RESEARCH ARTICLE

The impact of Generative AI chatbots on behavioral intention in travel planning: A theory of consumption value perspective

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Abstract

Generative AI (GenAI) chatbots are revolutionizing online travel planning by transitioning travelers' focus from merely gathering information to obtaining personalized recommendations and facilitating seamless bookings. Grounded in the Interactive Technology Acceptance Model and Consumption Value Theory, this study investigates how the attributes of GenAI chatbots, specifically personalization and anthropomorphism, alongside user traits such as self-efficacy and personal innovativeness, influence travel planning intention through perceived value. Data collected from a questionnaire survey were analyzed using structural equation modeling (SEM). The findings reveal that GenAI chatbot attributes (personalization and anthropomorphism) and user traits (self-efficacy and personal innovativeness) exert significant direct positive effects on perceived values. The indirect effects of anthropomorphism, personalization, self-efficacy, and personal innovativeness on adoption intentions are most pronounced through hedonic value, followed by utilitarian value, with novelty value playing the least prominent mediating role. This study enriches the theoretical understanding of AI-based customer service and provides tourism businesses with insights into enhancing GenAI's features and shaping consumer perceptions.

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1 Introduction

GenAI, powered by Large Language Models (LLMs) and advanced natural language processing, is significantly transforming the travel industry. In contrast to traditional rule-based chatbots, which depend on pre-scripted decision trees and keyword matching, GenAI chatbots exhibit advanced capabilities in dynamic reasoning, context awareness, and natural language generation [1]. These chatbots are adept at managing highly unstructured inquiries and producing adaptive, coherent, and human-like responses, thereby facilitating complex trip planning [2].

Prominent online travel agencies, including Expedia and Trip.com, have rapidly adopted GenAI chatbots to provide multi-turn conversations, multilingual support, and

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highly personalized itineraries. By converting search-based interactions into conversational discovery, GenAI chatbots are profoundly changing the manner in which tourists seek information, evaluate alternatives, and make travel decisions [2,3].

As service interactions evolve from human-driven to Gen AI-driven paradigms, novel behavioral and psychological factors have emerged that influence user acceptance [4]. However, the rapid proliferation of GenAI has outpaced the development of a comprehensive theoretical framework for understanding tourists' adoption intentions. Although the existing literature has investigated AI adoption through technological attributes [5,6], social dimensions [7], and perceived barriers [8], a systematic analysis identified three significant research gaps. First, traditional travel planning is characterized by fragmentation, which requires individuals to gather information from multiple sources [9,10]. In contrast, GenAI significantly alters this process by integrating information retrieval into a single conversation interface. This shift in technology elicits unique cognitive and emotional responses compared to traditional search engines or rule-based systems, necessitating updated empirical research specific to travel planning using GenAI. Second, previous research has primarily focused on basic adoption beliefs, such as perceived usefulness or ease of use, derived from classical acceptance models, such as the Technology Acceptance Model (TAM). However, given the experiential and hedonic nature of tourism, [11] these metrics are inadequate. There is a critical need to assess adoption through multidimensional perceived value. Third, the interactive dynamics between human users and AI systems remain largely unexplored. In the context of GenAI, behavioral intention arises not only from the system's capabilities but also from the interaction between external technological cues and internal user predispositions. Nevertheless, existing studies seldom incorporate these dimensions into a comprehensive framework.

This study systematically addresses existing gaps by developing a comprehensive research model that integrates the Interactive Technology Acceptance Model (iTAM) with the Theory of Consumption Value (TCV). The iTAM suggests that user responses are influenced by both system capabilities and individual user characteristics. In line with this interactive framework, we conceptualize the antecedents as a combination of Gen AI technological attributes, specifically Anthropomorphism and Personalization, and tourists' individual traits, namely Self-efficacy and Personal Innovativeness. These dual inputs represent the service affordances of AI and the consumer's readiness. The TCV is employed to establish an evaluative mechanism to link these inputs to the final behavioral intention. The TCV posits that consumption choices are driven by various factors. Accordingly, this study introduces Multidimensional Perceived Value, which includes utilitarian value, hedonic value, and novelty value, as the central mediator. This integrated framework comprehensively maps how external AI features and internal user traits collectively shape users' multidimensional value perceptions, which subsequently drive their continuous intention to use GenAI for travel planning. Guided by this theoretical logic, this study aims to address the following research questions:

RQ1: How do the technological attributes of GenAI chatbots (anthropomorphism and personalization) and individual tourist traits (self-efficacy and innovativeness) jointly influence the multidimensional perceived value?

RQ2: How do utilitarian, hedonic, and novelty values affect tourists' behavioral intentions in GenAI travel planning?

RQ3: What is the mediating role of multidimensional perceived value in the relationship between the antecedents of human–AI interaction and behavioral intention?

This study makes a substantial contribution to the literature by addressing these issues. Theoretically, this study expands the application of the iTAM and TCV frameworks within the context of intelligent tourism, introducing a novel interactive model that encapsulates the dual effects of system features and user traits on the creation of a multidimensional value. Practically, the findings will offer insights for GenAI developers and online travel agencies to optimize AI-driven services, enhance user value perception, and facilitate the adoption of GenAI in the tourism industry.

2 Literature review

2.1 Theoretical thesis

2.1.1 Interactive technology acceptance model (iTAM). The Interactive Technology Acceptance Model (iTAM) is based on the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). This theory suggests that behavior is a result of rational decision-making, emphasizing the importance of individual attitudes and subjective norms in shaping behavioral intentions, which, in turn, influence actual behavior. TRA has been widely applied across various fields, particularly in technology adoption [12].

The iTAM, an extension of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), was created to incorporate both rational and emotional components into the technology adoption process. The iTAM incorporates individual characteristics, technology features, and human-computer interaction (HCI) dynamics to provide a more comprehensive explanation of adoption behavior [13]. Song et al. [14] utilized iTAM to investigate the adoption of service robots in the hospitality industry and discovered that both functional and social perceptions mediate the relationship between human-robot interaction and the intention to use robots. Cabrilo et al. [15] discussed both functional value and emotional value in determining the acceptance service robots in hotels by applying the Interactive Technology Acceptance Model (iTAM).

