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AI Personalization and Travel Booking Intention in GenAI-Assisted Travel Planning: The Roles of Recommendation Relevance, Perceived Decision Autonomy, and Travel Decision Satisfaction

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Abstract

This study examines the relationships among AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention in generative artificial intelligence (GenAI)-assisted travel planning. An online survey using convenience sampling yielded 348 valid responses from consumers in Taiwan aged 20 years and older with experience using GenAI for travel planning. Structural equation modeling was used to test seven hypotheses. The model demonstrated good fit, and six hypotheses were supported. AI personalization was positively associated with recommendation relevance and perceived decision autonomy. Recommendation relevance was positively associated with perceived decision autonomy, and both constructs were positively associated with travel decision satisfaction. The direct association between perceived decision autonomy and travel booking intention was not significant after accounting for travel decision satisfaction. The path from travel decision satisfaction to travel booking intention had the largest standardized coefficient. These findings distinguish perceived personalization from recommendation relevance and clarify the different roles of autonomy and satisfaction in travel decision-making. For practitioners, the findings suggest that tourism platforms and GenAI service providers should offer recommendations aligned with consumers' needs, preserve their autonomy over choices, and improve the decision-making experience. The study provides evidence to inform the design of GenAI travel recommendation services.

JEL classification numbers: D12, L83, O33.
Keywords: Generative artificial intelligence, AI personalization, Perceived decision autonomy, Travel booking intention.

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1. Introduction

The rapid development of generative artificial intelligence (GenAI) is reshaping how consumers access travel information and plan their trips. Compared with conventional information search methods, GenAI can provide personalized recommendations for destinations, accommodation, and tourism activities in real time based on users' needs, reducing information search costs and improving planning efficiency (Li and Su, 2026). However, although GenAI can help alleviate information overload, it does not necessarily improve the decision-making experience (Mladenović et al., 2026), and the credibility and accuracy of its recommendations may also influence consumer judgments (Kang et al., 2026). Whether personalized recommendations translate into travel booking intention, and which psychological mechanisms underlie this relationship, therefore warrant further investigation.

Personalized recommendations involve providing information tailored to consumers' preferences and needs. Previous research indicates that perceived personalization and information quality influence consumers' trust in and attitudes toward recommendation technologies (Yang et al., 2024), while recommendation relevance can increase click-through intention (Yin et al., 2025). However, highly personalized recommendations are not necessarily perceived as more useful (Nguyen and Hsu, 2022), suggesting that information aligned with consumers' needs does not inevitably generate booking intention. Accordingly, understanding the effectiveness of personalized recommendations requires consideration of consumers' psychological experiences during decision-making, alongside recommendation relevance.

Perceived decision autonomy may be an important factor in determining the effectiveness of AI recommendations. It refers to consumers' subjective sense that they can evaluate alternatives and make choices according to their own preferences and volition. Research indicates that perceived autonomy influences consumers' assessments of the value and trustworthiness of AI travel recommendations (Trần et al., 2026) and may mediate the relationship between AI recommendations and satisfaction (Cho and Rha, 2026). Nevertheless, even when recommendations meet consumers' needs, a perceived lack of control over decision-making may elicit resistance (André et al., 2018). Recommendation relevance and perceived decision autonomy thus represent two distinct mechanisms in the decision-making process: the alignment of information with consumers' needs and the experience of making autonomous choices.

Travel decision satisfaction reflects consumers' overall evaluation of the process of assessing information, comparing alternatives, and making choices. Previous research has identified an association between decision satisfaction and subsequent behavioral intentions (Heitmann et al., 2007), while AI-powered personalized services can also enhance customer satisfaction and travel booking intention (Alcala et al., 2025). However, inadequate information quality and psychological reactance may diminish satisfaction (Kim et al., 2023; Pizzi et al., 2021). These findings

suggest that travel decision satisfaction may play an important role in linking recommendation relevance and perceived decision autonomy to travel booking intention.

Although previous studies have examined how AI personalization, information quality, and satisfaction relate to consumer behavior, limited research has integrated recommendation relevance, perceived decision autonomy, and travel decision satisfaction to explain travel booking intention. In particular, whether the alignment of recommendations with consumers' needs enhances perceived decision autonomy, and how these two factors jointly relate to travel decision satisfaction and booking intention, remain insufficiently understood. To address these gaps, this study develops a conceptual framework comprising AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention. Focusing on consumers with experience using GenAI for travel planning, the study employs structural equation modeling (SEM) to examine the relationships among these constructs. It seeks to clarify how perceived personalization, recommendation relevance, and consumers' evaluations of the decision-making process relate to travel booking intention and to provide practical insights for tourism businesses seeking to improve their personalized recommendation services.

