



Research article

Understand the Chinese Z Generation consumers' Green hotel visit intention: An Extended Theory of Planned Behavior Model

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ABSTRACT

In the context of growing environmental concerns and a shift towards sustainable tourism, understanding the behaviors of younger generations, particularly Generation Z, becomes crucial for the hotel industry. This study investigates the intentions of Chinese Generation Z consumers to visit green hotels, using an extended Theory of Planned Behavior (TPB) model incorporating multi-dimensional green perceived value. A questionnaire survey with 436 participants was conducted, and structural equation modeling was employed for data analysis. The study reveals that Functional value significantly shapes the inclination towards green hotels among Chinese Generation Z. Emotional value and Subjective norms also positively influence visit intentions, whereas social value, although not a significant driver, provides insights into the distinct nature of green consumption behaviors. This study's findings offer strategic insights for green hotel operators and policymakers to attract this demographic segment, emphasizing Chinese Generation Z consumers' unique preferences and values.

1. Introduction

The growth rate of the global tourism economy has been steadily increasing since the 1960s, and it has long surpassed the overall global economic growth rate. Over time, the tourism industry has evolved into the world's fastest-growing sector, even surpassing traditional energy and manufacturing industries, earning the title of the world's largest industry [1]. The tourism sector accounts for one-tenth of the global workforce and contributes 10 % to the global GDP [2]. Emerging destinations, often represented by developing countries, continue to emerge within the tourism sector, marking a shift in the world's regional focus towards the east [1]. China is a typical representative of this phenomenon, where its tourism industry has developed into a key pillar of the national economy and is a significant contributor to China's long-term stable and healthy economic growth [3]. In 2019, China's tourism sector made a notable contribution of 11.05 % to the GDP and represented 10.31 % of the total national workforce. With the full reopening of domestic travel within China following the domestic pandemic situation, during the 2023 "May Day" holiday, the total number of domestic tourists nationwide reached an impressive 274 million, marking a staggering year-on-year increase of 70.83 % and a recovery to 119.09 % of the levels seen during the same period in 2019. Furthermore, domestic tourism revenue reached 148.056 billion Chinese Yuan, marking a significant year-on-year growth of 128.90 % and a recovery to 100.66 % of the levels seen during the same period in 2019

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[4]. China's cultural and tourism industry is undergoing a robust resurgence.

Looking at the global perspective, while the tourism industry brings economic benefits, it also wields a substantial influence on global greenhouse gas (GHG, for short) emissions, contributing to approximately 8 % of the world's total GHG emissions [5]. Given the massive scale and vast potential of the tourism industry in China, creating a sustainable tourism environment and further developing green tourism strategies are of paramount importance. Presently, China is taking proactive measures to lead global climate governance initiatives aimed at carbon reduction [6]. In 2020, China committed to achieving carbon neutrality for the country by 2060 and reaching the peak of carbon emissions by 2030. This is a significant commitment made by China to address climate change and reduce its carbon footprint in the coming decades. This commitment is a daunting task, but if China can effectively achieve carbon neutrality as outlined in its plan, it will make a substantial contribution to global initiatives to combat climate change. This means that China's efforts alone could reduce the rate of global temperature rise by over 0.2° Celsius [7].

Most of the greenhouse gas emissions in the entire tourism industry can be attributed to the accommodation sector. The accommodation sector holds a crucial position in the tourism economy because approximately 75 % of environmentally harmful behaviors can be traced back to energy wastage and pollution emissions [8]. This includes the overuse of natural resources and pollution of water sources and the atmosphere. The sustainable development of the hotel accommodation industry has a profound impact on promoting the overall sustainability of the tourism economy. As countries increasingly prioritize social, economic, and environmental sustainability, the demand for environmentally sustainable services in the tourism industry is on the rise [9]. The surge in demand has led to a strong interest in green hotels.

It is noteworthy that alongside the continuous development of China's tourism industry, the environmental consciousness among Chinese consumers has been progressively increasing, leading to a heightened inclination towards choosing green hotels [10]. In China, green innovations have a significant positive impact on the economic performance of hotels [11], which means that green hotels contribute to environmental sustainability and enhance the economic vitality of the Chinese hotel industry. Presently, China boasts over 700 green hotels, a number that is swiftly on the rise [12], thereby showcasing the immense potential of the green hotel sector in China. Consequently, driven by changing consumer preferences and attitudes towards environmental issues, combined with the economic advantages of green practices, green hotels in China are encountering substantial market opportunities.

According to the Green Hotel Association (GHA, for short) definition from 2012 [13], a green hotel can be defined as an accommodation establishment committed to using environmentally friendly facilities and engaging in eco-friendly practices. Environmental practices encompass energy efficiency, emissions reduction, waste reduction, and environmental measures such as the use of durable items like trash cans and towels, which are recycled and reused, all aimed at protecting our planet and our shared home. Consequently, several certifications have been established to assess the "green" status of hotels. These certifications are not granted arbitrarily; they are only awarded to hotels that meet the required standards in terms of water resource conservation, pollution emissions reduction, and energy usage efficiency while actively participating in environmentally sustainable practices that contribute to social development [14].

While different organizations may have varying certification standards, and the motivations and strategies for businesses to comply with these environmental standards may differ slightly, these certifications can still serve as a means to differentiate hotels in the market. Green credentials provide tourists with additional criteria for hotel selection, which can lead to extra expenses. However, if the hotels themselves do not absorb the costs associated with certification, they might be transferred to customers in the form of elevated nightly rates [15]. Green hotel certification plays a crucial guiding role in steering the tourism industry toward sustainability. However, travelers' willingness to incur additional costs for green hotels is the critical factor influencing these certifications' effectiveness. Hence, to motivate hotels to embrace environmentally responsible practices, especially those that may not yield immediate cost savings, it becomes crucial to definitively establish that tourists prioritize and are willing to support environmental sustainability.