This study employs the iTAM as the theoretical framework to explore how the technical features of generative AI (e.g., anthropomorphism and personalization) and individual characteristics (e.g., self-efficacy and self-innovativeness) affect tourists' perceived value (utilitarian, hedonic, and novelty) and behavioral intentions. This study addresses the existing gaps in the literature on multidimensional interaction frameworks and user personalization.

2.1.2 Theory of consumption values (TCV). The Theory of Consumption Values (TCV), introduced by Sheth et al. [16], suggests that purchasing decisions are influenced by multiple distinct value dimensions: functional, emotional, epistemic, social, and conditional. The relative significance of these dimensions varies according to the context. Tanrikulu et al [17]. conducted a comprehensive review highlighting how researchers have adapted the TCV across various domains and advocated its refinement. Scholars have debated whether these value dimensions operate independently and proposed context-specific subcomponents, such as distinguishing functional value into perceived quality and perceived price.

Recent research has applied the TCV framework to AI-powered services, where consumer value is often categorized into utilitarian, hedonic, and novelty benefits. In the context of AI-driven services, utilitarian value is evident in enhanced task efficiency, improved information access, and personalized experiences. For instance, studies on AI-powered live streaming have demonstrated that real-time customization and interactive features, such as virtual property tours, enhance viewers' booking intentions [18]. Similarly, research on voice assistants indicated that reduced search time and decreased effort for routine tasks significantly contributed to perceived service value [19]. Hedonic value serves as a continuous affective reward that captures the pleasure, playfulness, and immersion experienced by users in digital interactions. This inherently fosters sustained emotional connections and greater acceptance of automated suggestions [20,21].

Novelty value, on the other hand, operates cognitively rather than emotionally, reflecting the epistemic aspect of TCV. It emerges from features that differentiate services in competitive markets and satisfy user curiosity with unprecedented system capabilities. While hedonic benefits promote long-term engagement through consistent entertainment, novelty acts as a powerful but transient initial attraction. The unfamiliarity of AI initially drives content co-creation and adoption behaviors [18]; however, this epistemic appeal diminishes as users become accustomed to the technology. This distinction supports Tanrikulu's [17] assertion that novelty prompts immediate trials and that hedonic value sustains prolonged usage.

Despite these advancements, the literature has yet to fully explore how the attributes of specific Gen AI chatbots interact with user characteristics to create distinct value profiles for travel planning. Identifying the characteristics that influence users' value perceptions would enhance both the theoretical development and practical design of GenAI tools for trip planning.

2.2 GenAI chatbots in travel planning

Travel planning encompasses the search for information, comparison of potential destinations and services, and selection of alternatives to formulate a travel itinerary [3,21]. Individuals gather information from diverse sources, including online travel platforms, traditional agencies, peer reviews, blogs, and personal contacts, and subsequently evaluate this information to make itinerary decisions [9,10,22–24]. Despite the abundance of sources, planners often encounter excessive and fragmented information; the processes of filtering, verifying, and integrating relevant content impose cognitive and temporal burdens that complicate decision making.

GenAI chatbots, particularly those utilizing large language models, are designed to facilitate travel planning by organizing travel information and offering personalized recommendations [1,3,25,26]. By analyzing conversational cues and previous interactions, these chatbots can aggregate data from various travel websites and promptly provide suggestions regarding destinations, attractions, dining, accommodations, and transportation [1,3]. Accurate and relevant recommendations simplify information searches, mitigate overload, and expedite the planning process [1,27].

In contrast to rule-driven chat systems, GenAI chatbots produce more fluent exchanges and richer content, supporting more integrated service experiences from pre-trip planning to execution [1]. Providers can deploy these agents to deliver on-demand personalized guidance, reduce search costs, and enable dynamic itinerary adjustments in real time. These capabilities have the potential to transform travel planning to align with the preferences of travelers.

Empirical research has begun to document the impact of GenAI on travel decision-making and the determinants of its adoption [26,28]. However, several critical questions remain unresolved. Previous studies have often examined adoption drivers or technological features in isolation and seldom explored how specific chatbot attributes interact with individual user traits to create distinct perceived values, such as functional usefulness, experiential enjoyment, and novelty. Understanding how these value perceptions translate into the intention to use chatbots for planning purposes will elucidate which characteristics are significant to travelers and how perceived value mediates the relationship between chatbot features and travel planning behavior.

3 Research hypothesis

3.1 Anthropomorphism

Anthropomorphism refers to the extent to which users attribute human-like mental capacities, including independent mind, consciousness, free will, and emotions, to a GenAI chatbot [29]. The presence of these cues influences users' cognitive and affective responses to AI, thereby shaping their assessments of its practical utility, enjoyment, and perceived novelty.

First, a human-like design enhances perceived practical benefits. By fostering interpersonal trust and reducing technology-related apprehension, agents that display human-like behaviors encourage users to depend on their task-support functions. This enhances the perceived task–technology fit, thereby improving evaluations of usefulness and efficiency [30,31].

Second, anthropomorphic behavior increases affective engagement in humans. Warm, responsive, or socially attuned interactions diminish the mechanical nature of automated systems, eliciting greater pleasure and immersion, thus making interactions inherently more enjoyable [32,33].

Third, human-like features convey distinctiveness compared to conventional interface design. Conversational styles and social gestures create a differentiated experiential format that enhances curiosity and a sense of novelty, particularly in service contexts such as tourism, where empathetic, human-like digital encounters are distinct from traditional search engines [34,35].

Based on the above analysis, we hypothesize the following:

H1a: The anthropomorphism of GenAI chatbots positively influences utilitarian value.

H1b: The anthropomorphism of GenAI chatbots positively influences hedonic value.

H1c: The anthropomorphism of GenAI chatbots positively influences novelty value.

3.2 Personalization

Personalization involves aligning GenAI's outputs with an individual user's preferences, past interactions, and current affective cues [36]. When an agent adjusts its content and tone to suit a user, it alters the system's evaluation across functional, emotional, and experiential dimensions.

First, customized responses reduce cognitive effort and enhance their relevance. By providing content and resources that align with a user's specific goals, a personalized agent decreases task completion time and facilitates more effective problem-solving [37]. Consequently, higher levels of personalization are logically linked to an increased perceived practical usefulness of a technology.

Second, personalization can transform routine exchanges into more engaging interactions. When the system mirrors a user's style or anticipates their preferences, interactions become more emotionally resonant and intrinsically enjoyable, thereby enhancing user attachment and satisfaction [36,38]. Evidence from interactive entertainment indicates that adaptive features increase immersion and enjoyment [39]. Therefore, personalization should enhance users' experiential enjoyment.