2. Literature Review and Hypotheses Development

2.1 Previous Research on GenAI-Assisted Travel Decision-Making

The development of generative artificial intelligence (GenAI) is reshaping how consumers search for travel information, compare travel options, and make consumption decisions. Compared with traditional recommendation systems, GenAI can interpret users' needs through natural language interactions and provide personalized recommendations based on travel budgets, individual preferences, and time constraints, enabling a more interactive approach to travel planning (Li and Su, 2026; Laciste and Sy, 2026). However, whether GenAI recommendations effectively influence travel booking intention depends not only on the ease of accessing information but also on consumers' subjective evaluations of the recommended content and the decision-making process (Li and Lee, 2025; Luo et al., 2025).

Previous research indicates that personalized recommendations can influence consumers' information processing and evaluations of their decisions through the alignment between information content and consumer needs (Tam and Ho, 2006). When recommendations align with users' preferences and needs, they can reduce the burden of information search and improve consumers' attitudes toward recommendation services and their behavioral intentions (Yang et al., 2024; Yin et al., 2025). However, a higher degree of personalization does not necessarily lead consumers to perceive the information as more useful (Nguyen and Hsu, 2022), highlighting recommendation relevance as an important factor in evaluating the effectiveness of personalized recommendations.

Beyond providing information, GenAI may also influence consumers' sense of autonomy in making travel decisions. Research suggests that algorithmic recommendations can alter consumers' perceptions of control over decision-making. When recommendation systems exert excessive influence over choices, they may undermine perceived autonomy and elicit negative responses (André et al., 2018; Wertenbroch et al., 2020). Conversely, allowing consumers to adjust recommendation criteria according to their needs, compare alternatives, and retain final decision-making authority can improve their decision-making experience and satisfaction (Cho and Rha, 2026; Han and Ko, 2025).

Taken together, these studies suggest that the relationship between AI personalization and travel consumption decisions may involve the alignment of recommended information with consumers' needs, their sense of autonomy in making choices, and their satisfaction with the overall decision-making process. Recommendation relevance reflects consumers' evaluations of how well the information aligns with their needs; perceived decision autonomy captures their subjective sense of being able to make choices autonomously; and travel decision satisfaction reflects their overall evaluation of the process of searching for information, comparing alternatives, and making choices. Accordingly, this study integrates these constructs to examine the relationships among AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention in GenAI-assisted travel planning.

2.2 AI Personalization, Recommendation Relevance, and Perceived Decision Autonomy

AI personalization refers to the process through which artificial intelligence systems dynamically adapt recommendation content based on users' needs, preferences, and contextual information. In this study, AI personalization refers specifically to personalization in GenAI-assisted travel recommendations and is assessed through consumers' perceptions of the system's ability to tailor its recommendations to their individual needs. Tam and Ho (2006) suggest that personalized recommendations influence information processing and decision-making through content relevance and self-reference mechanisms. In the context of GenAI-assisted travel planning, systems can integrate travelers' budgets, time constraints, and activity preferences to recommend suitable travel options. Research indicates that perceived personalization and information quality help shape consumers' trust in and attitudes toward recommendation technologies (Yang et al., 2024). However, a higher degree of personalization does not necessarily translate into greater perceived usefulness of the information (Nguyen and Hsu, 2022).

Recommendation relevance refers to the extent to which consumers perceive recommended content as aligned with their needs, preferences, and decision-making contexts. In this study, AI personalization captures consumers' perceptions of the system's ability to adapt recommendations, whereas recommendation relevance reflects their assessments of how well the recommended content fits their

needs. Previous research indicates that recommendations aligned with consumers' decision-making needs are more likely to receive favorable evaluations and encourage subsequent adoption (Chong et al., 2018). Yin et al. (2025) further suggest that the relevance of AI recommendations can enhance consumers' click-through intention. Accordingly, GenAI's adaptation of recommendation content to travelers' needs is expected to enhance recommendation relevance. The following hypothesis is therefore proposed:

H1: AI personalization has a significant positive effect on recommendation relevance.

Perceived decision autonomy refers to consumers' subjective sense that they can make decisions according to their own preferences and volition when evaluating and choosing among alternatives. Previous research suggests that algorithmic recommendations may influence consumers' sense of autonomy in making choices (Wertenbroch et al., 2020). When GenAI allows users to adjust recommendation criteria, compare alternatives, and retain final decision-making authority, it can strengthen perceived autonomy. Conversely, excessive influence over decision-making may undermine consumers' sense of control (Fan and Liu, 2022). Thus, when AI personalization serves a decision-support function, it is expected to enhance perceived decision autonomy. The following hypothesis is therefore proposed:

H2: AI personalization has a significant positive effect on perceived decision autonomy.

Recommendation relevance may also influence perceived decision autonomy. When information lacks relevance, consumers must devote additional time to screening alternatives, increasing their decision-making burden. Even when AI alleviates information overload, it does not necessarily improve the decision-making experience (Mladenović et al., 2026). By contrast, recommendations aligned with consumers' needs can help them identify viable alternatives and support choices based on their own preferences. Related research suggests that content relevance influences information processing and decision-making (Tam and Ho, 2006), and that personalized recommendations may shape consumer evaluations through perceived control (Xu and Chen, 2025). Although recommendation relevance is conceptually distinct from autonomy, it can provide the informational foundation that supports autonomous choice. The following hypothesis is therefore proposed:

H3: Recommendation relevance has a significant positive effect on perceived decision autonomy.