Generation Z, frequently denoted as "Z Generation" or "Gen Z," encompasses individuals born from the mid-1990s to the early 2010s [16]. In China, people within this age group are commonly known as "post-95s" or "post-2000s." Growing up in the 2000s, the Z Generation has been more significantly affected by global issues such as climate change and resource scarcity, making them inclined towards sustainability and responsible consumerism [17]. In studies related to consumers' willingness to choose green hotels, it is crucial to employ multivariate analyses that allow for the exploration of differences among various individual characteristics and behaviors. Recent studies have indicated that younger customers appear to be more supportive of green initiatives such as green hotels and are more willing to pay the additional costs associated with staying in green hotels [18]. Additionally, demographic variables like nationality, gender, and educational attainment may have an impact on the receptiveness to green hotel pricing [19]. With the improving living standards of consumers in mainland China, there is a growing emphasis on environmental protection and health, leading consumers to be more understanding and accepting of the additional costs associated with green products [20]. Therefore, a comprehensive investigation of the consumption intentions of China's Generation Z regarding green hotels is essential for effectively adapting to the market and meeting the needs of stakeholders.

While green hotels are not a brand-new concept, research on green hotels in mainland China has been relatively limited. Within the framework of China's "dual carbon" policy, green hotels have significant development prospects. Therefore, filling this research gap is particularly important, as understanding the factors that influence the environmental intention of China's Generation Z consumers can provide valuable insights into the Chinese tourism industry and guide marketing strategies for the accommodation sector. Hence, this study, using the TPB as a framework, aims to investigate the determinants of China's Generation Z's preference for green hotels. The study employs Structural Equation Modeling (SEM, for short) and takes into account corporate social responsibility and price perception to delve into the relationships between these factors.

2. Literature review

2.1. The TPB theory and its extension

The Theory of Planned Behavior (TPB, for short) [21] has evolved to become one of the most commonly used models in the realm of social psychology for predicting behavioral intentions, as cited by Ref. [22]. Similarly, the TPB has also influenced other fields, with many researchers using it as a fundamental theoretical framework when predicting environmental behavior and studying consumers' willingness to participate in environmentally friendly activities [23,24].

Moreover, TPB is highly adaptable, allowing researchers to enhance explanatory power by incorporating elements from other models into the original model. For example, in the field of green consumption, researchers like Paul et al. (2016) [25] combined TPB and its extended versions with the Theory of Reasoned Action (TRA, for short) to predict Indian consumers' perceptions and purchase intentions toward green products. Similarly, Yadav et al. (2016) [26] employed TPB as their theoretical framework and integrated factors such as environmental concern to extend TPB, studying the purchase intentions of young consumers regarding environmentally friendly products. Additionally, Chen et al. (2015) [27] constructed an expanded TPB research framework, including perceived moral responsibility and environmental concern, to predict the factors influencing consumers' choices of green hotels.

In the integration of the TPB and economic theory, Ruangkanjanases et al. (2020) [28] explored the application of the TPB model in green consumption behavior, emphasizing the impact of individual and societal interests on the intention to purchase environmentally friendly products. By drawing on marketing theory, Armutcu et al. (2023) [29] expanded the TPB model and investigated the influence of factors such as social media marketing and digital marketing interactions on green product purchasing behavior.

The combination of TPB and economic theories can provide robust theoretical support for understanding and predicting green consumption behavior, particularly in analyzing consumers' attitudes and purchase intentions towards environmentally friendly products. By integrating these theories, it is possible to delve deeper into the various factors influencing green consumption decisions, offering guidance for developing effective marketing strategies and policy interventions.

2.1.1. The TPB original model

The original TPB posits that behavioral intention is influenced by three primary factors: attitude toward the behavior, subjective norms, and perceived behavioral control [29]. Attitude can be described as the "individual's appraisal of the behavior or favorable or unfavorable evaluation in question" [21], representing an individual's significant beliefs about a specific behavior. It reflects the perceived outcomes of the behavior and the assessment of its importance to the individual. Subjective norm can be understood as "the influence from others on whether to perform a specific action [21]." The social pressure individuals perceive determines whether they will engage in or avoid a specific behavior. Perceived behavioral control is essentially an individual's belief in their capacity to carry out a particular task. When individuals possess a high level of confidence in their ability to accomplish something, they are more likely to engage in those tasks [30].

Existing research has demonstrated the effectiveness of TPB and its extended theories in the realm of environmentally friendly consumption and has found TPB to be suitable for predicting hotel customers' behavior [24]. This approach furnishes a well-defined framework for exploring the development of customers' intentions to purchase green hotels, taking into account both volitional and non-volitional elements [31]. However, many factors variations can influence whether customers choose green hotels, including gender differences, income levels, geographical location, education, and personal beliefs. Some of these factors are beyond the control of the customers themselves. These individual distinctions may exert a notable influence on consumers' readiness to embrace green consumption [32].

Therefore, this study argues that refining TPB research by considering individual characteristics and variations within the population is meaningful. Additionally, in research related to green hotels, some researchers have argued that consumers' willingness to consume is not significantly influenced by perceived behavioral control compared to the other two elements in the TPB (subjective norm and attitude) [33]. Drawing upon previous research findings and centering on the Generation Z demographic in China, this study puts forth the subsequent hypotheses while excluding Perceived Behavioral Control from the original TPB framework:

H1. Attitude towards green hotels positively impacts the intention to visit green hotels.

H2. Subjective norms exert a positive influence on the intention to visit green hotels.

