

Article

Green Building Consumption Perception and Its Impact on Fitness Service Purchasing Intentions: An Extended Institutional Analysis and Development Decision-Making Model Analysis

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Abstract: Green buildings play a pivotal role in advancing ecological civilization and promoting green, low-carbon development. Numerous studies have delved into the construction techniques, process attributes, economic benefits, risk management, and benefit assessments associated with green buildings. Concurrently, research on the profitability models, marketing strategies, and public purchasing intentions of commercial fitness clubs has also yielded extensive findings. Yet, there is a noticeable gap: limited research has investigated the nexus between green building development and consumers' propensity to purchase fitness services from these commercial establishments. Building upon the foundation set by previous scholars and employing the Extended IAD Decision-Making Model, this study utilizes the PLS-SEM method to analyze collected questionnaire data. Through path analysis, we examine the relationships between variables. Our findings indicate that: (1) Positive perceptions of green building consumption bolster the purchasing intentions toward fitness services in commercial fitness clubs. (2) Perceived risk mediates the relationship between green building consumption perceptions and consumers' fitness service purchasing intentions in commercial fitness clubs. (3) Environmental awareness enhances the correlation between green building consumption perceptions and the propensity to purchase services in these clubs. The goal of this research is to underscore the importance of green buildings both in environmental and economic contexts and to offer insights that can elevate the profitability of commercial fitness clubs.

Keywords: green building; commercial fitness clubs; PLS-SEM method; perceived risk; environmental awareness



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1. Introduction

According to economic data, the contribution rate of consumption expenditure in China's GDP growth in 2016 was as high as 64.6%, which is close to the average level of developed countries [1]. Thus, along with the fundamental transformation of China's economic structure and growth mechanism, consumption has replaced investment as the most important driving force for economic growth [2]. In recent decades, the world fitness service industry has undergone revolutionary changes in terms of scale and business management concepts, and more and more people have regarded sports and fitness consumption as a way of life, rather than as an experimental consumption in the past [3]. As a whole, the development of China's fitness service industry now presents three main features: First, China's fitness service industry is still in the stage of survival of the fittest

and internal competition; second, the fitness industry is still in the continuous “reshuffle”, meaning that the fitness industry in the business strategy and marketing strategy is still based on conservative management; third, the fitness industry needs of the consumer. More and more diversified consumer enthusiasm for fitness consumption continues to rise. Therefore, it is worth thinking about and exploring how the fitness and leisure service industry can respond to the new changes and demands of consumers in fitness and leisure consumption under the background of consumption upgrading, how to accurately locate the value orientation of the new generation, how to reconstruct the organizational structure of the fitness and leisure service, and how to create a change in the content system. From a macroscopic perspective, economy is the basis of sustainability, environment is the condition of sustainability, and society is the purpose of sustainability. Consequently, the fitness and leisure service industry must refine its industrial system, champion ecological civilization, and emphasize the harmonization of economic, environmental, and societal factors to foster the industry’s ecological advancement [4].

Commercial health clubs, as specific places where people provide exercise and fitness services, are an important component of the fitness service industry. Commercial clubs and their related business activities offer strength exercise equipment, aerobics classes, or other sports and programs as their main service content, encompassed by the goal of providing fitness services for people’s fitness businesses. With the 2020 pneumonia epidemic, the topic of physical health research has attracted renewed interest [5]. Reviewing the domestic and international research results on physical fitness, they are mainly reflected in the six major aspects of physical fitness engineering, physical fitness clubs, physical fitness services, physical fitness market, physical fitness consumption, and physical fitness management [6]. The existing research on fitness consumption mainly focuses on fitness consumption demand, fitness consumption ability, fitness consumption experience effect, fitness consumption subjective sense of well-being, and consumer behavior driving force [7–9]. Among them, the research on consumers’ willingness to purchase fitness services mainly focuses on two aspects, namely the demand side of commercial fitness consumption and the supply side of commercial fitness consumption [10,11]. This study encompasses four primary dimensions on the demand side: the service quality and awareness of commercial clubs, satisfaction with equipment and facilities, service variability, and the expression of class culture. On the supply side, it focuses on three aspects: the business strategies and revenue streams of commercial clubs, the ability to retain customer resources, and the adaptability in integrating Internet technology. These considerations are grounded in the subsequent research findings.

From an anthropological perspective, the primary unit of the social ecosystem is the individual. While natural conditions provide the essential material foundation for system functionality, it is through environmental interactions that individuals enhance their living conditions, fostering a harmonious relationship between humanity and nature. In practice, humans leverage advancements in science and technology to enhance the efficiency of production tools, thereby progressively minimizing resource expenditure [12]. The green building is one of the outstanding products of the harmony between man and nature. Since the Chinese government officially released the green building evaluation standard in 2007, the development of green buildings in China has ushered in a brand new stage. By the end of 2020, a total of 930 million square meters of buildings in China have been certified as green buildings, and the development of green buildings in China has gradually come into a mature stage from the initial start-up stage. A green building adheres to the concept of sustainable and healthy development, and its connotation lies in the safety and environmental protection of the whole life cycle from program design to later operation [13]. The green building is an inevitable trend in the development of the construction industry, which helps to ease the pressure imparted on environmental resources brought by high energy consumption, high pollution, and rough management, while achieving