2.3 Recommendation Relevance, Perceived Decision Autonomy, and Travel Decision Satisfaction

Travel decision satisfaction refers to consumers' overall satisfaction with the process of searching for travel information, evaluating alternatives, and making choices. Heitmann et al. (2007) examined the relationships among decision goal attainment, decision satisfaction, and consumption satisfaction, highlighting the conceptual distinction between evaluations of the decision-making process and post-consumption satisfaction. Accordingly, this study focuses on consumers' satisfaction with the process of planning travel and selecting alternatives with GenAI assistance.

Recommendation relevance may influence travel decision satisfaction. Given the complexity of travel information, consumers need to compare alternatives to reduce uncertainty in decision-making. When AI recommendations align with travelers' needs, budgets, and time constraints, they can reduce the burden of screening information and improve evaluation efficiency. Research indicates that personalized recommendations can enhance satisfaction by reducing information overload (Liang et al., 2006), while higher recommendation quality can reduce decision effort and improve choice satisfaction (Knijnenburg et al., 2012). However, recommendation effectiveness remains contingent on consumers' goals, and an excessive emphasis on accuracy may elicit psychological reactance (He et al., 2024). The following hypothesis is therefore proposed:

H4: Recommendation relevance has a significant positive effect on travel decision satisfaction.

Perceived decision autonomy may also influence travel decision satisfaction. Consumers' sense of autonomy in making choices may shape their evaluations of the overall decision-making experience. When consumers can compare alternatives and make choices according to their own volition, they are more likely to experience positive feelings about the decision-making process. Conversely, excessive AI intervention may undermine their sense of control and reduce satisfaction (Rohden and Espartel, 2024). Choudhary and Kour (2024) suggest that personalized recommendations need to accommodate consumer autonomy to improve decision satisfaction.

In the context of GenAI-assisted travel planning, consumers can retain autonomy over their choices by refining their requirements, asking follow-up questions, and comparing alternatives. Related research has found that perceived autonomy enhances satisfaction with AI services (Han and Ko, 2025) and mediates the relationship between AI recommendations and satisfaction (Cho and Rha, 2026). Furthermore, recommendation relevance and option visibility may enhance satisfaction through perceived control (Xu and Chen, 2025). Thus, AI is more likely to improve the travel decision-making experience when it supports consumers' decisions rather than replaces their judgment. The following hypothesis is therefore proposed:

H5: Perceived decision autonomy has a significant positive effect on travel decision satisfaction.

2.4 Perceived Decision Autonomy, Travel Decision Satisfaction, and Travel Booking Intention

Travel booking intention refers to consumers' subjective inclination to proceed with booking accommodation, transportation, or tourism activities after evaluating travel information and related products. Wen (2009) identified consumer trust, attitudes, website quality, and satisfaction as important factors influencing online travel purchase intention. Ahmad and Sharma (2025) likewise treated accommodation booking intention as a key outcome in online travel consumption. Compared with the intention to use AI, travel booking intention more directly reflects consumers' willingness to translate GenAI recommendations into consumption choices.

Perceived decision autonomy may influence consumers' endorsement of travel options and their subsequent booking intention. When consumers perceive that travel choices align with their preferences and that they can independently compare alternatives and retain final decision-making authority, they may be more willing to adopt the recommendations. Previous research has identified relationships among consumer autonomy, personalized recommendations, and purchase intention (Zhao et al., 2025; Hou et al., 2026). Furthermore, Hou et al. (2026) found that a sense of autonomy enhances purchase intention and the quality of AI-assisted decisions. In travel planning, allowing consumers to adjust recommendation criteria and compare alternatives autonomously may strengthen their endorsement of travel choices and increase booking intention. Conversely, excessive AI influence over choices may elicit psychological reactance (André et al., 2018). The following hypothesis is therefore proposed:

H6: Perceived decision autonomy has a significant positive effect on travel booking intention.

Travel decision satisfaction may also influence booking intention. When consumers positively evaluate the process of searching for information, comparing alternatives, and making choices, they are more likely to accept the selected option and develop booking intention. Alcala et al. (2025) found that travelers' satisfaction with AI chatbots significantly predicts booking intention. Ahmad and Sharma (2025) also indicated that both information satisfaction and service satisfaction influence online accommodation booking intention. Accordingly, when GenAI helps consumers integrate information, identify suitable alternatives, and improve their decision-making experience, it may further enhance travel booking intention.

