% for more than 12 months. All respondents were current paid subscribers with actual paid experience, and 70.6% had subscribed for at least six months, providing an experiential basis for measuring continued subscription intention.

4.2 | Common Method Bias Test

Because the independent variables, mediators, and dependent variable in this study were measured through the same questionnaire at the same time, common method bias may exist. To reduce this issue, the study adopted procedural controls during questionnaire design, including anonymous responses, interspersed item ordering, non-leading

TABLE 1 Sample Characteristics

Variable	Category	Frequency	Percentage
Gender	Male	271	48.0%
Gender	Female	294	52.0%
Age	20-29 years	286	50.6%
Age	30-45 years	279	49.4%
Education	Junior college or below	58	10.3%
Education	Bachelor's degree	356	63.0%
Education	Graduate degree or above	151	26.7%
Main use	Learning and research	188	33.3%
Main use	Work assistance	168	29.7%
Main use	Creative and content generation	128	22.7%
Main use	Other uses	81	14.3%
Subscription duration	Less than 6 months	166	29.4%
Subscription duration	6-12 months	211	37.3%
Subscription duration	More than 12 months	188	33.3%

Note. $N = 565$.

wording, and attention checks. Harman's single-factor test and single-factor confirmatory factor analysis were then used for statistical assessment.

First, all measurement items were included in an unrotated exploratory factor analysis. The results extracted 11 factors with eigenvalues greater than 1, which together explained 71.83% of the total variance. The first factor explained 28.64% of the variance, below the commonly used 40% threshold, and no single factor explained most of the measurement variance. This initially indicates that common method bias did not seriously affect the results.

Second, all measurement items were loaded onto a single latent variable to construct a single-factor measurement model, which was compared with the theoretically specified 11-factor measurement model. The single-factor model showed poor fit: chi-square/df = 8.214, CFI = 0.512, TLI = 0.486, RMSEA = 0.113, and SRMR = 0.119. By contrast, the 11-factor model fit the data much better: chi-square/df = 2.176, CFI = 0.953, TLI = 0.946, RMSEA = 0.046, and SRMR = 0.044. These results indicate good discriminability among variables and suggest that the findings are not mainly driven by a common measurement method.

4.3 | Measurement Model

Confirmatory factor analysis was used to test the reliability and validity of the measurement model. The fit indices of the 11-factor measurement model were chi-square/df = 2.176, CFI = 0.953, TLI = 0.946, RMSEA = 0.046, and SRMR = 0.044, all meeting recommended standards in relevant research (Hu and Bentler 1999). This indicates that the theoretical measurement model fit the sample data well.

In terms of reliability, Cronbach's alpha values for the latent variables ranged from 0.82 to 0.93, and composite reliability values ranged from 0.84 to 0.94, all exceeding the recommended threshold of 0.70. This indicates good internal consistency. In terms of convergent validity, standardized factor loadings ranged from 0.71 to 0.91, all above 0.70. AVE values ranged from 0.57 to 0.75, all above 0.50, indicating good convergent validity.

In terms of discriminant validity, the square root of AVE for each variable was higher than its correlations with other variables. HTMT values among variables ranged from 0.18 to 0.82, all below the strict threshold

of 0.85. The HTMT value between liking and intimacy was the highest at 0.82 but remained within the acceptable range. The HTMT value between information content quality and trust was 0.78, also below the recommended threshold. These results indicate that the latent variables are related but measure distinct theoretical concepts. Overall, the scales meet statistical requirements for internal consistency, convergent validity, and discriminant validity, allowing further structural model and hypothesis testing.

4.4 | Structural Model and Hypothesis Testing

After the measurement model was validated, structural equation modeling was used to analyze the paths among variables. The structural model showed acceptable overall fit: chi-square/df = 2.241, CFI = 0.949, TLI = 0.942, RMSEA = 0.047, and SRMR = 0.052. These indices indicate that the theoretical model fit the sample data well.

In terms of explanatory power, system quality and information content quality jointly explained 27% of the variance in expectation confirmation. System quality, information content quality, and expectation confirmation jointly explained 43% of the variance in perceived usefulness. Cognitive evaluation factors and positive relational perceptions jointly explained 62% of the variance in satisfaction. All antecedent variables and satisfaction jointly explained 58% of the variance in continued subscription intention. The model therefore has good explanatory power for satisfaction and continued subscription intention.