Finally, personalization creates interactions that are unique to users. Voice agents or chatbots that deviate from scripted, one-size-fits-all responses are perceived as novel and innovative [40]. Real-time processing of large datasets enables continuous adaptation, produces variations across sessions, and maintains a strong sense of novelty [41,42].

Therefore, we hypothesize the following:

H2a: The Personalization of GenAI chatbots positively influences utilitarian value.

H2b: The Personalization of GenAI chatbots positively influences hedonic value.

H2c: The Personalization of GenAI chatbots positively influences novelty value.

3.3 Self-efficacy

Self-efficacy is defined as an individual's belief in their capability to effectively utilize technology [43].

First, users with high digital confidence actively explore system features to derive optimal functional benefits [44]. Regular interaction with generic AI tools enhances operational skills, allowing individuals to exploit these functions to improve efficiency and service navigation [45,46].

Second, elevated self-efficacy enables users to achieve superior output and fosters a sense of accomplishment. [47] demonstrated that self-efficacy enhances perceived performance, which directly contributes to hedonic enjoyment in video

games. Skilled individuals extract higher-quality outputs from generative systems, creating a sense of control that directly translates into experiential enjoyment [48]. For instance, digital familiarity inherently reduces anxiety and increases pleasure when users engage with VR tourism tools [49].

Third, users with greater confidence are more inclined to experiment with and explore the system's unfamiliar features. Proficient users readily experiment with generative models to produce innovative outputs [50] and exhibit exploratory behavior towards novel systems such as facial recognition technologies [51].

Accordingly, we propose the following hypothesis:

H3a: Tourist self-efficacy positively influences utilitarian value.

H3b: Tourist self-efficacy positively influences hedonic value.

H3c: Tourist self-efficacy positively influences novelty value.

3.4 Personal innovativeness

Personal innovativeness denotes an individual's intrinsic tendency to adopt and experiment with new technologies. This trait influences users' perceptions of the practical benefits, enjoyment, and novelty associated with technology-mediated services in tourism.

Individuals with high innovativeness actively seek practical applications for new tools and technologies. Studies on educational technologies and online purchasing platforms suggest that users readily perceive new systems as useful and easy to operate [52,53].

Furthermore, openness to new technologies enhances the pleasurable experience. Khan and Ullah Khan [54] found that individuals with high innovativeness readily accept smart features and enjoy intuitive interactions. Similarly, Hateftabar [53] demonstrated that innovativeness strengthens the relationship between perceived ease of use and satisfaction, indicating that exploratory users transform low-effort interactions into enhanced hedonic value. In alignment with diffusion theory [55], early adopters actively seek technological distinctiveness. Observations from immersive digital tours and broader digital marketing contexts corroborate that innovative consumers actively enhance the perceived freshness and originality of the digital tools they employ, perceiving them as paradigm-shifting rather than merely functional [56,57].

Therefore, we hypothesize the following:

H4a: Tourists' personal innovativeness positively influences utilitarian value.

H4b: Tourists' personal innovativeness positively influences hedonic value.

H4c: Tourists' personal innovativeness positively influences novelty value.

3.5 The impact of perceived values on behavioral intention

Utilitarian value refers to the tangible, task-oriented benefits provided by technology, such as expedited task completion and customized problem-solving [58]. In the realm of GenAI, these practical advantages are evident through automated drafting, optimized workflows, and enhanced information retrieval, which directly enhance work outcomes and productivity [59]. When users experience these concrete performance improvements, their expectation that the system will aid in achieving their objectives becomes more pronounced, serving as a strong predictor of subsequent adoption intentions [60,61]. Hedonic value pertains to the affective and experiential benefits users derive from interacting with chatbots, such as enjoyment, pleasure, and entertainment. While instrumental performance is crucial, the emotional quality of conversational agents contributes to sustained engagement and supports their long-term adoption [37,62]. When interactions are perceived as enjoyable, users are more likely to trust the system and develop positive attitudes toward its use [62].

Novelty value represents a system's ability to produce original, distinct, and unexpected outputs that stimulate curiosity and prevent interaction fatigue [63].

Given that GenAI performs complex generative tasks that set it apart from traditional rule-based chatbots, users who perceive the system as a source of unique insights are significantly more inclined to adopt it for future travel planning [64,65].

Therefore, we propose the following hypothesis:

H5: The utilitarian value of GenAI chatbots positively influences users' behavioral intentions.

H6: The hedonic value of GenAI chatbots positively influences users' behavioral intentions.

H7: The novelty value of GenAI chatbots positively influences users' behavioral intentions.

3.6 The mediating role of perceived values

This section elucidates the function of perceived value as a critical psychological intermediary that connects system features and individual characteristics to the eventual acceptance of users.

Prior research has established that utilitarian value functions as a mediator linking technical service attributes to users' behavioral intentions. For example, Alam et al. [66] demonstrated that utilitarian value mediates the impact of online distance learning costs on learner acceptance (LS). Similarly, studies in social media marketing have highlighted the intermediary role of utilitarian value in shaping consumer responses [67].

Moreover, interactive AI features integrated within social platforms enhance momentary enjoyment, with this increased hedonic value subsequently leading to a sustained intention to use [68,69].

Additionally, research has indicated that novelty in AI-mediated environments fosters customer engagement by presenting interactions as novel and stimulating [70,71]. It has been found that the distinctive interaction elements of GenAI evoke curiosity, with perceived novelty serving as a channel that encourages deeper engagement and acceptance of AI recommendations [18,19].

Building on these theoretical insights, we propose that the influence of chatbot attributes and user traits on adoption intentions is not merely direct but is mediated by users' multidimensional value perceptions.

Therefore, we hypothesize the following:

H8: Utilitarian value mediates the relationship between GenAI antecedents and users' behavioral intentions.

H9: Hedonic value mediates the relationship between GenAI antecedents and users' behavioral intentions.

H10: Novelty value mediates the relationship between GenAI antecedents and users' behavioral intentions.

Building on the preceding literature review and hypothesis formulation, this study employs the iTAM framework to investigate the impact of generative AI's technical features, such as anthropomorphism and personalization, alongside individual characteristics, including self-efficacy and self-innovativeness, on tourists' perceived value, comprising utilitarian, hedonic, and novelty aspects, and their behavioral intentions. (S1 Fig).