Nevertheless, travel decision satisfaction and travel booking intention are distinct concepts. The former reflects consumers' overall evaluation of the decision-making process, whereas the latter represents their propensity to engage in subsequent consumption behavior. Even when consumers are satisfied with AI-assisted planning, price, time, and other situational constraints may prevent them from

completing a booking. Viglia and Acuti (2023) and Nieto-García et al. (2024) both highlight a potential gap between behavioral intentions and actual behavior in tourism consumption. This study therefore distinguishes travel decision satisfaction from travel booking intention and, drawing on prior evidence supporting the relationship between satisfaction and purchase intention, proposes the following hypothesis:

H7: Travel decision satisfaction has a significant positive effect on travel booking intention.

3. Methodology

3.1 Research Framework

This study aims to examine the relationship between AI personalization and consumers' travel booking intention and to clarify the roles of recommendation relevance, perceived decision autonomy, and travel decision satisfaction in GenAI-assisted travel decision-making. Drawing on the relevant literature and proposed hypotheses, the study develops an integrated framework comprising five constructs: AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention.

The framework positions AI personalization as an antecedent of recommendation relevance and perceived decision autonomy and specifies relationships between recommendation relevance and both perceived decision autonomy and travel decision satisfaction. It also includes paths from perceived decision autonomy to travel decision satisfaction and travel booking intention, as well as a path from travel decision satisfaction to travel booking intention. The framework encompasses five constructs and seven hypotheses. Structural equation modeling (SEM) was employed to test the hypothesized relationships among the constructs and assess overall model fit. This analysis examined the relationships among AI personalization, consumers' evaluations of GenAI-assisted travel decision-making, and travel booking intention. The research framework is presented in Figure 1.

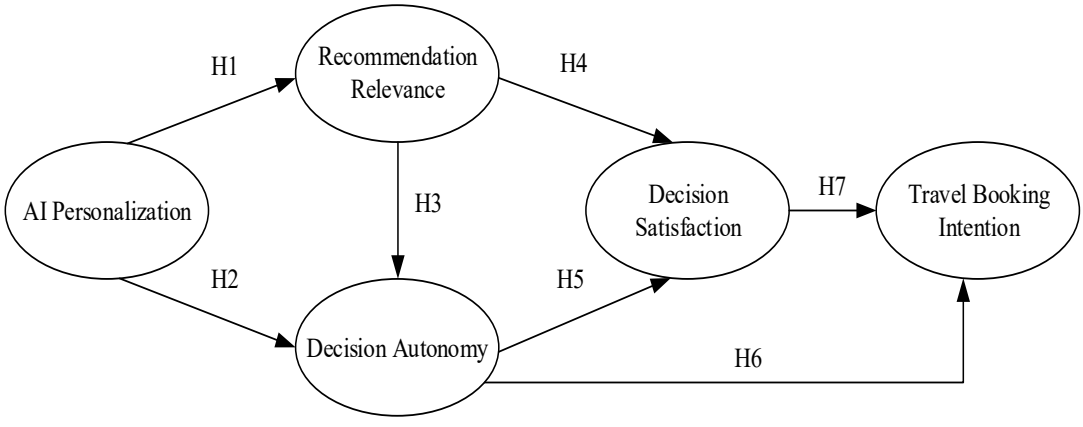


Figure 1: Research framework

3.2 Questionnaire Design

This study employed a structured questionnaire to collect data, with measurement items developed based on the relevant literature and existing empirical research. The questionnaire comprised three sections. The first section assessed respondents' experience using GenAI for travel planning through seven questions covering prior use, most recent use, primary tool used, usage frequency, travel planning purposes, the extent to which recommendations were consulted, and actual booking experience. The second section contained the measurement scales for the research constructs. The third section comprised nine questions on respondents' demographic characteristics and travel consumption patterns, including gender, age, educational attainment, occupation, average personal monthly income, number of overnight trips taken in the past year, primary type of travel, total personal travel expenditure in the past year, and methods used to book travel products.

The measurement scales covered five constructs: AI personalization (PER), recommendation relevance (REL), perceived decision autonomy (AUT), travel decision satisfaction (SAT), and travel booking intention (BI). Each construct was measured using five items, yielding 25 measurement items in total. All items were rated on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with higher scores indicating greater agreement with the corresponding statement. The measurement items for each construct are presented in Table 1.