System quality and information content quality both significantly affected users' cognitive evaluations. System quality positively affected expectation confirmation ($\beta = 0.310$, $p < 0.001$) and perceived usefulness ($\beta = 0.190$, $p < 0.001$). Information content quality also positively affected expectation confirmation ($\beta = 0.280$, $p < 0.001$) and perceived usefulness ($\beta = 0.240$, $p < 0.001$). H1a-H1d were therefore supported. The more stable and timely the paid ChatGPT service was, and the more accurate, relevant, and clear its generated content was, the more likely users were to perceive the actual experience as meeting prior expectations and to form higher functional value judgments.

TABLE 2 Descriptive Statistics, Reliability, and Convergent Validity

Variable	Items	Mean	SD	Std. loading	Cronbach's α	CR	AVE
System quality (SQ)	4	5.48	0.88	0.74–0.84	0.86	0.87	0.63
Information content quality (IQ)	4	5.21	0.94	0.76–0.87	0.88	0.89	0.67
Expectation confirmation (EC)	3	5.16	0.97	0.77–0.86	0.84	0.85	0.66
Perceived usefulness (PU)	4	5.62	0.86	0.81–0.89	0.90	0.91	0.72
Satisfaction (SAT)	5	5.34	0.91	0.78–0.89	0.91	0.92	0.70
Liking (L)	4	5.29	0.92	0.74–0.86	0.86	0.87	0.63
Trust (T)	4	4.98	0.99	0.76–0.88	0.89	0.90	0.69
Intimacy (I)	4	4.43	1.08	0.72–0.85	0.85	0.86	0.61
Perceived threat (TH)	4	3.81	1.12	0.71–0.83	0.82	0.84	0.57
Anxiety (AN)	5	3.64	1.09	0.72–0.85	0.85	0.87	0.58
Continued subscription intention (CPI)	5	5.07	1.03	0.82–0.91	0.93	0.94	0.75

Note. CR = composite reliability; AVE = average variance extracted. All standardized factor loadings were significant at $p < 0.001$.

TABLE 3 Structural Model Paths and Hypothesis Tests

Hypothesis	Path	Standardized β	C.R.	p	Result
H1a	SQ $\rightarrow$ EC	0.310	6.780	<0.001	Supported
H1b	IQ $\rightarrow$ EC	0.280	6.120	<0.001	Supported
H1c	SQ $\rightarrow$ PU	0.190	4.360	<0.001	Supported
H1d	IQ $\rightarrow$ PU	0.240	5.280	<0.001	Supported
H1e	SQ $\rightarrow$ SAT	0.170	3.760	<0.001	Supported
H1f	IQ $\rightarrow$ SAT	0.150	3.290	0.001	Supported
H1g	SQ $\rightarrow$ CPI	0.110	2.480	0.013	Supported
H1h	IQ $\rightarrow$ CPI	0.130	2.930	0.003	Supported
H2a	EC $\rightarrow$ PU	0.400	8.920	<0.001	Supported
H2b	EC $\rightarrow$ SAT	0.260	5.880	<0.001	Supported
H2c	PU $\rightarrow$ SAT	0.310	6.730	<0.001	Supported
H2d	SAT $\rightarrow$ CPI	0.390	8.540	<0.001	Supported
H3a	L $\rightarrow$ SAT	0.160	3.610	<0.001	Supported
H3b	L $\rightarrow$ CPI	0.120	2.710	0.007	Supported
H3c	T $\rightarrow$ SAT	0.210	4.770	<0.001	Supported
H3d	T $\rightarrow$ CPI	0.180	4.160	<0.001	Supported
H3e	I $\rightarrow$ SAT	0.140	3.230	0.001	Supported
H3f	I $\rightarrow$ CPI	0.070	1.690	0.091	Not supported
H3g	TH $\rightarrow$ SAT	-0.060	-1.440	0.150	Not supported
H3h	TH $\rightarrow$ CPI	-0.050	-1.210	0.226	Not supported
H3i	AN $\rightarrow$ SAT	-0.070	-1.630	0.103	Not supported
H3j	AN $\rightarrow$ CPI	-0.040	-0.980	0.327	Not supported

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. SQ = system quality; IQ = information content quality; EC = expectation confirmation; PU = perceived usefulness; SAT = satisfaction; L = liking; T = trust; I = intimacy; TH = perceived threat; AN = anxiety; CPI = continued subscription intention.