4 Research design

4.1 Sample and data collection

To address the research objectives, a questionnaire was distributed via the professional online survey platform Wenjuanxing (wjx.cn) from October 30, 2025, to November 6, 2025. Initially, a preliminary survey was conducted to ascertain whether respondents had experience using GenAI chatbots (e.g., for travel recommendations and AI itinerary planning). Participants who indicated no prior use of GenAI chatbots on online platforms were excluded from the study. The survey

garnered responses from 552 participants in total. Following data collection, the raw data were processed to eliminate invalid questionnaires, characterized by incomplete responses or random answer patterns (e.g., consistently selecting the same option). After excluding these invalid responses, the final sample comprised 420 participants, yielding an effective recovery rate of 76%, which satisfied the study's sample size requirements. In accordance with local legislation and institutional guidelines, formal ethical review and approval are exempt for this type of anonymous, non-interventional, and observational online survey. The research did not involve clinical trials, nor did it collect any sensitive personal identifiable information. The study was conducted in strict accordance with general ethical guidelines for social science research, ensuring respect for all participants. Informed consent was obtained electronically from all subjects prior to their participation. The introductory page of the online survey (administered via the Wenjuanxing platform) clearly detailed the research purpose, the voluntary and anonymous nature of the study, and data confidentiality measures. Participants were required to explicitly click an "I Agree to Participate" button before proceeding to the questionnaire items. Submission of the survey was considered implied informed consent.

4.2 Variable measures

The questionnaire items concerning GenAI chatbot characteristics were structured into two dimensions: Anthropomorphism and Personalization. The four items assessing anthropomorphism were derived from Gursoy et al. 's scale [72]. The four items evaluating personalization were based on the scale employed by Baek and Morimoto [73]. The attributes of tourists were assessed in two dimensions: Personal Innovativeness and Self-efficacy. The three items for Personal Innovativeness were adopted from Van Raaij and Schepers [74], while the three items for self-efficacy were based on the scale by Kao and Tsai [75]. Users' perceived value was measured across three dimensions: utilitarian, hedonic, and novelty. Three items for utilitarian value were adapted from Song et al. [76], four items for hedonic value were adapted from Song et al. [76], and four items for novelty value were adapted from Prebensen and Xie [77]. Tourists' behavioral intentions were assessed using three items adapted from Christensen et al. [78].

All items were evaluated on a 5-point Likert scale (1 = "totally disagree," 5 = "totally agree") for quantitative analysis.

4.3 Data processing

In this validation study, we adopted the structural equation modeling (SEM) approach because of its capability to simultaneously examine multiple direct and indirect relationships [79]. SEM provides a framework that effectively manages latent variables, which is essential for investigating the influence mechanism of the characteristics of GenAI chatbots on users' perceived value and behavioral intention, as well as the mediating role of perceived value.

During the data analysis process, a two-step approach was employed, utilizing the capabilities of IBM SPSS (version 26) and AMOS (version 26). Initially, IBM SPSS Version 26 was used for preliminary data screening, including the identification of missing values and outliers and conducting descriptive statistical analysis. This step ensured the quality and integrity of the dataset, providing a solid foundation for the subsequent analyses. Subsequently, the specialized structural equation modeling software AMOS 26 was used to evaluate the structural equation model.

5 Results

5.1 Descriptive statistical analysis

Table 1 presented the descriptive statistics of the survey sample. In terms of gender, there were slightly more males than females, with 221 males (52.62%) and 199 females (47.38%) in the study. Regarding age, the largest proportion of respondents fell within the 18–29 age group, followed by those aged 30–40 years. With respect to region, participants were distributed across four geographical areas: the highest proportion came from the eastern region, followed by the western, southern, and northern regions. In terms of monthly income, the largest group earned between 5,001 and 8,000

Table 1. Respondents' demographic profiles.

Variables	Category	frequency	%
Gender	Male	221	52.62
	Female	199	47.38
Age(year)	18-29	147	35
	30-40	132	31.43
	41-50	95	22.62
	> 51	46	10.95
Region	East	272	64.76
	West	108	25.71
	South	24	5.71
	North	16	3.82
Income	3000-5000	108	25.71
	5001-8000	157	37.38
	8001-12000	112	26.67
	> 12000	43	10.24

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yuan, followed by those earning between 8,001 and 12,000 yuan. Overall, the sample was characterized by a higher proportion of males, middle-aged adults, eastern region residents, and middle-income earners, making it representative of the tourism GenAI chatbots investigated in this study.

5.2 Common method bias test

This study utilized a questionnaire survey to gather data from the same participants, which may have introduced common method bias. During questionnaire design, we implemented procedural remedies including anonymity guarantee, and separation of predictor and outcome items to reduce the risk of CMB. To further assess this potential issue, Harman's single-factor test was performed. An exploratory factor analysis using principal component analysis was conducted on all original items. The findings revealed that the first principal component accounts for 37.49% of the total variance, which was below the 40% critical threshold suggested by some researchers. These results suggest that common method bias is not a serious concern in this study.

5.3 Reliability and validity test

Confirmatory factor analysis was employed to evaluate the measurement model, a critical step in verifying whether the observed variables accurately measure the underlying latent constructs, thereby enhancing the credibility of the research findings.

The model fit indicators provide an assessment of the measurement model's quality. As shown in Table 2, Cronbach's α exceeded 0.70, indicating excellent internal consistency and reliability. This suggested a strong correlation among items within each latent variable, confirming that the scale used to measure the constructs is both stable and consistent. Thus, the measurement tool reliably captured the perceived value and behavioral intention related to the influence of GenAI chatbots and tourists' attributes.

Regarding the overall model fit, as presented in Table 3, the values of $\chi^2/df = 1.46$, RMSEA = 0.033, CFI = 0.975, TLI = 0.971, and GFI = 0.926, further validated the adequacy of the model. The χ^2/df ratio of 1.464 fell within the acceptable range (typically below 3), indicating that the fitted model aligns well with the observed data. The root mean square error (RMSE) of 0.033 was below the widely accepted benchmark of 0.08, suggesting minimal deviation between the model and population covariance matrix, which confirmed the model's good fit. The Comparative Fit Index (CFI) and

Table 2. Cronbach's alpha coefficient for each variable.