2.2. Customer perceived value and multi-dimensional green perceived value

Customer perceived value is characterized as the comprehensive evaluation made by consumers regarding the net advantages gained from a particular product, service, or market offering [34]. The utilitarian perspective defines "value" as the cognitive balance between benefits and sacrifices. This view inadvertently simplifies the concept of value, suggesting that perceived value can be assessed by simply asking individuals about their feelings when purchasing a product or service. This idea narrows down customer perceived value to a single dimension. However, customer-perceived value is, in reality, a multifaceted concept. It reflects various elements in the consumer perception process, demonstrating the complexity of perceived value [35]. This is why customer-perceived value is regarded as a factor influencing the appeal of products or services [36].

In green marketing-related research, Chen et al. (2012) [37] defined Green Perceived Value (GPV, for short) as the "overall assessment of the degree to which consumers' self-generated green expectations (sustainability expectations, environmental expectations, etc.) are met to the costs they incur, with the perceived benefits in this process being termed as Green Perceived Value."

However, this definition, like utilitarianism, simplifies the concept of Green Perceived Value. In subsequent research, Deepak et al. (2017) [38] argued that GPV is not a single dimension but rather a multi-dimensional construct encompassing condition, functional, social, and emotional values. This expansion of GPV into the green energy domain demonstrates the versatility and applicability of GPV in various contexts. Subsequently, Wang et al. (2018) [39] delved into the influence of environmental knowledge, emotional value, social value, and functional value on consumers' inclination to patronize environmental-friendly hotels from a consumer value perspective. In parallel, Awuni and Du (2016) [40] scrutinized the determinants affecting the readiness of Chinese youth to make environmentally conscious purchases, highlighting the favorable influence of consumer perceived value on the willingness of young individuals to make green purchases.

Recent studies have established a close relationship between multi-dimensional green perceived value and customer perceived value. From an economic perspective, customer perceived value significantly influences purchase intention, reflecting consumers' overall assessment of a product [42]. In green consumption, multi-dimensional green perceived value is seen as a crucial component of customer perceived value, as it directly relates to consumers' recognition and assessment of a green product's environmental benefits. The TPB has been proven effective in examining various factors influencing green consumption decisions [41]. Therefore, integrating multi-dimensional green perceived value into TPB is logical. This study expands TPB from the perspective of multi-dimensional green perceived value to investigate its impact on the consumption of green hotels by Generation Z in China.

2.2.1. Functional value (quality/price)

Functional value (FV, for short) is considered a primary factor in consumer preferences [42]. As per Sheth et al. (1991) [43], "Functional value is the perceived usefulness that users obtain from the ability of a product to perform its functions, utilities, or physical performances relative to substitutes." Sweeney et al. (2001) [35] further explored the meaning of functional value and ultimately decomposed it into value and price. Both of which significantly influence consumers' final decisions. Among them, product price is a key factor affecting consumer choice, as higher prices inevitably lead to higher purchase costs [19]. Generally, green products tend to have higher prices than less environmentally friendly ones [44]. According to previous research, high (objective) prices remain a major hindrance to green purchasing behavior [45]. In the realm of green consumption, as asserted by Hongru Yan et al. (2021) [46], price, viewed as an external cost, negatively influences individuals' readiness to adhere to norms and select green hotels. In simpler terms, if the price substantially exceeds consumers' expectations and the quality is not outstanding, consumers may opt not to make the purchase. Based on optimistic estimates, consumers can accept an additional premium of 4%–6% for green hotels [47]. Therefore, the subsequent hypothesis is postulated:

H3. Functional value positively influences the attitude towards visiting green hotels.

H4. Functional value positively influences the intention to visit green hotels.

2.2.2. Emotional value

Emotional value refers to the differentiated feelings that consumers experience when engaging in consumption activities, which manifest through various emotional states. These emotional states give rise to different emotional values associated with products or services. In essence, emotional value represents the distinct emotional experiences and sentiments that consumers associate with a particular product or service, contributing to their overall perception of its value [43]. Emotions are considered critical factors at every stage of the buying process, making it essential to incorporate an emotional dimension into the enriched green perceived value [48]. The influence of emotions is much stronger than that of functionality when consumers purchase green products [49]. While using green products, they often experience a sense of moral contentment and happiness, as they believe they are actively contributing to the betterment of the Earth. Therefore, consumers with strong emotional values and deeply emotional behaviors may be significantly influenced by emotions when making decisions to purchase green or organic products [40]. Furthermore, individuals with strong emotional values and a high level of environmental awareness are more accepting of experiential green consumption. The experiential process provides them with pleasurable emotional feedback, leading them to believe that their environmentally friendly consumption contributes to long-term environmental protection. In the realm of green consumption, Akbar discovered that opting for organic food over conventional food offers consumers psychological benefits, as they perceive it as a morally upright choice that contributes to their personal growth and betterment [50]. Meanwhile, Hartmäann et al. (2012) [49] ascertained that users of green energy, despite paying a premium for societal advantages, also derive additional emotional benefits from promoting energy independence and addressing climate change. The following hypothesis is put forth:

H5. Emotional value positively influences the attitude towards visiting green hotels.

H6. Emotional value positively influences the intention to visit green hotels.