green development [14]. Under the premise of ensuring health, comfort, and safety, the green building integrates the concept of energy-saving design, the use of pollution-free materials, a construction process that is green and environmentally friendly, a green and sustainable mode of operation (so as to maximize the protection of the environment), and the successful implementation of the concept of green building design, which can enable major cities to ensure a healthy road to sustainable development. Consumers choose to go to commercial fitness clubs to participate in fitness consumption, partly in order to receive more scientific fitness guidance, but mainly to enhance their physical and mental health. The concept of sustainable and healthy development of green buildings is precisely unified with the concept of people's fitness consumption, so an in-depth exploration of the internal role of the relationship between the two to stimulates the enthusiasm of the fitness service consumers, promotes the healthy development of fitness services, and enhances the necessary profitability of commercial fitness clubs.

Green buildings prioritize health, comfort, and safety by integrating energy-efficient design, utilizing non-polluting materials, and adopting environmentally friendly construction processes. Their operational mode is sustainable, aiming to minimize environmental impact. Implementing green building concepts can guide major cities toward sustainable and healthy development pathways. Consumers attend commercial fitness clubs primarily for expert fitness guidance and overall well-being. The principles of green building, emphasizing sustainable and healthy development, align with the motivations behind fitness consumption. Therefore, examining the interplay between these concepts can invigorate public enthusiasm for fitness, bolster the growth of fitness services, and enhance the profitability of commercial fitness clubs. In essence, green buildings offer spaces that are health-centric, comfortable, energy-efficient, and environmentally benign. They embody the principles of sustainable development, harmoniously blending innovative designs with features like natural ventilation, daylighting, energy-efficient structures, solar energy utilization, eco-friendly materials, and smart controls. This synergy showcases the balance between humanistic values, architectural design, and technological advancements. The pertinent questions are: Does a green building enhance the appeal of commercial health clubs? Can green architectural designs boost people's inclination toward fitness services? What strategies can amplify this inclination? This research employs the extended IAD model, drawing from the theory of perceived risk, to develop a conceptual framework. This framework explores the mediating effects of perceived risk between green building design and the willingness to purchase fitness services in commercial clubs. Such insights can stimulate fitness participation and identify the key drivers of fitness consumption.

2. Literature Review and Research Hypotheses

2.1. Green Building Consumption Perceptions and Willingness to Purchase Fitness Services

Cognitive theory suggests that the degree of cognition plays an important role in the formation of behavioral willingness. A certain choice made by the consumer begins with a grasp of the relevant information about the product and the formation of a preliminary understanding of the product, added to a continuous accumulation of knowledge and information to perceive the overall value of the product, to finally end with the choice to consume [15].

Scholars in the academic world do not define green consumption perception in the same way, and most scholars define the connotation of green consumption perception based on the following two aspects: first, the consumer's perception of environmental issues, including mastery of environmental knowledge, environmental awareness, etc. For example, Biswas [16] defined green consumption perception as the value of the consumer's favorable impact on the environment through the adoption of green consumption behavior and the degree of understanding of green product information. Second, the consumer's awareness and understanding of green products, including the degree of understanding

of specific product information such as the concept of green product design or green certification. The second is the degree of the consumer's knowledge and understanding of green products, including the degree of knowledge of green product design concepts or green certification and other product-specific information. For example, Rauchow [17] defines green consumption perception as the degree of the consumer's understanding of the benefits of participating in green consumption and their knowledge of green labels such as eco-labels. Based on this, this study combines the concepts related to green consumption perception and defines consumer green building consumption perception as the degree of consumer understanding of green concepts such as the functions and connotations of green buildings in health clubs.

As scholars in various fields continue to explore the research related to green consumption perception, different scholars classify green consumption perception into different dimensions from different research perspectives, and thus the way of classifying and measuring green consumption perception by scholars is also different. For example, Sivek et al. [18] divided green consumption perception into general environmental perception and specialized environmental perception. General environmental perception can prompt consumers to pay more attention to the environmental value of consumption objects, while specialized environmental perception can enhance consumers' awareness of the environmental crisis and make them more actively participate in environmental consumption. Hirsh et al. [19] divided green consumption perception into environmental perception and green product perception based on the green product consumption market, and the study showed that both environmental perception and green product perception can predict consumers' willingness to engage in green behaviors. Kwon et al. [20] measured green consumption perception based on the perspective of environmental cognition and divided green consumption perception into two categories, namely environmental knowledge and environmental awareness, from the point of view of the environmental knowledge and environmental awareness that consumers have learned and worked on in the process of study and work. In summary, the way scholars divide and measure green consumption knowledge in the existing studies differs from each other, such as some scholars divide and measure green consumption perception from a single perspective, and some scholars carry out related studies from multiple perspectives, but regardless of these differences, scholars essentially explore green consumption perception around the two aspects of green environmental protection perception and green product cognition. Therefore, combining the previous scholars' research, this study coalesces the connotation of green building consumption perception into green building value perception, i.e., the consumer's accumulated knowledge that a green building is beneficial to environmental protection; and green building function perception, i.e., the consumer's understanding of a green building as a consumption object and their degree of functional cognition.