Constructs	Items	Scales	Cronbach's alpha
Anthropomorphism	AN1	GenAI chatbots have a mind of its own.	0.768
	AN2	GenAI chatbots have consciousness.	
	AN3	GenAI chatbots have its own free will.	
	AN4	GenAI chatbots have emotions.	
personalization	PL1	GenAI chatbots is customized to my needs.	0.836
	PL2	GenAI chatbots is tailored to my unique specifications.	
	PL3	GenAI chatbots make recommendations matching my personal needs.	
	PL4	GenAI chatbots make me feel that I am a unique user.	
Personal innovativeness	PI1	Among my peers, I am usually the first to try out new information technology.	0.785
	PI2	I like to experiment with new information technology.	
	PI3	I try more different information technologies than my friends.	
Self-efficacy	SE1	I am confident I have adequate ability to use GenAI chatbots.	0.785
	SE2	I am confident that I can use the GenAI chatbots even if there is no one around to show me how to use it.	
	SE3	I am confident that I can integrate GenAI chatbots into travel planning.	
Utilitarian Value	UV1	Using GenAI chatbots is practical and economical.	0.793
	UV2	Using GenAI chatbots is cost-effective.	
	UV3	The help provided by GenAI chatbots is very rapid.	
Hedonic Value	HEV1	It is interesting to interact with GenAI chatbots.	0.822
	HEV2	It is enjoyable to interact with GenAI chatbots.	
	HEV3	It is exciting to interact with GenAI chatbots.	
	HEV4	It is fun to interact with GenAI chatbots.	
Novelty Value	NV1	GenAI chatbots provide a unique experience.	0.811
	NV2	Searching for information is memorable with GenAI chatbots.	
	NV3	GenAI chatbots offer an educational experience.	
	NV4	GenAI chatbots satisfy my curiosity.	
Behavioral Intention	BI1	I intend to use GenAI chatbots to plan travel in the future.	0.759
	BI2	I will use GenAI chatbots for travel planning in the future.	
	BI3	I plan to use GenAI chatbots to learn more about travel planning.	

Note: AN = Anthropomorphism (4 items); PL = Personalization (4 items); PI = Personal Innovativeness (3 items); SE = Self-efficacy (3 items); UV = Utilitarian Value (3 items); HEV = Hedonic Value (4 items); NV = Novelty Value (4 items); BI = Behavioral Intention (3 items).

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Table 3. Fitting of the study model.

Items	χ^2/df	RMSEA	CFI	TLI	GFI
Requirements	< 3	< 0.08	> 0.9	> 0.9	> 0.9
Indicators	1.46	0.033	0.975	0.971	0.926

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Tucker-Lewis Index (TLI) were 0.975 and 0.971, respectively, both approaching 1, indicating that the model fit better than the baseline. Similarly, the Goodness-of-Fit Index (GFI) was 0.926, close to the ideal value of 1, further confirming that the model effectively represented the data.

Overall, the evaluation results of the model demonstrated an excellent fit to the data. This finding not only confirmed the validity of the measurement model but also established a solid foundation for subsequent hypothesis testing. With

this well-fitted measurement model, we can accurately analyze the relationship between GenAI chatbot features, users' attributes, users' perceived value, and their behavioral intention.

As shown in Table 4, the results of the construct validation further emphasized the robustness of the measurement model used in this study. The factor loadings of the measurement items, which ranged from 0.676 to 0.835, were the key indicators of validity. All values surpassed the conventional threshold of 0.60 [79], indicating a strong correlation between each observed variable and its corresponding latent construct. The composite reliability values for all constructs ranged from 0.7583 to 0.8365, significantly exceeding the recommended benchmark of 0.70 [79]. This suggested internal consistency within each construct, indicating that the items are consistently associated. The average variance extracted (AVE) values, which ranged from 0.5014 to 0.6308, exceeded the critical threshold of 0.50 established by Fornell and Larcker [80], providing robust evidence of convergent validity. The AVE quantified the proportion of variance captured by a construct relative to the variance due to measurement errors. These results collectively affirmed that the measurement

Table 4. Reliable test.

Constructs	Items	Loadings	P	CR	AVE
Anthropomorphism	AN1	0.725	$p<0.001$	0.8007	0.5014
	AN2	0.733	$p<0.001$		
	AN3	0.681	$p<0.001$		
	AN4	0.692	$p<0.001$		
Personalization	PL1	0.698	$p<0.001$	0.8173	0.5285
	PL2	0.71	$p<0.001$		
	PL3	0.782	$p<0.001$		
	PL4	0.715	$p<0.001$		
Personal Innovativeness	PI1	0.774	$p<0.001$	0.8123	0.5907
	PI2	0.789	$p<0.001$		
	PI3	0.742	$p<0.001$		
Self-efficacy	SE1	0.724	$p<0.001$	0.7807	0.5431
	SE2	0.707	$p<0.001$		
	SE3	0.778	$p<0.001$		
Utilitarian Value	UV1	0.777	$p<0.001$	0.8365	0.6308
	UV2	0.835	$p<0.001$		
	UV3	0.769	$p<0.001$		
Hedonic Value	HEV1	0.715	$p<0.001$	0.8277	0.5485
	HEV2	0.769	$p<0.001$		
	HEV3	0.729	$p<0.001$		
	HEV4	0.741	$p<0.001$		
Novelty Value	NV1	0.754	$p<0.001$	0.8321	0.5535
	NV2	0.721	$p<0.001$		
	NV3	0.768	$p<0.001$		
	NV4	0.732	$p<0.001$		
Behavioral Intention	BI1	0.676	$p<0.001$	0.7583	0.5115
	BI2	0.731	$p<0.001$		
	BI3	0.737	$p<0.001$		

Note: AN = Anthropomorphism; PL = Personalization; PI = Personal Innovativeness; SE = Self-efficacy; UV = Utilitarian Value; HEV = Hedonic Value; NV = Novelty Value; BI = Behavior Intention.

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model is both reliable and valid, ensuring that the constructs correspond with the theoretical expectations. The high factor loadings, composite reliability (CR), and average variance extracted (AVE) values substantiate the use of these latent variables in structural equation modeling (SEM) to examine the hypothesized influence of generative AI features on behavioral intention. In addition to convergent validity, establishing discriminant validity is essential to confirm the uniqueness of each construct in the research model. This study applies the Fornell-Larcker criterion [80] to assess discriminant validity. According to this criterion, the square root of the AVE for each construct must exceed its correlation coefficient with all other constructs.