2.2.3. Social value

Social value refers to how society is perceived or expected to react to one's purchasing decisions [38]. According to Moutinho (1987) [51], "Consumers' social groups can influence and even shape their consumption behaviors." Seeking status within society has also been found to be one of the motivations behind consumers' use of specific products [52]. This means consumers may purchase products that align with the consensus reached within their social groups to ensure they remain within or gain entry to a secure social relationship. Relevant research has found that consumers purchasing green products tend to be concerned about whether their symbolic identity is recognized by society. Social groups, peer opinions, social approval pressures, and other related social perceptions significantly influence consumers' decisions to buy and repeatedly purchase environmentally friendly products [53]. Therefore,

purchasing green products can also be seen as aligning oneself with others in the same social hierarchy. Within the realm of tourism, scholars have identified that Customers’ willingness to revisit environmentally friendly hotels is significantly influenced by social value [39]. The hypothesis is advanced:

H7. Social value positively impacts the attitude towards visiting green hotels.

H8. Social value positively affects the intention to visit green hotels.

The research framework is depicted in Fig. 1.

3. Materials and methods

3.1. Questionnaire design and data collection

In this study, all measurement items for constructs are adapted from previous research. For the Attitude and Subjective Norm constructs in the initial TPB theory, the measurement items are taken from Han et al.’s research (2010) [24,27,31]. For the Green Perceived Value-related items, this study used a total of eight measurement indicators from Wang et al.’s study (2018) [39] to measure Social Value, Emotional value, Functional value, and Visit intention, each measured using 3, 4, and 3 indicators, respectively. Except for the attitude items related to visiting green hotels, which are evaluated using a 7-point semantic differential scale, all the constructs under examination are assessed using a 7-point Likert scale spanning from “strongly disagree” to “strongly agree.” In this study, to comprehensively assess the convergent validity and reliability of the questionnaire, after the initial English version of the questionnaire was completed, we enlisted the expertise of three professional translators to translate the survey into Chinese independently. Following a meticulous comparison of the details in the three translated versions of the questionnaire, we distributed 15 copies to both research scholars and consumers for a preliminary study (see Table 1).

This study employed the wenjuanxing platform, which offers functionalities similar to Amazon Mechanical Turk, to create and distribute the questionnaire through WeChat. WeChat is a mobile social media app developed by Tencent in 2011. As of March 2021, it has reached 1.26 billion active users and is the fastest-growing social software in China [55]. The questionnaire is distributed with the help of faculty members from various higher education institutions and vocational colleges to ensure data coverage across different educational levels. As of September 5, 2023, a total of 436 questionnaires were collected, covering 21 provincial-level administrative regions in China, with the majority concentrated in tourism-developed cities such as Sichuan, Jiangsu, Guangdong, Anhui, and Zhejiang. Since this study obtained questionnaires through online completion, it is not possible to entirely avoid responses from non-Z generation participants. Therefore, after a more in-depth review of the questionnaires, 303 questionnaires were confirmed as valid. Given the diverse geographical origins of the collected data, we conducted chi-square tests and t-tests to scrutinize potential distinctions among these samples. The outcomes revealed no statistically significant differences.

3.2. Data analysis

This study employed SPSS AMOS 28.0 software for data analysis. The research process for SEM analysis was divided into two stages following the methods proposed by Arbuckle (2006) [56] and Anderson et al. (1988) [57]. In the first stage, to assess the quality and adequacy of the measurement model, ensuring reliability, discriminant validity, and convergent validity, a Confirmatory Factor Analysis (CFA, for short) was utilized. Subsequently, in the second stage, SEM is used to explore the causal connections between latent variables. In the course of the first stage examination, it is noted that three items (FV1, FV3, and FV4) had standardized factor loadings below 0.6. While factor loadings exceeding 0.6 are generally considered acceptable in item testing [58], these items are removed to better align with the model without compromising the effectiveness of the measurement.

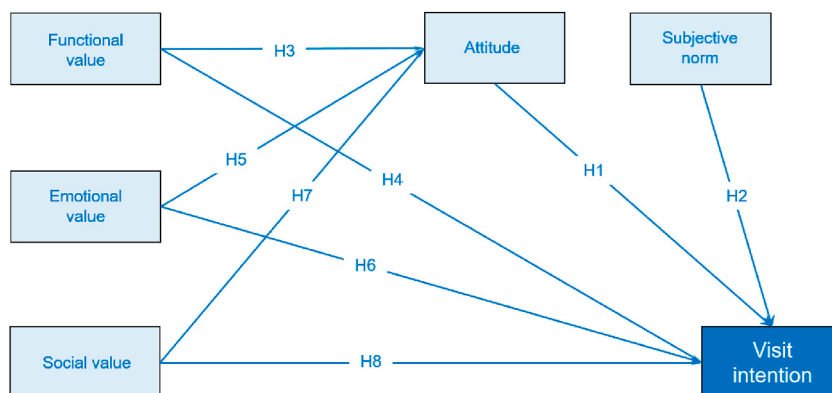


Fig. 1. Framework for the intentions of consumers to visit green hotels. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Table 1
Constructs and measurement items.