Table 1: Questionnaire items

Construct	Measurement item
AI personalization (PER)	PER1: GenAI can provide customized travel recommendations based on my personal travel preferences.
	PER2: GenAI can adjust its recommendations to accommodate my travel budget.
	PER3: GenAI can provide personalized recommendations that take my available travel time and itinerary constraints into account.
	PER4: GenAI can adjust its recommended travel options according to the different travel needs I specify.
	PER5: GenAI can continually adjust its travel recommendations based on my feedback during our interactions.
Recommendation relevance (REL)	REL1: The travel recommendations provided by GenAI meet my actual travel needs.
	REL2: The travel options recommended by GenAI are highly relevant to the purpose of my trip.
	REL3: The travel information provided by GenAI meets the criteria I consider important when planning a trip.
	REL4: The travel options recommended by GenAI align with the travel arrangements I am considering.
	REL5: The travel content recommended by GenAI matches my personal travel preferences.
Perceived decision autonomy (AUT)	AUT1: When using GenAI to plan travel, I can still make choices according to my own wishes.
	AUT2: Even when GenAI provides travel recommendations, I still feel that I make the final decision myself.
	AUT3: When GenAI assists me with travel planning, I can independently decide which recommendations are worth adopting.
	AUT4: When using GenAI to plan travel, my choices can still reflect my own travel preferences.
	AUT5: Even when GenAI provides travel recommendations, I can still decide on my travel arrangements according to my own ideas.

Travel decision satisfaction (SAT)	SAT1: I am satisfied with the decision-making process when using GenAI to plan travel.
	SAT2: I am satisfied with the process of comparing and evaluating travel options with GenAI assistance.
	SAT3: The decision-making experience when using GenAI to plan travel meets my expectations.
	SAT4: I am satisfied with the process of making travel choices with GenAI assistance.
	SAT5: The decision-making process involved in GenAI-assisted travel planning provides me with a positive decision-making experience.
Travel booking intention (BI)	BI1: I am willing to book travel products based on the travel recommendations provided by GenAI.
	BI2: When GenAI recommends suitable travel options, I would consider booking them.
	BI3: When planning future trips, I intend to book accommodation, transportation, or tourism activities based on GenAI recommendations.
	BI4: I am willing to give priority to travel options recommended by GenAI when considering what to book.
	BI5: I intend to use the travel recommendations provided by GenAI as a basis for actually booking travel products.

3.3 Data Collection

This study targeted consumers aged 20 years and older in Taiwan who had previously used generative artificial intelligence (GenAI) to search for travel information or plan travel itineraries. Given the digital and interactive nature of GenAI-assisted travel planning, data were collected through an online questionnaire using non-probability convenience sampling. Participation was voluntary and anonymous. The questionnaire covered respondents' GenAI usage experience, AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, travel booking intention, demographic characteristics, and travel consumption patterns. Importantly, the study examined consumers' prospective travel booking intention rather than actual booking behavior. Accordingly, prior experience using GenAI for travel planning was required for participation, whereas previous booking of travel products based on GenAI recommendations was not an eligibility requirement. This distinction was consistent with the operationalization of travel booking intention, which assessed respondents' willingness to consider and make future travel bookings based on GenAI recommendations, regardless of whether they had previously completed such transactions.

To ensure that the sample met the study's eligibility criteria, the questionnaire included screening questions to confirm respondents' prior experience using GenAI for travel planning. A total of 400 online questionnaires were collected. After excluding responses that did not meet the screening criteria and other invalid responses, 348 valid questionnaires were retained, representing 87.00% of all questionnaires collected. These valid responses were used for descriptive statistical analyses, reliability and validity assessments, and structural equation modeling (SEM) to examine the hypothesized relationships among AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention. By including respondents with and without previous GenAI-influenced booking experience, the study examined prospective booking intention among consumers familiar with GenAI-assisted

travel planning rather than restricting the sample to those who had already converted AI recommendations into completed bookings.

4. Empirical Results

4.1 Descriptive Statistics

Descriptive analyses were conducted using 348 valid questionnaire responses to examine respondents' demographic characteristics, travel consumption behavior, and experience using generative artificial intelligence (GenAI) for travel planning. These analyses provide an overview of the sample composition and usage patterns, while also distinguishing previous booking behavior from prospective travel booking intention.

Regarding demographic characteristics, the sample comprised 171 men (49.14%) and 177 women (50.86%), indicating a relatively balanced gender distribution. The largest age group was 30–39 years (91 respondents, 26.15%), followed by 40–49 years (84 respondents, 24.14%) and 20–29 years (80 respondents, 22.99%). Most respondents held a university or junior college degree (226 respondents, 64.94%). The service sector accounted for the largest occupational group (92 respondents, 26.44%), followed by commerce and industry (76 respondents, 21.84%). The most common monthly income categories were NT$30,000 or below (120 respondents, 34.48%) and NT$30,001–50,000 (107 respondents, 30.75%).

Regarding travel consumption characteristics, the largest group had taken one or two overnight trips in the past year (162 respondents, 46.55%), followed by those who had taken three or four trips (97 respondents, 27.87%). Domestic independent travel (166 respondents, 47.70%) and international independent travel (117 respondents, 33.62%) were the predominant travel types, together accounting for 81.32% of the sample. The most common category of total personal travel expenditure in the past year was NT$10,001–30,000 (90 respondents, 25.86%), followed by NT$30,001–50,000 (75 respondents, 21.55%). These findings indicate that the sample was predominantly characterized by independent travel and low-to-moderate travel expenditure.