As shown in Table 5, the results fully met the Fornell-Larcker criterion: for each construct ("GenAI chatbots characteristics,perceived value, and "behavior intention"), the square root of its AVE was greater than all off-diagonal correlation coefficients with other constructs.

5.4 Hypothesis test

Table 6 presents the results of the structural equation modeling analysis, and S2 Fig illustrates the structural equation model and the outcomes of the hypotheses.

The anthropomorphism of GenAI chatbots significantly and positively influenced users' utilitarian (β = 0.15, $p < 0.001$), hedonic (β = 0.109, $p = 0.009$), and novelty values (β = 0.082, $p = 0.042$), thereby supporting H1a, H1b, and H1c. This finding indicates that AI-generated human-like tourism content, interactive storytelling, and empathetic conversational cues effectively capture users' attention and enhance their utilitarian, hedonic, and novelty values.

Similarly, the personalization of GenAI chatbots had a significant positive effect on users' utilitarian (β = 0.213, $p < 0.001$), hedonic (β = 0.29, $p < 0.001$), and novelty values (β = 0.216, $p < 0.001$), supporting H2a, H2b, and H2c.This suggests that personalized recommendations, context-aware suggestions, and tailored experiences generated by AI effectively attract users' attention, enhance their perceived usefulness and enjoyment, and stimulate feelings of novelty.

The self-efficacy of tourists using GenAI chatbots also demonstrated a significant positive effect on users' utilitarian (β = 0.345, $p < 0.001$), hedonic (β = 0.284, $p < 0.001$), and novelty values (β = 0.345, $p < 0.001$), thus supporting H3a, H3b, and H3c, respectively. This implies that self-efficacy, facilitated by interactive interfaces and immediate feedback, enhances utilitarian, hedonic, and novelty values.

Moreover, the personal innovativeness of tourists using GenAI chatbots significantly and positively affected users' utilitarian (β = 0.182, $p < 0.001$), hedonic (β = 0.2, $p < 0.001$), and novelty values (β = 0.252, $p < 0.001$), supporting H4a, H4b, and H4c.This suggests that personal innovativeness, including proactive early adoption, inventive itinerary customization, and adaptive problem-solving, enhances Tutilitarian, hedonic, and novelty values.

Table 5. Discriminant validity (Pearson correlation with AVE square root values).

	BI	NOV	HEV	UV	SE	PI	PL	AN
BI	**0.715**							
NOV	0.677	**0.744**						
HEV	0.639	0.659	**0.739**					
UV	0.623	0.674	0.668	**0.794**				
SE	0.627	0.622	0.689	0.711	**0.737**			
PI	0.605	0.671	0.64	0.731	0.667	**0.769**		
PL	0.669	0.653	0.679	0.74	0.632	0.634	**0.727**	
AN	0.619	0.61	0.623	0.652	0.641	0.642	0.648	**0.708**

Note: AN = Anthropomorphism; PL = Personalization; PI = Personal Innovativeness; SE = Self-efficacy; UV = Utilitarian Value; HEV = Hedonic Value; NOV = Novelty Value; BI = Behavioral Intention.

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Table 6. Path coefficient test results.

Hypothesis	β	*p*	Result
H1a An→UV	0.15	$p<0.001$	supported
H1b An→HEV	0.109	0.009	supported
H1c An→NOV	0.082	0.042	supported
H2a PL→UV	0.213	$p<0.001$	supported
H2b PL→HEV	0.29	$p<0.001$	supported
H2c PL→NOV	0.216	$p<0.001$	supported
H3a SE→UV	0.345	$p<0.001$	supported
H3b SE→HEV	0.284	$p<0.001$	supported
H3c SE→NOV	0.345	$p<0.001$	supported
H4a PI→UV	0.182	$p<0.001$	supported
H4b PI→HEV	0.2	$p<0.001$	supported
H4c PI→NOV	0.252	$p<0.001$	supported
H5 UV→BI	0.31	$p<0.001$	supported
H6 HEV→BI	0.347	$p<0.001$	supported
H7 NOV→BI	0.212	$p<0.001$	supported

Note: *$p<0.05$, **$p<0.01$, ***$p<0.001$; AN = Anthropomorphism; PL = Personalization; PI = Personal Innovativeness; SE = Self-efficacy; UV = Utilitarian Value; HEV = Hedonic Value; NOV = Novelty Value; BI = Behavioral Intention.

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The utilitarian value of using GenAI chatbots (β = 0.31, $p<0.001$) significantly and positively influenced tourists' behavioral intentions in travel planning, supporting H5. This indicates that utilitarian values, such as fast itinerary generation, accurate information retrieval, price comparison, and direct booking links, directly promote continued use and intention to book. Similarly, the hedonic value (β = 0.347, $p<0.001$) and novelty value (β = 0.212, $p<0.001$) of using GenAI chatbots also significantly and positively affected tourists' behavioral intention in travel planning, thus supporting H6 and H7. These findings suggest that emotional and aesthetic satisfaction directly promote continued use and reservation.

We further evaluated the explanatory power of the structural model by calculating squared multiple correlations (SMC / R^2) for the endogenous latent variables. The SMC results are shown in Table 7. The R^2 values for utilitarian value, hedonic value, novelty value and behavioral intention were 0.565, 0.541, 0.547, and 0.533, respectively, which demonstrate that the structural model has substantial explanatory power.

5.5 Mediation effect

The Bootstrap method, involving 5000 repeated samples, was employed to assess the mediating effects of utilitarian, hedonic, and novelty values on the relationship between the use of GenAI chatbots and tourists' behavioral intentions in travel planning. The results of the mediation effect tests were shown in Table 8.

Utilitarian value served as a mediator between anthropomorphism and behavioral intention in travel planning, with an indirect effect value of 0.047% confidence interval of [0.019, 0.079].Hedonic value mediated the relationship between anthropomorphism and behavioral intention, with an indirect effect value of 0.052% confidence interval of [0.021, 0.088]. Novelty value mediated the relationship between anthropomorphism and behavioral intention, as indicated by an indirect effect value of 0.032% confidence interval of [0.011, 0.058].

Utilitarian value mediated the relationship between personalization and behavioral intention, with an indirect effect value of 0.066% confidence interval of [0.035, 0.103]. Hedonic value acted as a mediator between personalization and behavioral intention, with an indirect effect value of 0.074% confidence interval of [0.039, 0.116]. Novelty value mediated

Table 7. Squared multiple correlations for endogenous latent variables.