Variables	Item	Source
Attitude	AT1: For me, staying at a green hotel when traveling is extremely bad (1)/extremely good (7)	[22,25]
	AT2: For me, staying at a green hotel when traveling is extremely unpleasant (1)/extremely pleasant (7)	[28]
	AT3: For me, staying at a green hotel when traveling is extremely stupid (1)/extremely clever (7)	
Subjective norm	AT4: For me, staying at a green hotel when traveling is extremely undesirable (1)/extremely desirable (7)	
	SN1: Most people who are important to me think I should stay at a green hotel when traveling	[22,25]
	SN2: Most people who are important to me would want me to stay at a green hotel when traveling	[28]
Functional value	SN3: People whose opinions I value would prefer that I stay at a green hotel when traveling	
	FV1: It is worth paying for the quality and the service of green hotels	[36,54]
	FV2: I think green hotels offer value for money.	
	FV3: It is worthwhile choosing green hotels when traveling.	
	FV4: I think it is economical to visit green hotels.	
	FV5: I think green hotels have consistent quality.	
	FV6: I think the products and services of green hotels are well made.	
	FV7: I think green hotels have an acceptable standard of quality.	
Emotional value	FV8: I think the products and services of green hotels are reliable.	
	EV1: I think visiting green hotels instead of conventional hotels would feel like making a good personal contribution to something better.	[36,54]
	EV2: I think visiting green hotels instead of conventional hotels would feel like the morally right thing to do.	
Social value	EV3: I think visiting green hotels instead of conventional hotels would make me feel like a better person	
	SV1: I think visiting green hotels helps me feel accepted by others.	[36,55]
	SV2: I think visiting green hotels would improve the way I am perceived by others.	
	SV3: I think visiting green hotels makes a good impression on other people.	
Visit intention	SV4: I think visiting green hotels gives me social approval.	
	VI1: I am willing to choose a green hotel when traveling	[22]
	VI2: I plan to choose a green hotel when traveling	
	VI3: I will make an effort to stay at a green hotel when traveling	

In both stages, the Maximum Likelihood Estimation (MLE, for short) method, as described by Byrne (2001) [59], is employed. The goodness of fit (GOF, for short) is evaluated using multiple indices, including chi-square (χ^2), Tucker-Lewis Index (TLI, for short), chi-square-to-degrees-of-freedom ratio (χ^2/df), Comparative Fit Index (CFI, for short), and Root Mean Square Error of Approximation (RMSEA, for short), Goodness of Fit Index (GFI, for short).

4. Data analysis and results

4.1. Measurement model: reliability and validity

During the CFA, MLE is employed to evaluate the validity of the proposed model. The results, as presented in Table 2, demonstrate a strong fit of the measurement model with the data ($\chi^2 = 405.229$; CFI = 0.956; GFI = 0.896; IFI = 0.956; TLI = 0.948; $\chi^2/df = 2.089$; $p < 0.001$; RMSEA = 0.060). All standardized factor loadings for the items surpass the threshold of 0.6 [60]. Furthermore, Cronbach's α is employed to measure the scales' reliability, with Bernardi (1994) [61] suggesting a minimum value of 0.70. As illustrated in Table 3, The values of Cronbach's α range from 0.937 to 0.940, signifying a strong level of internal consistency for each construct. Composite Reliability (C.R., for short) serves as an additional measure of internal consistency, with recommended values also at least 0.70. The results presented in Table 3 unequivocally confirm that the composite reliability values, ranging from 0.881 to 0.930, not only meet but comfortably surpass the prescribed standard of 0.70.

Structural validity is characterized by the degree to which items genuinely represent the underlying structure being examined. Discriminant validity and convergent validity are the primary assessment focuses of this study. This study calculated the Average Variance Extracted (AVE) for each construct to assess convergent validity. An AVE value exceeding 0.50 indicates acceptable convergent validity [62]. As indicated in Table 3, all constructs in this study possess AVE values surpassing the 0.50 threshold, ranging from 0.598 to 0.769. These results support the effectiveness of convergent validity. As shown in Tables 3 and 4, when assessing discriminant validity, we compared the shared variances between constructs with the AVE values, which supported the reliability of discriminant validity since the results indicated that the square root of the AVE values was significantly higher than the correlations between all constructs.

Table 2
Confirmatory Factor Analysis model fit indices.

Common Indicators	χ^2	df	p	χ^2/df	GFI	RMSEA	RMR	CFI	NFI	NNFI
Criteria	–	–	>0.05	<3	>0.9	<0.10	<0.05	>0.9	>0.9	>0.9
Values	405.229	194	0.000	2.089	0.896	0.060	0.073	0.956	0.919	0.948
Additional Indicators	TLI	AGFI	IFI	PGFI	PNFI	PCFI	SRMR	RMSEA 90 % CI		
Criteria	>0.9	>0.9	>0.9	>0.5	>0.5	>0.5	<0.1	–		
Values	0.948	0.864	0.956	0.687	0.772	0.803	0.042	0.052–0.068		

Table 3
Results of the confirmatory factor analysis.

Construct	Items	Factor Loadings	Cronbach's Alpha value	AVE*	C.R
Attitude	AT1	0.870	0.940	0.650	0.881
	AT2	0.792			
	AT3	0.761			
	AT4	0.798			
Subjective norm	SN1	0.851	0.938	0.727	0.889
	SN2	0.857			
	SN3	0.850			
Functional value	FV2	0.667	0.939	0.598	0.881
	FV5	0.793			
	FV6	0.828			
	FV7	0.801			
Emotional value	FV8	0.768	0.938	0.708	0.879
	EV1	0.844			
	EV2	0.812			
Social value	EV3	0.868	0.938	0.769	0.930
	SV1	0.839			
	SV2	0.913			
Visit intention	SV3	0.880	0.938	0.640	0.842
	SV4	0.873			
	VI1	0.798			
	VI2	0.809			
	VI3	0.792			

Table 4
Means, standard deviations, and correlations.

	Attitude	Subjective norm	Social value	Functional value(quality/price)	Emotional value	Visit intention
Attitude	0.806					
Subjective norm	0.500	0.853				
Social value	0.265	0.513	0.877			
Functional value(quality/price)	0.478	0.601	0.444	0.773		
Emotional value	0.374	0.410	0.711	0.468	0.841	
Visit intention	0.570	0.600	0.550	0.669	0.624	0.800

Based on the data results presented above, it is sufficient to conclude that the conceptual model proposed in this study demonstrates strong validity (including convergent and discriminant validity) and reliability.