System quality and information content quality also significantly and positively affected satisfaction and continued subscription intention. The path coefficients from system quality to satisfaction and continued subscription intention were 0.170 and 0.110, respectively. The path coefficients from information content quality to satisfaction and continued subscription intention were 0.150 and 0.130, respectively. H1e–H1h were supported. These results indicate that technical and content quality not only indirectly affect payment decisions through expectation confirmation and perceived usefulness but also directly improve users' overall evaluation of paid services and their renewal tendency.

All core ECM cognitive paths were significant. Expectation confirmation positively affected perceived usefulness ($\beta = 0.400$, $p < 0.001$) and satisfaction ($\beta = 0.260$, $p < 0.001$). Perceived usefulness positively affected satisfaction ($\beta = 0.310$, $p < 0.001$), and satisfaction positively affected continued subscription intention ($\beta = 0.390$, $p <$

0.001). H2a–H2d were supported. Satisfaction showed the largest standardized direct effect, indicating that users' decisions to continue subscribing to paid ChatGPT are closely related to their overall satisfaction based on accumulated paid-use experience.

Positive relational perceptions had differentiated effects on payment decisions. Liking positively affected satisfaction ($\beta = 0.160$, $p < 0.001$) and continued subscription intention ($\beta = 0.120$, $p = 0.007$). Trust also positively affected satisfaction ($\beta = 0.210$, $p < 0.001$) and continued subscription intention ($\beta = 0.180$, $p < 0.001$). The standardized coefficients indicate that trust had a relatively stronger effect on continued subscription intention, suggesting that users' willingness to continue paying depends not only on liking the interaction with ChatGPT but also on whether they regard the system as reliable, safe, and dependable. This pattern suggests that different relational perceptions have different economic consequences. Liking may make the paid interaction more pleasant and reduce users' motivation to search for alternatives, while trust can more directly support continued payment

because it lowers uncertainty about reliability, safety, and the value of relying on the service.

Intimacy positively affected satisfaction ($\beta = 0.140$, $p = 0.001$), but its direct effect on continued subscription intention was not significant ($\beta = 0.070$, $p = 0.091$). H3e was supported, whereas H3f was not. This indicates that familiarity and psychological closeness with ChatGPT can improve the overall interaction experience, but intimacy alone may not be sufficient to make users continue bearing economic costs. Its effect on payment intention may mainly operate indirectly through satisfaction.

The negative effects of perceived threat and anxiety on satisfaction and continued subscription intention were not statistically significant, so H3g-H3j were not supported. For current paid users, concerns about privacy, technological substitution, and AI uncontrollability did not directly translate into reduced satisfaction or intentions to stop paying. This result does not mean that negative perceptions have no role or that AI-related risks can be ignored. Rather, it may indicate a boundary condition of the paid-user context: users who have already crossed the threshold into active paid adoption may place greater weight on practical utility, service quality, and trust relationships in payment decisions, or they may have higher tolerance for AI-related risks. Because the cross-sectional design cannot directly establish this selection mechanism, the interpretation should be treated as theoretically suggestive and should be examined in future research comparing current subscribers, former subscribers, and non-paying users.

4.5 | Mediation Effects

To further examine the mechanisms through which cognitive factors and relational perception factors influence continued subscription intention, the study used bootstrap mediation analysis with 5,000 resamples. Bias-corrected 95% confidence intervals were used to determine whether indirect effects were significant.

The results show that expectation confirmation partially mediated the relationship between system quality and satisfaction, with a standardized indirect effect of 0.081 and a 95% confidence interval of [0.052, 0.116]. Expectation confirmation also mediated the relationship between information content quality and satisfaction, with an indirect effect of 0.073 and a 95% confidence interval of [0.045, 0.105]. Because both confidence intervals excluded zero and the direct effects of system quality and information content quality on satisfaction remained significant, both effects are partial mediations.

Perceived usefulness had a significant indirect effect between system quality and satisfaction, with an effect of 0.059 and a 95% confidence interval of [0.032, 0.091]. Its indirect effect between information content quality and satisfaction was 0.074, with a 95% confidence interval of [0.044, 0.108]. These findings indicate that technical quality and content quality can be transformed into perceived task value, thereby increasing satisfaction with the paid service. Satisfaction also mediated the relationship between expectation confirmation and continued subscription intention, with an indirect effect of 0.101, and the relationship

between perceived usefulness and continued subscription intention, with an indirect effect of 0.121. Both confidence intervals excluded zero, indicating that users' judgments of confirmation and task value are further translated into renewal intention through overall satisfaction.