At the same time, existing studies on the specific links between green consumption perception and consumers' purchase intention are almost always explored from four perspectives: functional value, emotional value, social value, and environmental value. (1) Green consumption functional value perception and purchase intention. The functional value perspective focuses on consumers' perceptions of the price, quality, safety, and durability of the products they choose. For example, the findings of Biswas et al. [16] and Goncalves et al. [21] show that the perception of functional value positively affects the willingness to buy of consumers in India and Portugal. (2) Green consumption emotional value perception and purchase intention. Emotional value perspective focuses on consumers' emotional feelings of satisfaction when choosing, purchasing, and using products or services; therefore, emotional value can play a crucial role in promoting green product purchase intention. For example, the research of Nalchy et al. [22] shows that, when consumers have positive emotional attitudes toward a product or brand, such emotions can lead consumers to repeat a purchase of the same product or brand. (3) Green consumption

social value perception and purchase intention. As exemplified in ref. [23], social value refers to the social benefits that consumers reap from the products or services they buy, specifically including the relationship between consumers and nature and the relationship between consumers and others; the relationship between consumers and nature refers to the impact that consumers have on nature through their consumption behaviors, while the relationship between customers and others refers to the impact that purchasing behaviors have on the customers' personal image. The study of Finch pointed out that the characteristic of improving self-image by purchasing green products may have a significant impact on consumers' green consumption behavior. (4) Perceived environmental value of green consumption and purchase intention. Purchasing green products represents the consumers' active pursuit of ecological value, and environmental value is the consumers' own assessment of the value and benefits of green products' environmental protection function. As Chen [24] and others have pointed out, green value is the value that consumers constantly weigh from the perceived environmental utility of green products and the costs they pay to judge the green value of the product, which in turn generates the willingness to consume and influences consumption behavior.

Scholarly research shows that the consumers' systematic cognition of environmental issues and specific cognitive ability regarding green products are the prerequisite and foundation for generating green consumption perceptions and the starting point for generating purchase intentions. Based on this, consumers with high green building consumption perception can enhance their own sense of acquisition, participation, and other subjective efficacy perceptions through information collection, peer influence, or personal participation, so that consumers perceive that they have a greater sense of responsibility and influence, and that participation in consumption can have more benefits, which will help to form the willingness to consume and generate consumption behavior. Therefore, the following hypothesis is proposed:

Hypothesis 1. *Green building consumption perceptions positively contribute to the willingness to purchase fitness services in commercial health clubs.*

2.2. Green Building Perceived Risk and Willingness to Purchase Fitness Services

The application of the term risk in the field of scientific research first originated in the economics research in the 1920s, and then this concept was gradually extended to finance, sociology, marketing, and so on. At that time, the term risk was used in the research to represent the subjective feelings based on the objective unknowability in the process of consumption. Perceived risk was firstly applied to the marketing field by marketing scholar Bauer [25] from the field of psychology who, based on the theory of limited rationality and satisfaction theory, organically combined the concept of perceived risk with the research related to consumer behavior, and defined the perceived risk so that it gained wide attention. Bauer's understanding of perceived risk reflects two characteristics of perceived risk: first, the uncertainty of the outcome of the behavior, i.e., consumers do not know in advance whether the outcome of the decision is in line with their expectations, and second, the severity of the outcome, i.e., consumers do not know in advance whether the outcome of the decision is in line with their expectations. Bauer's "uncertainty theory" has been widely recognized and used by academics, but unlike his "uncertainty theory", some scholars have adopted the "loss theory" as the basis for their understanding of perceived risk. For example, Mauricio et al. [26] argue that perceived risk is some type of loss that consumers may suffer when they expect the outcome of their purchasing behavior.

At the same time, with the continuous development of marketing, scholars have gradually reached a relative consensus on the dimensional division of perceived risk, and the current research on perceived risk is mostly based on the dimensions contained in the perceived risk. For example, Cox [27] specifies the concept of perceived risk, and he

points out that, when the consequences of consumers' purchasing behavior do not meet their goals or when the consequences of consumption have adverse effects, perceived risk arises, so he focuses on consumers' pre-consumption goals, and divides the perceived risk into two dimensions: on the one hand, it is the risk that is predicted before the purchasing behavior occurs, and on the other hand, it is the adverse effects that are generated after the purchasing behavior occurs. With the development of marketing, scholars have further subdivided the dimensions of perceived risk, for example, Cunningham [28] believes that perceived risk includes product performance, physical damage, financial damage, loss of time, or social consequences, etc.; Stone et al.'s study [29] will divide perceived risk into six constructs of risk such as physical, performance, financial, temporal, social, and psychological. On the basis of their predecessors, contemporary scholars have been condensing the different dimensions of perceived risk, and the dimensional division of perceived risk and the measurement angle have gradually become more consistent, for example, Woodside [30] divides the perceived risk into social, functional, and economic dimensions. Some other scholars have subdivided perceived risk according to different research contexts, but most of the studies generally agree that perceived risk includes financial risk, physical risk, and psychological risk [31].