4.2. Structural model: goodness of fit results

After conducting path analysis using AMOS 28.0 software, this study tested the path coefficients between constructs among individuals. As shown in Table 5, the chi-square/degrees of freedom ratio is 2.13, with a chi-square value of 431.529 and 195 degrees of freedom. Other fit indices include IFI = 0.951, NFI = 0.914, GFI = 0.890, CFI = 0.951, TLI = 0.942, and RMSEA = 0.063. These indicators suggest a good fit of the structural model to the data.

As previously hypothesized, H1, H4, and H6 suggest that customers' attitudes, perceived functional value, and emotional value will positively influence the intention of Chinese Generation Z to visit green hotels. ($\beta_{AT \rightarrow VI} = 0.234, p < 0.001$ $\beta_{FV \rightarrow VI} = 0.358, p < 0.001$ $\beta_{EV \rightarrow VI} = 0.364, p < 0.001$). Therefore, H1, H4, and H6 are supported. Additionally, as stated earlier, Subjective norm and Social value are expected to favorably impact the intention to consume green hotels ($\beta_{SN \rightarrow VI} = 0.148, p < 0.1$). Although the impact is weak, it still shows a positive correlation, thus supporting H2. However, the influence of social value is feeble ($\beta_{SV \rightarrow VI} = 0.015, p < 1$), and H8 is not supported.

H3, H5, and H7 posit that consumers' perceived functional value, emotional value, and social value play a positive role in shaping their attitude toward consuming green hotels. According to the data from this study, hypotheses H3 and H5 are supported, as there is a

Table 5
Structural Equation Modeling model fit indices.

Common Indicators	χ^2	df	p	χ^2/df	GFI	RMSEA	RMR	CFI	NFI	NNFI
Criteria	-	-	>0.05	<3	>0.9	<0.10	<0.05	>0.9	>0.9	>0.9
Values	431.529	195	0.000	2.213	0.890	0.063	0.086	0.951	0.914	0.942
Additional Indicators	TLI	AGFI	IFI	PGFI	PNFI	PCFI	SRMR	RMSEA 90 % CI		
Criteria	>0.9	>0.9	>0.9	>0.5	>0.5	>0.5	<0.1	-		
Values	0.942	0.857	0.951	0.686	0.772	0.803	0.051	0.055-0.071		

significant positive correlation between functional value and emotional value with the attitude toward consuming green hotels. ($\beta_{FV \rightarrow AT} = 0.465, p < 0.001$ $\beta_{EV \rightarrow AT} = 0.327, p < 0.01$). While the correlation between social value and attitude is weak, it still exhibits a negative relationship ($\beta_{SV \rightarrow AT} = -0.188, p < 0.1$). Therefore, H3 and H5 are supported, but H7 is not.

Furthermore, The total impact of Functional value on the consumption intention of Chinese Generation Z for green hotels is 0.467. (The direct impact is 0.358, and the indirect impact through attitude is 0.109.) Emotional value’s total impact on the intention to visit is 0.440 (direct impact is 0.364, indirect impact is 0.077). After comparison, It has been found that both of them significantly affect Chinese Generation Z’s intention to engage in visits to green hotels, with Functional value slightly more significant than Emotional value.

The result of SEM is depicted in Fig. 2.

5. Discussion and implication

5.1. Discussion

This study explores the link between multi-dimensional perceived value and the green hotel visitation intentions of China’s Generation Z, focusing on the influencing factors of green hotel patronage. A framework was developed, extending the TPB theoretical framework by integrating multi-dimensional green perceived value. Results indicate that functional value, among the multi-dimensional green perceived values, has the greatest impact on green hotel visitation intentions, followed by emotional value, visitation attitude, and subjective norms, while the effects of social value is minimal.

In recent years, the increase in tourism consumption and the consequent rise in waste production have had an increasingly adverse impact on the environment. China advocates active participation in green consumption among its citizens, and environmental awareness has significantly increased in the population. However, for China’s Generation Z, a “cognition-action gap” [63] remains, posing a significant challenge to China’s future sustainability. It must be acknowledged that green hotels are a completely different product. Unlike eco-friendly products such as electric cars and energy-saving appliances, which provide direct personal benefits through long-term cost savings in fuel and energy-related expenses, green hotels do not offer these cost savings to guests; instead, they save costs for the owners or operators. Nevertheless, many guests are willing to pay extra to patronize green hotels [19]. This study focuses on the factors influencing China’s Generation Z’s patronage of green hotels.

Among China’s Generation Z, functional value has the most significant influence on the willingness to stay in green hotels. This is consistent with the views earlier proposed by Tan (2023) [64] and other scholars, who believed that among perceived green advantages, functional benefits have the most significant impact on the willingness to stay in green hotels. The emphasis on functional value implies that China’s Generation Z places more importance on the practical facilities and actual prices of eco-hotels. Green hotels are perceived to be less functional than traditional hotels, in line with the general perception of other green products [65]. Green hotels constantly remind guests to reduce water and electricity use and minimize waste production. They often reduce toilet flush volumes, use water-saving faucets and showerheads, and maintain cleanliness. Rooms are typically equipped with eco-friendly furniture, carpets, and pillows made of recyclable materials. Sometimes, these green practices may cause some inconveniences. In some partially green hotels, guests might even be asked to reuse towels used by other guests [65], although most hotels do not require this. However, all these measures may reduce hotel stay comfort to varying degrees, subtly lowering the perceived image of green hotels among consumers. This is why functional value significantly impacts the willingness of China’s Generation Z to stay in green hotels. It can be inferred that charging high fees while only offering facilities comparable to non-green hotels might affect their willingness to book a stay.