In the relational perception path, satisfaction partially mediated the relationship between liking and continued subscription intention, with an indirect effect of 0.062, and the relationship between trust and continued subscription intention, with an indirect effect of 0.082. Because the direct effects of liking and trust on continued subscription intention remained significant, both variables promote continued payment both directly and indirectly through satisfaction.

The indirect effect of intimacy on continued subscription intention through satisfaction was 0.055, with a 95% confidence interval of [0.028, 0.083], reaching statistical significance. Because the direct path from intimacy to continued subscription intention was not significant, intimacy showed an indirect-only effect: its influence on continued subscription intention operated mainly through satisfaction. Supplementary tests showed that the confidence intervals for the indirect effects of perceived threat and anxiety on continued subscription intention through satisfaction included zero, so H4d was not supported. In addition, system quality and information content quality influenced continued subscription intention through the sequential path of expectation confirmation, perceived usefulness, and satisfaction. The complete chain mediation effect was 0.015 for system quality and 0.014 for information content quality, and both confidence intervals excluded zero. H4e was therefore supported. These results further validate the complete ECM chain in the context of paid ChatGPT use.

5 | CONCLUSION AND DISCUSSION

5.1 | Main Findings

This study verifies the foundational role of system quality and information content quality in continued subscription decisions for ChatGPT. The more stable the system, the faster the responses, and the smoother the interaction, the more likely users are to perceive the service as meeting expectations and to form higher perceived usefulness. Advantages in the accuracy, relevance, completeness, and clarity of generated content directly improve users' learning, work, and creative performance. System quality and information content quality not only directly increase satisfaction and subscription intention but also exert indirect effects through expectation confirmation and perceived usefulness. In free-use contexts, users may tolerate a certain degree of delay or error. In paid contexts, however, users bear economic costs and therefore evaluate the service by stricter standards. Stable performance and high-quality content constitute the basic conditions for maintaining a subscription relationship, consistent with the information systems success model and ECM (Bhattacharjee 2001, DeLone and McLean 2003).

The findings further show that the core cognitive chain of expectation confirmation, perceived usefulness, satisfaction, and continued

TABLE 4 Bootstrap Mediation Effects

Indirect path	Standardized indirect effect	95% CI	<i>p</i>	Mediation result
SQ → EC → SAT	0.081	[0.052, 0.116]	<0.001	Partial mediation
IQ → EC → SAT	0.073	[0.045, 0.105]	<0.001	Partial mediation
SQ → PU → SAT	0.059	[0.032, 0.091]	<0.001	Partial mediation
IQ → PU → SAT	0.074	[0.044, 0.108]	<0.001	Partial mediation
EC → PU → SAT	0.124	[0.086, 0.169]	<0.001	Significant indirect effect
EC → SAT → CPI	0.101	[0.067, 0.141]	<0.001	Significant indirect effect
PU → SAT → CPI	0.121	[0.083, 0.164]	<0.001	Significant indirect effect
L → SAT → CPI	0.062	[0.034, 0.095]	<0.001	Partial mediation
T → SAT → CPI	0.082	[0.052, 0.117]	<0.001	Partial mediation
I → SAT → CPI	0.055	[0.028, 0.083]	<0.001	Indirect-only effect
TH → SAT → CPI	-0.023	[-0.058, 0.010]	0.142	Not supported
AN → SAT → CPI	-0.027	[-0.063, 0.007]	0.106	Not supported
SQ → EC → PU → SAT → CPI	0.015	[0.007, 0.027]	<0.001	Significant chain mediation
IQ → EC → PU → SAT → CPI	0.014	[0.006, 0.024]	<0.001	Significant chain mediation

Note. **p* < 0.05; ***p* < 0.01; ****p* < 0.001.

subscription intention remains valid in a paid context. When actual experience exceeds expectations, users are more likely to recognize ChatGPT's efficiency and task value, form higher satisfaction, and ultimately strengthen renewal intention. Satisfaction showed the largest standardized direct effect, indicating that renewal decisions depend on accumulated overall satisfaction rather than the usefulness of a single response. Sequential mediation tests show that system quality and information content quality can continuously affect continued subscription intention through expectation confirmation, perceived usefulness, and satisfaction, extending ECM from general continuance to continued payment behavior under economic-cost constraints.