Numerous research results have shown that there are a large number of risk factors which will have an impact on the consumer's willingness to buy or their purchase behavior. Among the many risk factors, there is the fact that the consumer's decision to buy a product or service will inevitably take into account the elements of the risk to be borne. One viewpoint in the field of marketing suggests that the trade-off between perceived value and perceived risk is the key to the consumer's decision of whether to make a purchase; another viewpoint suggests that the level of perceived risk is an important psychological evaluation criterion in the consumer's decision of whether to make a purchase. This study focuses on the second point of view, and although scholars have not reached a unified conclusion on the relationship between willingness to buy and perceived risk, most scholars believe that willingness to buy is significantly negatively correlated with perceived risk. For example, Murray [32], in his study on the purchase process of service products, clearly points out that there is a significant negative correlation between user-perceived risk and user willingness to buy, i.e., the higher the degree of user-perceived risk, the lower the user's willingness to buy service products. In terms of the perceived risk of green products and consumers' willingness to buy, previous scholars have also obtained similar conclusions, such as Mandal et al.'s [33] study, which suggested that the psychological risk perceived by consumers when purchasing green products is different from that of purchasing traditional products, and the reason for such risk is that the health or environmental protection function of the green product fails to meet the psychological expectations of the consumers, which is partly the mental pursuit generated by the independent thoughts and positive expectations of individual consumers. This part of the psychological expectation is the consumers' personal independent thoughts and positive expectations generated by the spiritual pursuit, so the negative impact on the consumer's willingness to consume is also greater. ODonovan et al.'s [34] research also found that, in the context of consumer's purchase of green brands or green consumption, often the green product purchase is not a decision that is easy to influence. The higher cost of green products compared to ordinary products and the limited access to green products, among other disadvantages, make consumers prone to negative evaluations and thus negative attitudes. For example, Kasterine [35] points out that part of the reasons why consumers choose to buy green products may be due to the pressure of ethical norms on environmental protection or the pressure of their roles in the social network, etc. A considerable portion of consumers will pay some attention to green products out of ethical considerations, that is to say, the perceived ethical risk affects the purchasing behavior of consumers to a certain extent. The

research of Priester et al. [36] also shows that consumers may have ambivalent attitudes when they have low evaluations of the price factor, perceived value, availability, access to information, and credibility of green products. After the ambivalence, consumers may experience significant psychological discomfort and conflict, making them hesitant.

In summary, green building design represents a new environmental endeavor favorable to public health. As such, the “double health” effect of commercial fitness clubs adhering to green building criteria, as well as offering sport and fitness services, becomes a key marketing selling point. However, the green building, as a novel entity, triggers in consumers curiosity as well as doubts about its function or utility and other aspects, which can be summarized as follows: (1) Consumers have psychological uncertainty about whether the green building of the fitness club is damaged, due to the fact that green buildings may exhibit design, manufacturing, or decoration defects. (2) Compared with other traditional fitness clubs, the consumer price of green building fitness clubs may be higher than the price of other traditional fitness clubs. Green building fitness clubs may therefore bring greater economic losses to consumers. (3) Green buildings adopt new technologies, new techniques, or use new raw materials, so green buildings have some green performance characteristics that distinguish them from non-green buildings. Before consumption, consumers will take the initiative to understand the functional characteristics of green buildings for reasons such as curiosity, etc., and will have certain psychological expectations for the future consumption experience, which will cause greater harm if the special functions or service quality of the green building fitness clubs fail to meet the consumers’ expected results. Therefore, the following hypothesis is proposed:

Hypothesis 2. *The consumers’ perceived risk of green buildings in commercial health clubs has a negative inhibitory effect on their willingness to purchase fitness services.*

2.3. Perceived Green Building Consumption in Commercial Health Clubs and Perceived Risk to the Public

Environmental stimuli can stimulate and influence consumers’ internal thoughts and perceptual states, making them engage in positive or avoidance behaviors in the purchasing process [37]. In contemporary society, merely relying on product or service quality is insufficient for providers to secure a competitive edge. To effectively capture consumer attention, it is imperative to understand and cater to their preferences. Continuous communication is essential to foster strong relationships. Furthermore, pinpointing the primary determinants of consumer value and monitoring real-time dynamics are crucial for sustained consumer attraction and enhanced business efficiency. A review of the existing research on the correlation between green consumer perception and perceived risk reveals three primary dimensions: the green value perspective, the personal perception perspective, and the information acquisition perspective.

Almost all scholars who conducted research centered on green perception believe that the more green knowledge consumers have, the more they can enhance the perceived value of green products, which in turn reduces consumers’ worries and enhances their willingness to buy. For example, Sun Jian et al. [38] found that the consumers’ knowledge of green products has a greater impact on their willingness to buy, and that the more knowledge or experience consumers accumulate about green products, the deeper their perception of green products and the more positive their willingness to buy. Sun [39] also pointed out that, after consumers have accumulated a certain degree of knowledge about environmental protection, they will form a deeper perception of environmental protection, which will motivate them to rationally choose consumer products, and thus be willing to pay more for green products. Sun also pointed out that, after accumulating a certain degree of environmental knowledge, consumers will form a deeper level of environmental perception, which will encourage them to rationally choose consumer products, and thus be willing to pay more for green products. Yadav et al. [40], based on the Indian green

product consumer market, show from their research results that environmental awareness and knowledge have an impact on consumer attitudes, subjective norms, and cognitive control, which in turn drive consumers' green purchasing intentions.