Conversely, if hotel managers can provide more excellent functional value than traditional hotels, guests will perceive more advantages in staying at green hotels, and they will be more inclined to include them in their travel plans. Therefore, green hotel operators can enhance the appeal of green hotel attributes by offering differentiated natural products, increasing the proportion of green

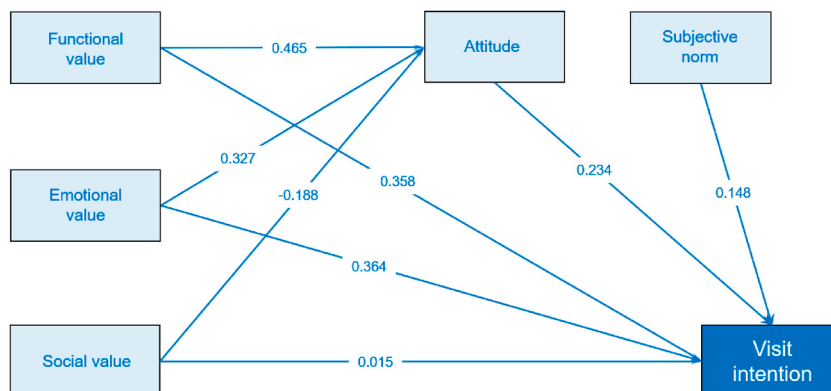


Fig. 2. Result of the structural equation model.

plants in rooms, and introducing pure, fresh, and pollution-free air to make the accommodation space more natural and comfortable. This could provide a reasonable explanation for the higher costs associated with staying in green hotels and amplify the willingness of China's Generation Z to stay there.

This study found that emotional value and subjective norms also significantly influence the willingness of China's Generation Z to stay in green hotels. This finding further corroborates previous research [66]. From an emotional value perspective, this can be attributed to the Chinese government's promotion of and policy support for green industries. China's Generation Z often views staying in green hotels as a positive action. In the context of Chinese society, the promotion through social media and government support can significantly enhance the impact of subjective norms on green consumption behavior among Chinese university students [67], a significant portion of whom are part of Generation Z. Therefore, it can be inferred that these legal measures or policies can significantly enhance the pro-environmental behavior of China's Generation Z.

From the perspective of subjective norms, as a collectivist society, individual behaviors in China are more likely to be influenced by the environment, and their subjective norms are more easily shaped by the current context. Chinese university students may be influenced by the thoughts of significant people in their daily lives, thereby changing their behavior. Hence, if people around them exhibit pro-environmental behavior, China's Generation Z might choose to stay in green hotels.

An interesting finding of this study is the minimal impact of social value on the willingness of China's Generation Z to stay in green hotels. Previous studies on the impact of social value on the willingness to stay in green hotels have been controversial. Wang et al. (2018) [39] argued that Chinese consumers are willing to bear the extra cost of staying in green hotels because they perceive it as having social value. In contrast, Demir et al. (2021) [54] argued that social value is not very important and has little impact on customers' willingness to stay in green hotels, which aligns with this study's perspective. Explain this result: this study contrasts staying in green hotels with consuming eco-friendly clothing. In previous studies, China's Generation Z might engage in eco-friendly clothing consumption because their green consumption behavior can enhance their "face" (in Chinese culture, it refers to a person's social reputation), social status, or influence within their social circle [68]. Specifically, they are likely to engage in green clothing consumption when they perceive that the benefits outweigh the investment cost of green clothing. Compared to eco-friendly clothing consumption, the social value obtained from staying in green hotels is a short-term gain. The stay in green hotels typically ranges from a day to a few days, whereas eco-friendly clothing can be worn for a long time, making the social value derived from hotel stays much less enduring. Moreover, hotel stay behavior is more private compared to dressing and appearance. Changes in attire are easily noticed by others, but unless guests deliberately mention their experience staying in green hotels, others might not take notice of such behavior. Therefore, the frequency at which customers perceive social value is also lower.

The reason why social value is a contentious issue in the green hotel sector could be multifaceted. On one hand, the environmental values of China's Generation Z are gradually changing. They realize that their lives are closely related to environmental protection and should cultivate their sense of responsibility and willingness for green consumption based on self-interest. On the other hand, China's Generation Z is usually in the early stages of university education or career, with wealth accumulation at an initial stage. The generally higher prices of green hotels in China, coupled with the relatively lower influence on social status or "face" compared to other green products, may prompt many consumers to forego visiting green hotels. Therefore, it can be speculated that extending the perceived duration and frequency of social value from green hotel consumption, along with moderately reducing the cost of staying in green hotels, can positively impact the visitation intentions of China's Generation Z. Green hotel operators could extend the perceived duration of social value from green hotel consumption by giving away wearable or displayable green hotel souvenirs, thereby influencing visitation intentions.

5.2. *theoretical implication*

The theoretical significance of this article lies in proposing a more comprehensive and detailed theoretical framework to explain and predict the willingness of China's Generation Z to visit green hotels. This not only provides a new perspective for theoretical research but also offers valuable references for practical decision-making. Firstly, although previous studies have explored expanding the TPB theory to better predict the potential inclination towards green hotels, this study enhances the explanatory power of the TPB framework by incorporating multi-dimensional green perceived value. Moreover, the study underscores the necessity of segment-specific analysis, suggesting that future research should adopt more refined and customized approaches to explore the specific needs and preferences of different market segments. Future studies should consider expanding their scope to include other demographic groups and delve deeper into the price acceptability within the functional value dimension, making it easier for consumers to accept and visit green hotels.

Secondly, from the perspective of multi-dimensional green value perception, the study highlights the significant impact of functional and emotional value on the willingness to visit green hotels among China's Generation Z. This suggests that future theoretical models should pay more attention to consumers' perceptions of the functionality and emotional experience of products or services. The study also re-evaluates the impact of social value. Although its influence on Generation Z is relatively small, this finding provides a new perspective for theory, indicating the need for a more detailed analysis of the role of different value dimensions in consumer behavior patterns.