Regarding GenAI usage experience, ChatGPT was the most frequently reported primary tool (201 respondents, 57.76%), followed by Gemini (91 respondents, 26.15%). The most common periods of most recent use were within the past month (102 respondents, 29.31%) and more than one month but no more than three months prior to the survey (90 respondents, 25.86%). Itinerary planning was the most common purpose of use (106 respondents, 30.46%), followed by recommendations for attractions and activities (75 respondents, 21.55%) and accommodation searches and comparisons (57 respondents, 16.38%). In terms of the extent to which respondents consulted AI recommendations, the largest group reported referring to approximately half of the recommendations (147 respondents, 42.24%), followed by those who referred to most of them (98 respondents, 28.16%). Furthermore, 127 respondents (36.49%) reported having previously booked travel products based on AI recommendations, whereas 221 respondents (63.51%) had not.

The relatively high proportion of respondents without previous GenAI-influenced booking experience highlights the distinction between using GenAI for travel planning and completing travel bookings based on its recommendations. However, the absence of previous booking behavior does not imply an absence of future booking intention. The present study specifically examines consumers' prospective willingness to book travel products based on GenAI recommendations, as measured by the travel booking intention items, rather than their history of completed transactions. Therefore, both respondents with and without previous booking experience were relevant to the research objectives. Nevertheless, because most respondents had not previously completed bookings based on GenAI recommendations, the findings should be interpreted as reflecting consumers' stated booking intentions rather than evidence of actual booking behavior. This distinction provides an important context for interpreting the relationships among recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention.

4.2 Reliability and Convergent Validity Analysis

To assess the quality of the measurement instrument, internal consistency reliability and convergent validity were evaluated for the five constructs: AI personalization (PER), recommendation relevance (REL), perceived decision autonomy (AUT), travel decision satisfaction (SAT), and travel booking intention (BI). The Kaiser–Meyer–Olkin (KMO) measure was used to assess the suitability of the data for factor analysis. Internal consistency reliability was evaluated using Cronbach's α and composite reliability (CR), while convergent validity was assessed using factor loadings and average variance extracted (AVE).

The KMO values for the five constructs ranged from 0.877 to 0.888, exceeding 0.80 and indicating that the data were suitable for factor analysis. As shown in Table 2, Cronbach's α values ranged from 0.887 to 0.899, and CR values ranged from 0.918 to 0.926. All values exceeded the recommended threshold of 0.70, indicating satisfactory internal consistency reliability. Regarding convergent validity, the factor loadings of the 25 measurement items ranged from 0.762 to 0.880, all exceeding 0.70. The AVE values ranged from 0.693 to 0.713, exceeding the recommended threshold of 0.50 for all constructs. These results support the convergent validity of the measures.

Overall, the findings indicate that the measures demonstrated satisfactory internal consistency reliability and convergent validity. The detailed results are presented in Table 2.

Table 2: Reliability and convergent validity

Constructs	Items	Factor Loading	Cronbach's α	CR	AVE
AI personalization (PER)	PER1	0.775	0.892	0.921	0.700
	PER2	0.875			
	PER3	0.866			
	PER4	0.794			
	PER5	0.868			
Recommendation relevance (REL)	REL1	0.848	0.894	0.921	0.701
	REL2	0.799			
	REL3	0.863			
	REL4	0.866			
	REL5	0.808			
Perceived decision autonomy (AUT)	AUT1	0.788	0.899	0.926	0.713
	AUT2	0.864			
	AUT3	0.880			
	AUT4	0.836			
	AUT5	0.852			
Travel decision satisfaction (SAT)	SAT1	0.870	0.887	0.918	0.693
	SAT2	0.789			
	SAT3	0.866			
	SAT4	0.868			
	SAT5	0.762			
Travel booking intention (BI)	BI1	0.768	0.891	0.920	0.697
	BI2	0.866			
	BI3	0.842			
	BI4	0.861			
	BI5	0.834			

Note: CR: Composite reliability; AVE: Average variance extracted.

4.3 Structural Equation Modeling and Hypothesis Testing

Structural equation modeling (SEM) was employed to examine the structural relationships among AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention. Overall model fit, standardized path coefficients, and t-values were used to assess support for the proposed hypotheses.

The model demonstrated good overall fit. The chi-square statistic was 291.721 with 268 degrees of freedom, yielding a χ^2/df ratio of 1.089, below the commonly accepted threshold of 3.00. The chi-square test was not statistically significant ($p = 0.1528$). Furthermore, RMSEA = 0.0159 and SRMR = 0.0341 were both below 0.05. The remaining fit indices - GFI = 0.939, AGFI = 0.926, NFI = 0.948, NNFI = 0.995, CFI = 0.996, and IFI = 0.996 - all exceeded the recommended threshold of 0.90. Collectively, these indices met commonly accepted criteria, indicating that the proposed model fitted the sample data well.