Scholars who have conducted research centered on individual perception have focused on monitoring the changes in consumers' consumption psychology in response to changes in the external environment or the transaction process, such as RAMBALAK et al. [41] who observed that environmental knowledge is a key factor influencing consumers' consumption psychology and consumption behavior, and that this factor will affect the entire process of consumers making purchases. And Mitchell et al. [42] argued that perceived risk varies at different stages of the consumer's buying process. In the initial awareness stage, the perceived risk level gradually increases; after searching for information and deepening their understanding, the perceived risk level gradually decreases; in the stage of making purchase decisions, the perceived risk level slightly increases; in the stage of post-purchase evaluation, if they are satisfied with the shopping process, the perceived risk level will decrease rapidly. ZOU et al. [43] also showed that most consumers believe that they have the obligation to protect the environment, and therefore need to contribute to environmental protection, i.e., consumers' own green cognition will transform their concern for the environment into actual green consumption behavior; therefore, once consumers have a sense of ethical identity, it will have a direct effect on their willingness to consume in a green way, and thus generate the willingness to purchase to complete the purchasing behavior.

Scholars who conduct research centered on the perspective of information acquisition argue that the link between consumers' consumption cognition and their perceived risk is based on the perspective of information transmission and information collection. For example, Paul [44] argues that information asymmetry is an important reason for consumers to feel risky and indecisive when choosing, and that continuously garnering product information and deepening their understanding of the product by searching for other people's evaluations can reduce uncertainty and perceived risk. Another study by Nepomuceno [45] and others also pointed out that, when consumers want to buy a certain product, they will search for information about the product through various methods to reduce the occurrence of consumption risk.

Green building fitness services, characterized as experiential products, fall within a unique category. The dual nature of these services, both tangible and intangible, intensifies consumers' concerns regarding the perceived value of fitness services offered by green building fitness clubs and the associated risk of not meeting consumer expectations. A comprehensive service description, detailed information, and a holistic service display can enhance the perceived value for consumers considering fitness services in green buildings, subsequently reducing their perceived risk.

The stimuli related to green building information act as catalysts for consumers' cognitive and emotional responses. These stimuli encompass various elements, including the fitness club's environmental design, the distinctive features of the green building, environmental protection principles, service quality, user evaluations, and more. Together, these elements shape the consumer's perception of green building consumption. The perception of green building consumption can be viewed as a balance between perceived gains and losses. Losses encompass all costs borne by consumers when purchasing fitness services in green building fitness clubs. Gains, on the other hand, include tangible assets, fitness service attributes, technical support, pricing, and other elements that contribute to the perceived value of the products or services. This study posits that consumer attitudes toward green building fitness clubs influence their risk perception. However, due to varying information sources, either online or offline, a herd effect may emerge. This effect can alter consumers' value perception of the fitness club's green building attributes, subsequently influencing their risk perception related to green buildings and ultimately affecting their purchase intentions. Based on this, we propose the following hypotheses:

Hypothesis 3. *Consumers' perceptions of green building consumption in commercial health clubs have a negative inhibitory effect on their perceived risk.*

Hypothesis 4. *Perceived risk mediates the relationship between consumers' perceptions of green building consumption in commercial health clubs and their willingness to purchase fitness services.*

2.4. The Moderating Role of Environmental Awareness

Environmental awareness is an individual's incorporation of green concepts into his/her self-consciousness, which reflects his/her concern for the environment [46]. Relevant studies have shown that environmental awareness can motivate individuals to change their own behavior and habits, so as to show their own sense of environmental responsibility and achieve environmental protection purposes. This is because environmental awareness, as a kind of green coordinating value, can make consumers with strong environmental awareness have a greater sense of green responsibility, which is more likely to motivate individuals to implement green behaviors to achieve environmental protection purposes. For example, the study by Balderjahn [47] directly points out that good environmental awareness and attitudes motivate consumers to purchase and use eco-friendly products.

Consumers will produce corresponding consumption feelings after consumption, and such consumption feelings can be roughly divided into two levels, namely the material level and the spiritual level. The material level is the consumption feelings about the use value of the purchased goods, such as function, quality, etc., which is the most basic level in the composition; the spiritual level pays attention to the extensiveness of the consumption process, which specifically refers to the degree of contribution to the social development that the consumers experience in the process of purchasing the products or services. The spiritual level is concerned with the extensiveness of the consumption process, specifically the degree of their own contribution to social development experienced by consumers in the process of purchasing products or services, such as the moral value and ecological value of products or services. At the same time, the occurrence of consumers' green consumption behavior is influenced by the internal thoughts of individuals, and environmental awareness makes human behavior have a series of characteristics such as directionality, purposefulness, regulation, and constraints, which prompts consumers to select product or service information in a directional way from a green perspective, selectively choose the target products or services, and regulate and control their own consumption behavior in a purposeful way.

The self-determination theory was proposed by American psychologists Deci and Ryan in the 1980s, emphasizing the dynamic role of self-consciousness in the individual's action process. The self-determination theory suggests that an individual's internal drive, intrinsic needs, and self-emotions are the sources of motivation for self-determined behavior. Therefore, when consumers' environmental awareness is high, consumers will better appreciate the favorable impacts of green buildings, and the more the degree of self-identification is elevated, the more they will participate in green building fitness consumption; when consumers' environmental awareness is low, consumers are likely to ignore the environmentally friendly features of green buildings, and their self-identification is low, resulting in their willingness to purchase green building fitness services also being low. Therefore, the following hypotheses are proposed:

Hypothesis 5. *Environmental awareness has a positive moderating effect between consumers' commercial health club green building consumption perceptions and fitness service purchase intentions.*

In summary, this study uses the IAD extended decision model as the modeling logic, wherein the consumer's green building consumption perceptions serve to represent the conditional control, the consumer's perceived risk of green building fitness clubs serves to represent the external environment and the participant's judgment of the net benefit, and the hypothetical model, which is shown in Figure 1, is proposed.