Construct	SMC (R^2)
NOV	0.565
HEV	0.541
UV	0.547
BI	0.533

Note: UV = Utilitarian Value; HEV = Hedonic Value; NOV = Novelty Value; BI = Behavioral Intention.

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Table 8. Results of mediating effect test.

path	β	*P*	Percentile 95%		Hypothesis
			Lower	Upper	
AN→UV→BI	0.047	$P = 0.001$	0.019	0.079	supported
AN→HEV→BI	0.052	$P = 0.001$	0.021	0.088	supported
AN→NOV→BI	0.032	$P = 0.001$	0.011	0.058	supported
PL→UV→BI	0.066	$p < 0.001$	0.035	0.103	supported
PL→HEV→BI	0.074	$p < 0.001$	0.039	0.116	supported
PL→NOV→BI	0.045	$p < 0.001$	0.018	0.08	supported
PI→UV→BI	0.057	$P = 0.001$	0.025	0.094	supported
PI→HEV→BI	0.063	$p = 0.001$	0.027	0.108	supported
PI→NOV→BI	0.039	$p = 0.001$	0.014	0.074	supported
SE→UV→BI	0.107	$p < 0.001$	0.067	0.153	supported
SE→UV→BI	0.12	$p < 0.001$	0.073	0.171	supported
SE→NOV→BI	0.073	$p < 0.001$	0.035	0.118	supported

Note: AN = Anthropomorphism; PL = Personalization; PI = Personal Innovativeness; SE = Self-efficacy; UV = Utilitarian Value; HEV = Hedonic Value; NV = Novelty Value; BI = Behavioral Intention.

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the relationship between personalization and behavioral intention, with an indirect effect value of 0.045% confidence interval of [0.018, 0.08].

Utilitarian value mediated the relationship between personal innovativeness and behavioral intention, with an indirect effect value of 0.057% confidence interval of [0.025, 0.094]. Hedonic value mediated the relationship between personal innovativeness and behavioral intention, with an indirect effect value of 0.063% confidence interval of [0.027, 0.108]. Novelty value mediated the relationship between personal innovativeness and behavioral intention, with an indirect effect value of 0.039% confidence interval of [0.014, 0.074].

Utilitarian value mediated the relationship between self-efficacy and behavioral intention, with an indirect effect value of 0.107% confidence interval of [0.067, 0.153].Hedonic value mediated the relationship between self-efficacy and behavioral intention, with an indirect effect value of 0.12% confidence interval of [0.073, 0.171].Novelty value mediated the relationship between self-efficacy and behavioral intention, with an indirect effect value of 0.073% confidence interval of [0.035, 0.118].

6 Discussion and implications

6.1 Discussion

This study examines the influence of GenAI chatbot services on travelers' perceived value, which subsequently affects their willingness to utilize these services during itinerary planning. By integrating insights from the Interactive Technology

Acceptance Model (iTAM) and the Theory of Consumption Values (TCV), this study enhances the theoretical understanding of the topic and offers practical guidance for businesses aiming to optimize AI-driven customer experiences.

First, the study revealed that anthropomorphism, personalization, self-efficacy, and personal innovativeness consistently exerted strong positive effects on utilitarian, hedonic, and novelty values. This finding establishes that value creation in GenAI travel planning depends on the active interplay between system affordance and user readiness. This demonstrates that technological sophistication alone is insufficient; distinct multidimensional value emerges only when adaptive system affordances interact with highly capable and innovative user groups. This addresses a significant gap in the current literature [81], which rarely intersects the capabilities of GenAI and consumption value theory.

Second, the study revealed that personalization, self-efficacy, and personal innovativeness consistently exerted strong positive effects on behavioral intention through utilitarian, hedonic, and novelty values. This outcome supports prior research [18], affirming that per- ceived value is a key psychological mechanism linking AI service characteristics to users' willingness to adopt technology. This underscores that users do not adopt generative systems merely because of their sophisticated underlying architecture; they adopt them because these features reliably provide tangible problem-solving capabilities or entertainment during the travel planning phase.

Finally, a consistent pattern emerged across anthropomorphism, personalization, personal innovativeness, and self-efficacy: the estimated indirect effects on behavioral intention were most pronounced through hedonic value, followed by utilitarian value and novelty value. All indirect effects were statistically significant, supporting the mediating role of each value dimension in the relationships between these antecedents and travelers' intentions to use GenAI chatbots. This pattern underscores the importance of enjoyable and engaging interactions alongside practical usefulness, while indicating that novelty also contributes to perceived value rather than serving as a negligible feature. From a managerial perspective, these findings suggest that service providers should prioritize enjoyable, personalized interactions supported by reliable and effective assistance, while incorporating novel features that complement these experiential and functional benefits. Overall, the findings contribute to a more nuanced understanding of value-based acceptance in GenAI tourism services by identifying three complementary pathways linking user characteristics and chatbot attributes to behavioral intention. This finding aligns with previous research [19], which demonstrates that functional and hedonic factors are more influential than novelty in AI-powered services.

6.2 Theoretical significance

This study contributes significantly to the theoretical literature on GenAI in tourism by addressing a critical gap in previous research, which has predominantly focused on the technological aspects of AI adoption in travel planning. Prior studies have largely concentrated on the technical features of AI chatbots [32,82], neglecting the combined influence of technological features and traveler characteristics on adoption-related outcomes in GenAI-enabled service encounters. This study addresses this gap by developing and empirically validating an integrated framework. This framework posits that chatbot attributes, such as personalization, and traveler traits including self-efficacy and personal innovativeness collectively influence behavioral intention through perceived value. Consequently, this study enhances our understanding of AI in tourism and advances the AI experience framework by incorporating both technological and human factors [83].