As reported in Table 3, six of the seven hypotheses were supported. AI personalization had a significant positive effect on recommendation relevance ($\beta = 0.542$, $p < 0.001$), supporting H1, and on perceived decision autonomy ($\beta = 0.252$, $p < 0.001$), supporting H2. Recommendation relevance also had a significant positive effect on perceived decision autonomy ($\beta = 0.441$, $p < 0.001$), supporting H3. The standardized coefficient for the path from recommendation relevance to perceived decision autonomy was numerically larger than that for the path from AI personalization to perceived decision autonomy (0.441 versus 0.252). Regarding travel decision satisfaction, recommendation relevance had a significant positive effect ($\beta = 0.352$, $p < 0.001$), supporting H4. Perceived decision autonomy also had a significant positive effect ($\beta = 0.412$, $p < 0.001$), supporting H5. Both paths were statistically significant, with a numerically larger standardized coefficient for perceived decision autonomy than for recommendation relevance (0.412 versus 0.352). These findings indicate that both constructs were positively associated with travel decision satisfaction.

Regarding travel booking intention, the direct effect of perceived decision autonomy was not statistically significant ($\beta = -0.028$, $p > 0.05$); thus, H6 was not supported. By contrast, travel decision satisfaction had a significant positive effect on travel booking intention ($\beta = 0.682$, $p < 0.001$), supporting H7. This path had the largest standardized coefficient among the seven structural paths examined. These results indicate that travel decision satisfaction was positively and significantly associated with travel booking intention, whereas the direct association between perceived decision autonomy and travel booking intention was not statistically significant after accounting for travel decision satisfaction.

Overall, the structural model demonstrated good fit, and six of the seven hypotheses were supported. Only the hypothesized direct effect of perceived decision autonomy on travel booking intention failed to reach statistical significance. The hypothesis testing results are presented in Table 3.

Table 3: Structural path estimates and hypothesis testing results

Hypothesis	Hypothesized Path	Standardized coefficient (β)	t-value	Results
H1	PER→REL	0.542***	9.189	Supported
H2	PER→AUT	0.252***	4.041	Supported
H3	REL→AUT	0.441***	6.582	Supported
H4	REL→SAT	0.352***	5.652	Supported
H5	AUT→SAT	0.412***	6.400	Supported
H6	AUT→BI	-0.028	-0.437	Not supported
H7	SAT→BI	0.682***	8.682	Supported

Note: ***p < 0.001. β denotes the standardized path coefficient.

5. Conclusion

This study examined the relationships among AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention in GenAI-assisted travel planning. Based on 348 valid questionnaire responses, the structural equation modeling results supported six of the seven proposed hypotheses. AI personalization was positively and significantly associated with both recommendation relevance and perceived decision autonomy, while recommendation relevance was positively associated with perceived decision autonomy and travel decision satisfaction. Perceived decision autonomy was also positively associated with travel decision satisfaction. However, its direct association with travel booking intention was not statistically significant after accounting for travel decision satisfaction. By contrast, travel decision satisfaction was positively and significantly associated with travel booking intention. These findings indicate that understanding consumers' booking intention in GenAI-assisted travel planning requires consideration of not only the perceived relevance of AI-generated recommendations but also consumers' autonomy and satisfaction during the decision-making process.

The findings provide further insights into the relationships among AI personalization, recommendation relevance, and perceived decision autonomy. Both AI personalization and recommendation relevance were positively associated with perceived decision autonomy, with recommendation relevance exhibiting a numerically larger standardized coefficient than AI personalization (0.441 versus 0.252), although the difference was not formally tested. This finding suggests that consumers' sense of autonomy in GenAI-assisted travel planning is associated not only with the perceived personalization of recommendations but also with the extent to which the recommended information corresponds to their travel needs and preferences. Furthermore, recommendation relevance and perceived decision autonomy were both positively associated with travel decision satisfaction, with standardized coefficients of 0.352 and 0.412, respectively. Although these coefficients were not formally compared, the results suggest that relevant recommendations and consumers' perceived ability to make independent choices are both important aspects of a satisfactory travel decision-making experience.

An important finding concerns the nonsignificant direct association between perceived decision autonomy and travel booking intention ($\beta = -0.028$, $p > 0.05$). Although perceived decision autonomy was positively associated with travel decision satisfaction ($\beta = 0.412$, $p < 0.001$), it did not demonstrate a statistically significant direct association with booking intention after accounting for satisfaction. In contrast, travel decision satisfaction exhibited a strong positive association with travel booking intention ($\beta = 0.682$, $p < 0.001$). These findings suggest that perceived decision autonomy and travel decision satisfaction play different roles within the proposed model. Autonomy is associated with consumers' evaluations of the decision-making experience, whereas satisfaction with that experience is more directly associated with their willingness to book. One possible

explanation is that retaining decision-making control may not be sufficient to generate booking intention when consumers still face numerous alternatives, uncertainty, or additional decision effort. Nevertheless, mechanisms such as choice overload, decision fatigue, and psychological reactance were not directly measured in this study and should therefore be regarded as possible theoretical explanations rather than empirically established findings. The nonsignificant direct path does not indicate that autonomy is unimportant; instead, it suggests that its role in travel booking intention may be more complex than a direct relationship alone would imply.