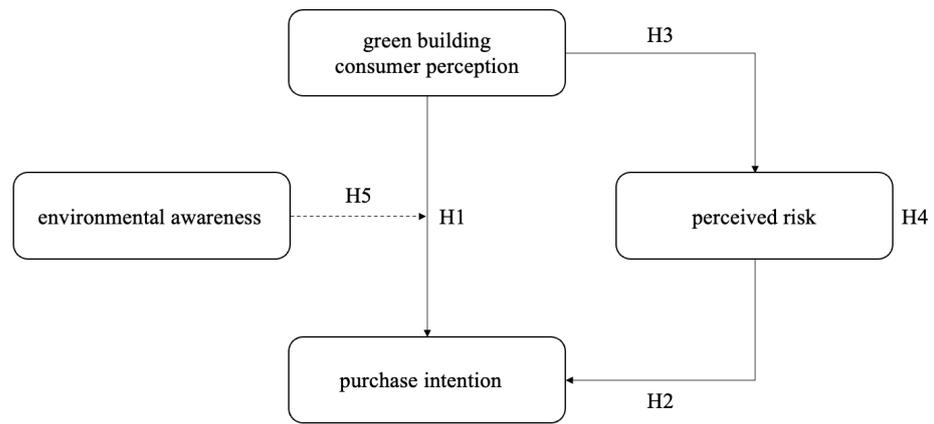


Figure 1. Diagram of the hypothetical model.

3. Study Design

3.1. IAD Extended Decision Model

The extended IAD (Institutional Analysis and Development framework) model proposed by Elinor Ostrom [48,49] (Figure 2), which is the core of the IAD model, is centered on the participant’s intellectual decision-making model, and its core connotations are as follows: In addition to the external environment and cultural influences, on the one hand, the participant’s decision-making is influenced by information about the participant’s situation, condition control, net benefits, and the participant’s perception of these conditions. In addition to external environmental and cultural influences, on the one hand, the participants’ decisions are influenced by information about the participants’ situation, the control of the conditions, the net benefits, and the participants’ perception of these conditions, and on the other hand, by the extent to which the participants know the actual final outcome before they act.

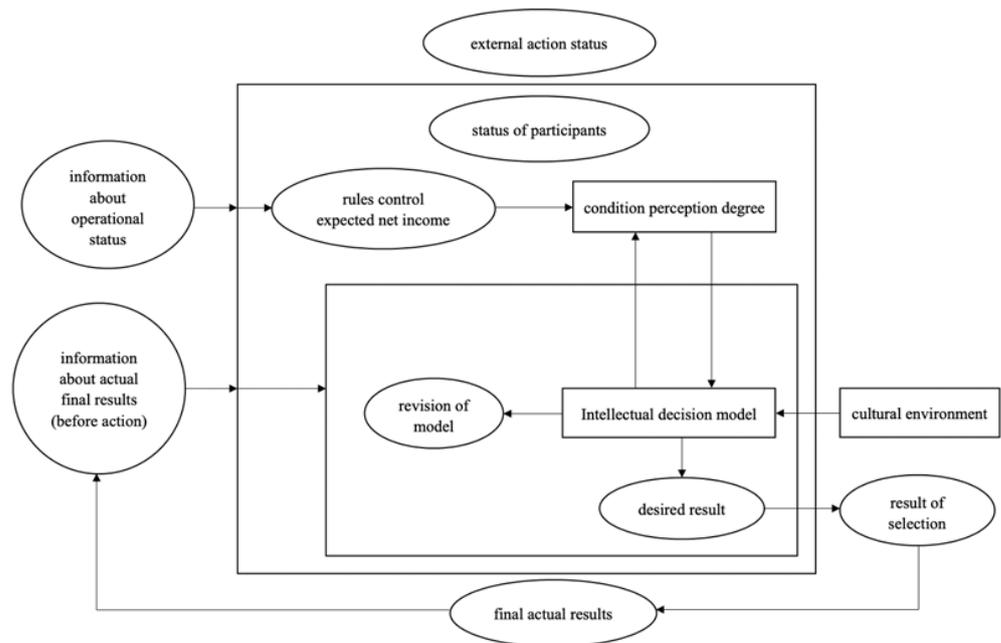


Figure 2. Diagram of the IAD extended decision model.

This research aims to examine consumers' inclination to engage with fitness services offered by green building fitness clubs. It seeks to contextualize the elements of the extended IAD model by considering various factors present in the green building consumption process. The subsequent analyses will utilize the basic consumer profile to depict the participant's status, the consumer's perception of green building consumption as a measure of condition control, and the consumer's perceived risk associated with green building fitness clubs to represent both the external and cultural environments, as well as the participant's assessment of the net benefits.