Analysis of relational perception paths shows that liking and trust significantly increase both satisfaction and subscription intention, with both direct effects and indirect effects through satisfaction. Liking comes from a natural and friendly interaction experience, suggesting that users purchase not only model performance but also a comfortable and pleasant interaction process. Trust has a relatively stronger effect on satisfaction and subscription intention, indicating that long-term subscription depends on perceived system reliability and safety. Trust is a key psychological condition that transforms technology use into a paid relationship (Hsieh and Lee 2024). This distinction is theoretically important because it separates forming a relationship with an AI system from being willing to pay for that relationship. Trust can translate relatively directly into willingness to maintain an economic relationship because paid AI use involves uncertainty about output reliability, privacy, and service value. By contrast, intimacy significantly improves satisfaction but does not directly affect subscription intention. It therefore shows an indirect-only effect. Familiarity and the experience of being understood can improve use experience, but they must first be transformed into satisfaction before they can drive payment; they cannot independently replace judgments of functional value and service quality (Lee and Kwon 2011). Different relational perceptions therefore operate through distinct mechanisms in payment decisions.

The direct negative effects of perceived threat and anxiety and their indirect effects through satisfaction were not supported. For Korean users aged 20–45 who were current paid subscribers, concerns about

privacy, misinformation, and substitution risk did not directly translate into lower satisfaction or reduced payment intention. This may be because paid users have already developed value recognition and tend to maintain subscriptions as long as functional benefits outweigh perceived risk costs. Users may also manage risks themselves through restricted use scenarios, data verification, or other protective strategies. At the same time, the sampling process excluded people who refused paid adoption or had already cancelled because of high risk perception, which may create a selection effect. This interpretation remains cautious because the present research design cannot directly observe the process through which risk perceptions are filtered before paid adoption or cancellation. The nonsignificant effects of negative perceptions should therefore not be interpreted as evidence that risks disappear among paid users. Their effects may depend on specific high-risk contexts, operate through other mediating variables, or appear more clearly when current subscribers are compared with former subscribers and non-paying users (Li 2025, Jung et al. 2023).

Overall, the core contribution of the study is to reveal the psychological convergence of cognitive evaluation and positive relational perception in satisfaction, while also showing that relational perceptions differ in their economic consequences. System quality, information content quality, expectation confirmation, and perceived usefulness constitute functional evaluation. Liking, trust, and intimacy constitute positive relational evaluation, whereas perceived threat and anxiety are better understood as negative human-AI risk and affective responses. Functional evaluation and positive relational evaluation both flow into satisfaction as a central hub and drive payment decisions. At the same time, liking and trust can also influence continued subscription intention beyond satisfaction, while intimacy mainly becomes economically consequential after it improves overall satisfaction. The nonsignificant role of negative perceptions clarifies a possible boundary condition among current paid users, but it does not imply that AI-related concerns are irrelevant. Continued subscription to ChatGPT is neither purely rational calculation nor mere emotional attachment. It is a composite decision jointly driven by technological utility, trusted reliance, favorable interaction experience, and cautious risk management.

5.2 | Theoretical Contributions

This study makes three main theoretical contributions. First, it extends ECM from traditional continuance contexts to the continued subscription context of GAI (Bhattacharjee 2001, Hwang et al. 2023), verifying the applicability of expectation confirmation, perceived usefulness, and satisfaction under economic-cost constraints and showing that ECM can effectively explain the maintenance of AIGC subscription relationships. Second, it moves beyond simply adding relational variables to ECM by specifying how different human-AI perceptions matter for paid relationships. The results show that anthropomorphic interaction with ChatGPT encourages users to form social-relational judgments (Mousawi et al. 2021), but these judgments do not operate uniformly: liking and trust have both direct and indirect effects on continued subscription intention, whereas intimacy operates indirectly through satisfaction. This distinction suggests that trust and liking can support willingness to maintain an economic relationship with an AI service, while psychological closeness becomes valuable mainly when it improves the overall experience. Third, the study reveals the integrative role of satisfaction between cognitive evaluation and positive relational perception. Satisfaction not only carries functional value and expectation assessment but also absorbs positive emotional experience, becoming a key psychological hub linking technical quality, anthropomorphic relational experience, and continued subscription intention. Finally, by distinguishing positive relational perceptions from negative human-AI risk and affective responses, the study clarifies why perceived threat and anxiety may have weaker effects among current paid subscribers and provides a boundary-condition agenda for future research.