Lastly, the theoretical model proposed in this study enhances understanding of Generation Z's consumer behavior and reveals a gap between their cognition and actual behavior. It offers specific guidance for practitioners, emphasizing the need for a deeper understanding and bridging this gap in designing intervention measures and marketing strategies, helping them to attract and serve this group more effectively.

5.3. Practical implication

This study has a significant impact on the marketing and management strategies of green hotels. From the perspective of multi-dimensional green perceived value, emphasizing the importance of functional and emotional value in attracting Chinese Generation Z consumers provides more targeted strategic directions for green hotels. Additionally, the findings will inspire the government to formulate relevant policies to promote green consumption, especially among the younger generation.

For green hotel managers, it's not only necessary to provide eco-friendly facilities such as efficient energy utilization, waste recycling, and reuse, and the use of organic and sustainable living products. They also need to enhance the uniqueness of the actual experience of green hotel services, such as offering healthy, organic dining options and green fitness facilities, emphasizing concern for customer health. These measures help convey the functional advantages of green hotels, instilling in customers expectations that surpass those of non-green hotels, thereby motivating Generation Z to consume at green hotels. Moreover, green hotel managers can regularly organize environmental education workshops and green lifestyle experience events, allowing customers to experience a green lifestyle personally. Displaying the hotel's commitment to environmental protection and social responsibility, such as supporting local environmental projects and showcasing achievements in hotel carbon emissions, can help green hotels establish a positive brand image in society and further enhance their appeal to environmentally conscious Generation Z consumers. These strategies will help green hotels better meet the needs of the younger generation while pushing the hotel industry toward a more sustainable direction.

The Chinese government can raise the younger generation's awareness of environmental protection through education and publicity campaigns, support the construction and operation of green hotels, as well as increase Generation Z's purchasing power for green hotels, through financial incentives such as tax breaks, subsidies, and developing incentives that align with Generation Z consumer preferences. In addition, the government should establish a platform for cooperation with enterprises to promote the development of green tourism and hotels. These measures will help raise public environmental awareness and encourage young consumers to choose green hotels. Overall, this study will promote innovation and development in the green hotel industry, while strengthening the dissemination of environmental awareness, positively impacting the achievement of sustainable development goals.

6. Conclusions and limitations

6.1. Conclusions

This study examines the relationship between green perceived value and the tendency of China's Generation Z to visit green hotels. Constructing an extended TPB model that integrates multi-dimensional green perceived values, highlights the model's significant role in promoting the willingness to visit green hotels. Specifically, the study found that functional value significantly impacts the willingness to visit, followed by emotional value, attitudes toward visiting, and subjective norms. It also explored the potential reasons why social value has a limited impact on the willingness of China's Generation Z to visit.

The study provides deep insights into the willingness of China's Generation Z to visit green hotels at both theoretical and practical levels. For green hotel operators, it is essential to focus on enhancing the functionality and emotional experience of the hotel to meet the demands of Generation Z consumers. Hotels should strengthen cooperation with the government and environmental organizations, addressing challenges posed by uncertainties through technological innovation and service diversification. The government plays a crucial role in promoting green consumption; it should raise ecological awareness among the young generation through education and publicity campaigns and support the development of green hotels through fiscal incentives.

Considering China's political and climatic background, the development of green hotels needs to be closely integrated with China's sustainable development strategy and actively respond to the government's environmental policies. Future research should explore how government policies affect consumer attitudes and behaviors towards green hotels. In the face of the severe challenges posed by climate change, green hotels should take more active measures to reduce their environmental impact. Future research needs to focus on how these measures affect consumer choices and the operational costs of hotels. The effect of the COVID-19 pandemic on the tourism industry further highlights the importance of green hotels in maintaining their environmental commitments while ensuring safety and hygiene.

Overall, this study emphasizes that green hotels and related research need to adopt flexible and innovative strategies to achieve sustainable and environmentally friendly goals in the ever-changing global environment. Future research should continue to explore how different demographic characteristics affect consumer behavior and pay attention to the impact of policy and environmental changes on the green hotel industry.

6.2. Limitations and recommendations

The formation of perceived values is highly contextual and influenced by various factors. Firstly, the notion of value holds different interpretations at distinct junctures, such as during acquisition, in the preparatory phases, and in the midst of consumption. The current study only investigated customer-perceived values in the pre-purchase stage, and a significant portion of China's Generation Z may not have stayed in green hotels. Perceived values in this stage may change as they gain real-life experience with green hotels. Hence, future studies should integrate longitudinal research to examine how perceived values change over time. Moreover, although this study encompassed 21 provincial-level administrative regions in China, it predominantly concentrated on the southern regions along the Yangtze River, with limited sampling in northern China. Future research should replicate this study in other areas across China, consistently increasing the sample size to develop a more precise comprehension of the willingness of China's Generation Z to

visit green hotels.

Institutional review board statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Medical Ethics Committee of Jiangnan University (protocol code JNU202209011RB12).

This study has obtained written informed consent from the research participants, including the informed consent of the parents of minors.

Additional information

No additional information is available for this paper.

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Data availability statement

The data supporting the findings of this study are available from the open database Mendeley Data (DOI: 10.17632/n6wfps9ht2.2).

CRedit authorship contribution statement

Haodong Wu: Writing – original draft, Conceptualization, Visualization. **Weizheng Wang:** Resources. **Yinying Tao:** Writing – review & editing, Supervision. **Ming Shao:** Investigation, Methodology. **Chenwei Yu:** Investigation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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