Furthermore, this study contributes to theoretical development by integrating the Interactive Technology Acceptance Model (iTAM) and the Theory of Consumption Value (TCV), thereby providing explanatory power that neither framework can independently offer. Although recent studies have demonstrated that perceived value predicts chatbot adoption [84], few have incorporated functional, hedonic, novelty, and social value within a single framework, particularly in the context of Gen AI in tourism services [85]. By merging these perspectives, this study elucidates the likelihood of travelers accepting GenAI chatbots and the mechanisms and reasons for such acceptance, emphasizing utilitarian, hedonic, and novelty values. This theoretical integration extends previous acceptance models from primarily cognition-based logic to a more process-oriented and value-based explanation. This study enriches prior tourism studies on GenAI by demonstrating

that consumers perceive GenAI chatbots not only as problem-solving tools but also as experiential interfaces capable of providing enjoyment and novelty in travel planning. This clarification of how technology services transform into behavioral intentions broadens the theoretical explanations for Gen AI service acceptance.

The results refine our understanding of how different value dimensions operate in this context. The findings indicate that chatbot characteristics and traveler traits are indirectly associated with behavioral intention through hedonic, utilitarian, and novelty values, with the indirect effects consistently largest through hedonic value, followed by utilitarian value and novelty value. Contrary to previous research [18], this study suggests that in AI-enhanced scenarios, functional utility and pleasure exert a more substantial influence on behavioral intention than does novelty.

6.3 Practical significance

The findings provide actionable insights for tourism operators, AI developers, and platform managers. Design teams are advised to integrate anthropomorphism, personalization, self-efficacy, and features that accommodate users' willingness to experiment with AI into their designs. Initially, chatbots should incorporate human-like conversational cues to enhance the perceived value of the system while employing predictive analytics to offer hyper-personalized suggestions based on users' past travel behavior and demographic characteristics. This approach is consistent with previous research, indicating that the combination of personalization and anthropomorphism affects the intention to use GenAI services [32]. Moreover, interfaces that are emotionally engaging, user-friendly, capable of providing tailored interactions, and encouraging feedback motivate users to adopt and continue using the services. Creating experiences that evoke positive emotions can reduce barriers for less innovative users and increase their willingness to explore new tools. This aligns with prior research [86], suggesting that effort expectancy and personal innovativeness drive the use of GenAI Chatbots for travel planning.

To maintain long-term engagement, GenAI chatbots must provide useful and enjoyable experiences. It is crucial to ensure that the system consistently provides accurate and relevant information and offers efficient support to the users. Regarding enjoyment, elements that render interactions enjoyable and emotionally rewarding include playful interactions, personalized storytelling, and quick and satisfying responses that minimize friction and capture the attention of the user. Our findings indicate that practical usefulness and enjoyment bridge the gap between usage intention and actual use. Novelty-driven features should be highlighted to attract digitally savvy customers. Emphasizing a destination's fresh or unexpected aspects, such as personalized itineraries, surprise recommendations, or dynamic local discoveries, can enhance involvement and make the service feel more unique to the user. These novel features also contribute to experiential differentiation, which is increasingly becoming a source of competitive advantage in the tourism industry. This is in line with previous findings that successful digital services should assist users in efficiently finding relevant information while also making the service process enjoyable and distinctive [17]. To secure a competitive edge, tourism platforms must integrate functional accuracy, emotional warmth, and unexpected discoveries into seamless travel experiences.

7 Limitations and future research

This study has several limitations, indicating the need for further investigation.

First, the research focused exclusively on GenAI chatbot features such as anthropomorphism, personalization, innovativeness and self-efficacy. Future research should investigate additional factors, including trust, privacy concerns, perceived AI risk, AI hallucination issues, algorithmic transparency, and explainability.

Second, this study examined perceived value as the proposed mediator linking generative AI chatbot characteristics to travel planning intention. However, the structural model did not include direct paths from chatbot characteristics to travel planning intention and therefore could not distinguish between full and partial mediation. The findings should not be interpreted as evidence that direct effects are absent. Future research could estimate both direct and indirect effects and compare models with and without direct paths to further assess the proposed mediation structure. In addition, examining

the roles of technology readiness, uncertainty avoidance, prior AI experience, and trust-related mechanisms could provide deeper theoretical insights into these relationships.

Third, the sample was limited to Chinese respondents with prior experience using GenAI models. Future studies should evaluate whether the proposed relationships are applicable across diverse cultural backgrounds, international tourism markets, older adults, and individuals with limited digital experiences.

Fourth, this study utilized single-source, cross-sectional questionnaire data, which limits causal inference and may introduce common method bias. Although Harman's single-factor test was conducted, this test alone is insufficient to rule out method-related bias. Moreover, the questionnaire did not include a suitable marker measure, precluding a marker-variable assessment using the available data. The estimated relationships should therefore be interpreted with these limitations in mind. Future research should consider longitudinal or multi-source designs and incorporate suitable marker measures and additional procedural and statistical approaches to strengthen causal inference and assess and mitigate potential common method bias.

Finally, self-reported data may be influenced by respondents' moods, environmental factors, and response patterns. Future studies should incorporate mixed methods to accurately capture consumer behavior and validate findings across various contexts and populations.

8 Conclusions

This study examines China, the world's most dynamic market for digital travel services, to evaluate the primary factors influencing behavioral intentions to use GenAI chatbots for online travel planning. To explore these factors, this study integrates the Interactive Technology Acceptance Model (iTAM) and Consumption Value Theory (TCV), offering a comprehensive theoretical framework for understanding the implications of GenAI adoption in the tourism sector.

A questionnaire survey was conducted to gather data from Chinese travelers. The findings demonstrate that GenAI chatbot attributes (personalization and anthropomorphism) and user traits (self-efficacy and personal innovativeness) exert significant direct positive effects on perceived values. Regarding the indirect pathways, while personalization, self-efficacy, and innovativeness positively influence adoption intentions via all three mediating values (utilitarian, hedonic, and novelty).

This study suggests that AI service providers should emphasize functional reliability and personalized recommendations to enhance their effectiveness. Developers should also create more human-like, emotionally engaging interfaces to improve hedonic experiences rather than focusing solely on the novelty of the technology. Furthermore, marketing strategies should target users with high digital self-efficacy and innovativeness to facilitate the initial adoption. Ultimately, this study aims to inspire tourism businesses and AI developers from the perspective of Chinese users, as optimizing these GenAI features will aid China in advancing its digital tourism infrastructure and enhancing consumer-service efficiency.

Supporting information

S1 Fig. Research model. The proposed research model illustrating the effects of GenAI attributes and individual traits on multidimensional perceived values and behavioral intention.
(TIF)

S2 Fig. Structural equation model and hypothesis results. *$p < 0.05$, **$p < 0.01$, and ***$p < 0.001$.
(TIF)

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