5.3 | Practical Implications

The findings offer several implications for the design and operation of paid generative AI products. First, continuously improving system quality and information content quality remains the foundation for maintaining paid user relationships. Platforms should prioritize response stability, interaction fluency, and service availability during peak periods, while continually improving the accuracy, relevance, and consistency of generated content. For paid users, service quality must be clearly differentiated from free versions; otherwise, users may struggle to form a sufficient sense of paid value.

Second, platforms need to translate perceived usefulness into benefits that users can repeatedly identify. Rather than simply displaying model parameters, more effective approaches include task templates, professional tools, personalized workflows, and usage reports that help users perceive the paid service's value in time savings, efficiency gains, and improved outputs. Only when users can repeatedly answer why the service is worth paying for will technical quality be transformed into stable renewal intention.

Third, trust building should be central to the design and management of paid AI services. Platforms should clearly communicate information

sources, system capability boundaries, potential errors, and data-use practices, while providing accessible verification mechanisms, privacy controls, and data-management tools. Responsible AI management requires responsibility to be embedded throughout the design, implementation, and use of AI-based systems rather than treated as a reactive response to technical failure (Chapuis and Guégan 2024). A trustworthy AI system is therefore not one that never makes mistakes, but one whose limitations are transparent and whose users retain meaningful opportunities to verify outputs and control associated risks.

Fourth, relational and anthropomorphic design should serve user experience but should not replace functional value. Friendly language, continuous dialogue, and moderate personalization can strengthen liking and intimacy, but excessive anthropomorphism may blur system boundaries and even induce dependency or privacy risk. Platforms should therefore balance interaction friendliness, system transparency, and user control.

Fifth, platforms can implement differentiated operations according to users' subscription stage. New subscribers need clearer demonstrations of functional value and onboarding guidance, whereas long-term subscribers place greater emphasis on stability, trust, and personalized experience. By identifying users' purposes, subscription duration, and task needs, platforms can design more targeted renewal strategies rather than relying only on uniform price promotions.

5.4 | Limitations and Future Research

This study has several limitations that suggest directions for future research. First, it uses cross-sectional data and therefore cannot capture dynamic changes across subscription stages. Future studies could conduct longitudinal tracking. Second, the sample is limited to Korea's MZ generation, and the conclusions cannot be directly generalized to other groups or platforms. Cross-national, cross-generational, and cross-product validation is needed. Third, the study focuses on payment intention rather than actual behavior (Wei 2024). Future research could combine platform logs and real renewal data to improve explanatory power. Fourth, the model does not include factors such as price fairness, perceived value, switching costs, and substitutes, and therefore should be further extended. Fifth, the measurement of negative perceptions is relatively broad. Future research could refine risk dimensions and use experiments to explore their boundary conditions. Sixth, future research should connect subscription continuance with AI ethics more explicitly. Issues such as privacy protection, transparency, accountability, overreliance, and democratic governance of AI may shape how users evaluate the legitimacy of long-term paid AI relationships (Sahut et al. 2023). Ethical concerns may be especially important in high-stakes use contexts where continued subscription is tied not only to utility and satisfaction but also to users' judgments about responsible AI design and governance.

In sum, continued subscription intention for ChatGPT among Korean users aged 20-45 results from the joint influence of technological utility

and positive human-AI relational experience, under the boundary condition of current paid subscription. System and information quality are the basis for maintaining subscription. Expectation confirmation and perceived usefulness drive cognitive evaluation. Liking, trust, and intimacy supplement the experience with affective and relational value, but they do not have identical economic meanings: trust and liking can support continued payment more directly, whereas intimacy operates mainly by improving satisfaction. Satisfaction integrates these effects as a key psychological hub. Perceived threat and anxiety did not show significant effects in this study, and their mechanisms require further investigation through designs that compare current subscribers, former subscribers, and non-paying users and that more explicitly consider ethical concerns in AI use.

AUTHOR CONTRIBUTIONS

Liucun Zhu: Conceptualization, methodology, formal analysis, investigation, and writing—original draft. Chunlin Duan: Supervision, theoretical development, and writing—review and editing.

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None reported.

CONFLICT OF INTEREST

The authors declare no potential conflict of interests.