From a theoretical perspective, this study contributes to the literature on GenAI-assisted consumer decision-making by integrating AI personalization, recommendation relevance, perceived decision autonomy, travel decision satisfaction, and travel booking intention within a unified analytical framework. First, the study distinguishes perceived AI personalization from recommendation relevance. AI personalization reflects consumers' perceptions of the system's ability to adapt recommendations to individual needs, whereas recommendation relevance captures their evaluations of how well the recommended information matches those needs. Second, the positive associations between recommendation relevance, perceived decision autonomy, and travel decision satisfaction highlight the importance of considering both information-related evaluations and consumers' subjective decision-making experiences. Third, the different relationships of perceived decision autonomy and travel decision satisfaction with booking intention refine the understanding of their respective roles in AI-assisted travel decisions. Specifically, autonomy was positively associated with decision satisfaction but did not exhibit an additional significant direct association with booking intention after satisfaction was included in the model. This finding suggests that consumer autonomy should not automatically be assumed to translate directly into booking intention and that satisfaction with the decision-making process deserves separate theoretical consideration.

Regarding practical implications, tourism platforms, online travel agencies, and GenAI service providers should extend their focus beyond increasing the degree of personalization to improving recommendation relevance and the overall decision-making experience. Service providers can enhance the perceived relevance of recommendations by incorporating travelers' purposes, budgets, time constraints, and personal preferences into the recommendation process. In addition, GenAI systems should allow users to modify recommendation criteria, compare alternatives, and retain final decision-making authority. Features such as transparent explanations of recommendations, clear comparisons of travel options, and interactive adjustment of itineraries may help consumers evaluate alternatives more effectively. However, providing greater autonomy alone may not be sufficient to strengthen booking intention. Given the strong positive association between travel decision satisfaction and booking intention, service providers should also emphasize information clarity, manageable choices, and efficient decision support to improve consumers' overall satisfaction with GenAI-assisted travel planning.

Several limitations should be acknowledged when interpreting the findings. First, the study examined self-reported travel booking intention rather than actual booking behavior. Although all respondents had experience using GenAI for travel planning, 221 respondents (63.51%) had not previously booked travel products based on GenAI recommendations. This does not necessarily indicate a lack of future booking intention, because prospective behavioral intention and completed transactions represent distinct concepts. Nevertheless, consumers who express willingness to book may not ultimately complete a transaction because of financial constraints, travel schedules, changing preferences, or other situational factors. Therefore, the findings should be interpreted as relationships involving prospective booking intention rather than evidence of actual booking behavior. Future research could incorporate longitudinal observations or actual booking records to investigate whether consumers' stated intentions subsequently translate into completed transactions.

Second, this study employed a cross-sectional research design and collected data through a single self-reported online questionnaire. Consequently, potential common method bias cannot be ruled out, and the observed relationships among the constructs may be influenced by shared measurement methods. In particular, the relatively strong positive association between travel decision satisfaction and travel booking intention ($\beta = 0.682$) should be interpreted cautiously. Although the structural model demonstrated satisfactory overall fit, model fit alone does not establish the absence of common method bias or support causal inference. Because the present study did not conduct a separate statistical assessment of common method bias, the extent to which shared measurement methods influenced the estimated relationships remains undetermined. Future studies could employ longitudinal designs, collect predictor and outcome measures at different time points, incorporate multiple data sources, and apply appropriate statistical assessments of common method variance to strengthen the robustness of the findings.

Finally, the study adopted non-probability convenience sampling and focused on consumers aged 20 years and older in Taiwan who had experience using GenAI for travel planning. Therefore, the generalizability of the findings to other populations and cultural contexts may be limited. Future research could employ more representative sampling strategies and investigate consumers from different countries, age groups, and levels of GenAI experience. In addition, comparative studies could examine whether previous GenAI-influenced booking experience changes the relationships among recommendation relevance, perceived decision autonomy, travel decision satisfaction, and booking intention. Future studies could also directly measure choice overload, decision fatigue, and psychological reactance to clarify the conditions under which perceived autonomy contributes to decision satisfaction and subsequent booking intention.

Overall, this study highlights the importance of recommendation relevance, perceived decision autonomy, and travel decision satisfaction in understanding consumers' travel booking intention in GenAI-assisted travel planning. The

findings suggest that personalized recommendations should not be evaluated solely by their ability to match consumers' preferences, but also by how they support autonomous decision-making and satisfactory decision experiences. By distinguishing the roles of perceived autonomy and decision satisfaction, the study provides empirical insights into consumer decision-making in GenAI-assisted travel planning and offers practical guidance for developing more consumer-oriented travel recommendation services.

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