3.2. Data Sources

This study mainly takes the form of online distribution of electronic questionnaires. The electronic questionnaires are mainly distributed and recovered through WeChat APP, and in order to ensure the representativeness of the research samples, this study adopts the quota sampling method to carry out the research work. The specific questionnaire distribution time is April 2023, during which a total of 400 questionnaires were distributed, of which 392 questionnaires were retrieved, and after excluding invalid questionnaires, a total of 363 valid samples were obtained, so the validity rate of the questionnaire was 90.75%.

In terms of scales and questionnaire items, the dependent variable of this study refers to the well-established research scales of Fishbein et al. [50] and Sheng Guanghua et al. [51] for fitness service purchase intention. The independent variable of green building consumption perception refers to the well-established research scales of Jaiswal et al. [52] and Chan et al. [53]. The mediator variable of perceived risk refers to the well-established research scales of Séquier [54] et al. and Stone et al. [55]. The moderator variable of environmental awareness refers to the well-established research scales of Ballantyne et al. [56] and Schill et al. [57]. The scales in this study are all based on the mature scales of previous scholars, adjusted and modified to the format of the questions according to the characteristics of green building clubs and fitness services. The scales in this study all adopt the Likert-5 point scoring method.

3.3. Analytic Strategy and Reliability Tests

3.3.1. Analytical Strategies

In this study, we employed the Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4.0 software for model validation. PLS-SEM is an iterative estimation technique that integrates principal component analysis, canonical correlation analysis, and multiple regression for causal modeling. This method extracts principal components for specific variables associated with different latent variables, incorporates them into the model, and then refines the principal component weights to optimize the model's predictive capability. Given its superior ability to handle multivariate complex structural models, PLS-SEM was chosen over the covariance-based CB-SEM approach.

3.3.2. Reliability Test

The evaluation of the measurement model includes reliability analysis and validity analysis. The reliability analysis of this study uses Cronbach's Alpha reliability coefficient to verify the degree of consistency of the questionnaire research variables on each measurement item. Academic research has shown that variables have good reliability when Cronbach's Alpha coefficient is greater than 0.7 [58]. As shown in Table 1, the reliability of Cronbach's Alpha coefficient of each variable in this study is greater than 0.7, which indicates that the reliability of each variable in this study is good.

Table 1. Structural reliability and validity analysis.

Variable	Item	Questions	Factor Loading	Cronbach's Alpha	CR	AVE
Environmental Awareness (EA)	EA11	You will take the initiative to understand or learn something about environmental protection in your life and improve your environmental protection ability.	0.829	0.890	0.919	0.649
	EA12	You will spontaneously adopt environmentally friendly behaviors in your life and work.	0.854			
	EA13	You encourage your family, friends, and colleagues to adopt more environmentally conscious behaviors.	0.834			
	EA14	You are aware of the environmental initiatives promoted by the media.	0.810			
	EA15	You maintain a positive attitude toward environmental protection or green efforts.	0.836			
Green Building Consumer Perception (GBCP)	GBCP31	You think participating in green building commercial fitness club is good for the environment.	0.890	0.925	0.944	0.770
	GBCP32	You are more concerned about the green value, and you believe that consuming fitness services in green building commercial fitness clubs is beneficial to the ecological environment.	0.891			
	GBCP33	You think you have a responsibility to choose green building commercial fitness clubs to experience fitness services over ordinary fitness clubs.	0.843			
	GBCP34	Participating in fitness in green building commercial fitness clubs is consistent with your fitness program and you will be immersed in it.	0.909			
	GBCP35	You believe that participating in green building commercial fitness clubs helps you to improve your personal image and receive more recognition from others.	0.853			
Perceived Economic Risk (PER)	PER21	You will be concerned about excessive financial loss if the green building commercial fitness club service experience does not meet your requirements.	0.878	0.870	0.911	0.720
	PER22	You may be concerned that the green building commercial fitness club is not value for money.	0.870			
	PER23	You will be concerned about the possibility of discounts or price reductions that may occur soon after the purchase of the green building commercial fitness club fitness service.	0.834			
	PER24	You will be concerned about the true value for money of the green building commercial fitness club.	0.811			
Purchase Intention (PI)	PI21	You will be willing to buy the services of green building commercial fitness clubs if you have the need to buy fitness services.	0.875	0.825	0.895	0.740
	PI22	You would recommend green building commercial fitness clubs to your friends when they need fitness services.	0.847			
	PI23	Green building commercial fitness clubs are an ideal place for you to spend your money on fitness services.	0.859			

Table 1. Cont.

Variable	Item	Questions	Factor Loading	Cronbach's Alpha	CR	AVE
Perceived Safety Risk (PSR)	PSR11	You may be concerned that the technology associated with green building commercial fitness clubs is immature, flawed, or defective.	0.881	0.860	0.905	0.704
	PSR12	You may be concerned about potential safety issues associated with green building commercial fitness clubs.	0.802			
	PSR13	You may be concerned that participation in a green building commercial fitness club is closely related to your health.	0.809			
	PSR14	You are concerned about whether a green building as a selling point for a fitness club is beneficial to your physical and mental health.	0.862			
Perceived Utility Risk (PUR)	PUR21	You may be concerned that the specific features or functionality of the green building commercial fitness clubs do not match what is being advertised by the business.	0.869	0.845	0.906	0.763
	PUR22	You may worry that the unique green features of green building commercial fitness clubs cannot meet your expectations.	0.883			
	PUR23	Green building is a new thing, you may worry that its function is not stable.	0.868			