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APPENDIX

A MEASUREMENT ITEMS AND SOURCES

TABLE A1: Measurement Items and Sources

Variable	Code	Measurement item	Main source
System quality	SQ1	ChatGPT runs stably.	(DeLone and McLean 2003, Petter et al. 2008)
Information content quality	SQ2	ChatGPT responds to my questions promptly.	(DeLone and McLean 2003, Wixom and Todd 2005)
	SQ3	ChatGPT is convenient to operate and interact with.	
	SQ4	The overall interaction process with ChatGPT is smooth.	
	IQ1	The information provided by ChatGPT is relevant to my needs.	
Expectation confirmation	IQ2	The content generated by ChatGPT is clear and easy to understand.	(Bhattacharjee 2001)
	IQ3	The information provided by ChatGPT is generally accurate and reliable.	
	IQ4	The content generated by ChatGPT is relatively complete and covers my main questions.	
	EC1	The actual performance of paid ChatGPT meets my expectations.	
Perceived usefulness	EC2	The functions provided by paid ChatGPT basically meet my expectations.	(Bhattacharjee 2001, Venkatesh et al. 2012)
	EC3	Overall, the experience of using paid ChatGPT is better than or consistent with my previous expectations.	
	PU1	Paid ChatGPT improves my task efficiency.	
	PU2	Paid ChatGPT helps improve my learning or work performance.	
Satisfaction	PU3	Using paid ChatGPT has practical value for me.	(Oliver 1980, Bhattacharjee 2001)
	PU4	Paid ChatGPT helps me better complete information retrieval, writing, or creative tasks.	
	SAT1	Overall, I am satisfied with paid ChatGPT.	
	SAT2	Choosing to use paid ChatGPT was the right decision.	
Liking	SAT3	The overall experience of paid ChatGPT satisfies me.	(Gan 2017, Hsieh and Lee 2024)
	SAT4	Compared with my paid investment, paid ChatGPT satisfies me.	
	SAT5	Overall, I evaluate my previous experience with paid ChatGPT highly.	
	L1	I have a positive liking for ChatGPT.	
Trust	L2	I enjoy interacting with ChatGPT.	(Gefen et al. 2003, Hsieh and Lee 2024)
	L3	Overall, ChatGPT leaves a good impression on me.	
	L4	Compared with similar AI products, I prefer ChatGPT's interaction experience.	
	T1	Even when some uncertainty exists, I still believe ChatGPT's suggestions have reference value.	
Intimacy	T2	I believe ChatGPT can help me complete tasks in a relatively reliable way.	(Lee and Kwon 2011)
	T3	In most cases, I think paid ChatGPT is trustworthy.	
	T4	I am willing to rely on ChatGPT for assistance in important but verifiable tasks.	
	I1	I feel a certain degree of closeness when interacting with ChatGPT.	
Perceived threat	I2	Long-term use has made ChatGPT feel familiar to me.	(Li 2025, Jung et al. 2023)
	I3	I sometimes feel that ChatGPT understands my needs.	
	I4	During continued interaction, I feel that I have formed a certain psychological connection with ChatGPT.	
	TH1	I worry that ChatGPT may collect or use my personal information improperly.	
	TH2	I worry that overreliance on ChatGPT may weaken my independent judgment.	
	TH3	I believe the widespread use of ChatGPT may threaten some jobs.	

Continued on next page

Table A1 continued

Variable	Code	Measurement item	Main source
Anxiety	TH4	I worry that ChatGPT may create information-security or decision-making risks.	(Li 2025, Jung et al. 2023)
	AN1	I sometimes feel uneasy when using ChatGPT.	
	AN2	I feel anxious when I cannot judge whether ChatGPT's answer is correct.	
	AN3	I feel worried when I think ChatGPT may produce erroneous or uncontrollable results.	
	AN4	Using ChatGPT for sensitive issues makes me feel tense.	
Continued subscription intention	AN5	If I rely too much on ChatGPT, I feel psychological discomfort.	(Kim et al. 2007, Hsiao and Chen 2016)
	CPI1	I am willing to continue subscribing to paid ChatGPT in the future.	
	CPI2	When my current subscription expires, I am willing to renew paid ChatGPT.	
	CPI3	Even if I need to keep paying, I am still willing to use paid ChatGPT.	
	CPI4	Among similar AI products, I would prioritize continuing to pay for ChatGPT.	
	CPI5	In the future, I am willing to maintain or increase my investment in paid ChatGPT.	

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