3.3.3. Validity Tests

Validity analysis is assessed on the basis of convergent validity and discriminant validity. Convergent validity refers to the degree of similarity of measurement results when different measures are applied to determine the same characteristic, i.e., different measures should converge in the determination of the same characteristic. AVE is a reliability evaluation index of the ability to comprehensively account for the variable. The magnitude of the AVE value is able to reflect whether the latent variable is able to account for the ability of the measurement variable it corresponds to at the same time. When the average extracted variance (AVE) of a research variable is higher than 0.5, it means that this variable can explain more than 50% of the variance and has good convergent validity. CR is a measure of the consistency of the effects between the variables, and well-known scholars such as Nunnally believe that the value of CR should be greater than the criterion of 0.7. Therefore, this paper combines the experience of previous researchers, and in order to be able to successfully carry out the subsequent testing and analysis, the AVE is not less than 0.5 and the CR is not less than 0.7 as a measure of whether the latent variables designed in the present study have a good degree of convergence. As shown in Table 1, the factor loading of the various measurement topics is greater than 0.7, the CR value of the dimensions is greater than 0.7, and the AVE values are greater than 0.5, indicating that each dimension has good convergent validity.

The test of the discriminant validity of the measurement model can be conducted by applying the Fornell–Larcker criterion, which serves to test the discriminant validity by looking at the magnitude of the square root of the average variance extracted (AVE) and the correlation coefficients of the latent variables; if the square root of the AVE is greater than the correlation coefficients of the latent variables (i.e., the values on the diagonal are greater than the values on the non-diagonal), then it indicates that the latent variables in the measurement model have a good discriminant validity. As shown in Table 2, the square root value of the AVE of each variable is greater than the correlation coefficient between the variables, which indicates that there is discriminant validity between the variables.

Table 2. Distinctive validity test table.

	EA	GBCP	PER	PI	PSR	PUR
EA	0.833					
GBCP	0.372	0.878				
PER	−0.450	−0.591	0.848			
PI	0.440	0.712	−0.456	0.861		
PSR	−0.189	−0.537	0.321	−0.641	0.839	
PUR	−0.293	−0.622	0.380	−0.693	0.484	0.873

From the cross-loading coefficient results show in Table 3, we can find that the factor loadings of the variables of this study with large values fall on the measurement question items of the corresponding latent variables, thus meeting the cross-loading criterion, which further indicates that the variables have differential validity.

Table 3. Table of cross-loading factors.

	EA	GBCP	PER	PI	PSR	PUR
EA11	0.829	0.291	−0.374	0.316	−0.095	−0.208
EA12	0.854	0.292	−0.382	0.345	−0.107	−0.270
EA13	0.835	0.363	−0.383	0.386	−0.166	−0.232
EA14	0.810	0.257	−0.329	0.348	−0.185	−0.225
EA15	0.836	0.334	−0.401	0.420	−0.216	−0.277
GBCP31	0.366	0.890	−0.493	0.641	−0.481	−0.566
GBCP32	0.367	0.891	−0.552	0.653	−0.510	−0.582
GBCP33	0.256	0.843	−0.515	0.599	−0.448	−0.502
GBCP34	0.335	0.909	−0.539	0.650	−0.488	−0.577
GBCP35	0.302	0.853	−0.493	0.575	−0.424	−0.495
PER21	−0.407	−0.504	0.878	−0.393	0.256	0.330
PER22	−0.376	−0.558	0.870	−0.438	0.324	0.367
PER23	−0.382	−0.480	0.834	−0.389	0.295	0.306
PER24	−0.363	−0.454	0.811	−0.317	0.204	0.275
PI21	0.415	0.651	−0.417	0.875	−0.539	−0.616
PI22	0.356	0.582	−0.401	0.847	−0.580	−0.601
PI23	0.363	0.603	−0.359	0.859	−0.536	−0.570
PSR11	−0.169	−0.444	0.280	−0.581	0.881	0.427
PSR12	−0.116	−0.389	0.275	−0.475	0.802	0.376
PSR13	−0.142	−0.455	0.238	−0.518	0.809	0.397
PSR14	−0.200	−0.506	0.285	−0.570	0.862	0.420
PUR21	−0.261	−0.524	0.338	−0.598	0.361	0.869
PUR22	−0.273	−0.573	0.399	−0.622	0.471	0.883
PUR23	−0.233	−0.531	0.253	−0.594	0.432	0.868

In addition to the Fomell–Larcker criterion and the cross-loading approach to testing validity, recent studies have suggested the use of a newer test of discriminant validity proposed by Henseler. Traditional tests have the disadvantage of overestimating factor loadings and underestimating the relationship between variables, resulting in discriminant validity being more likely to pass the test, so Henseler proposed a superior test, the heterogeneity–monomorphism ratio (HTMT), which is the ratio of the means of the correlation of the indicators between different variables relative to the means of the correlation of the indicators between the same variables, and it is generally recommended that the HTMT between two variables be less than 0.85. As shown in Table 4, the values of HTMT between the variables in this study are less than 0.85. Therefore, it is again proved that the present measurement model has good discriminant validity.

Table 4. HTMT table.

	EA	GBCP	PER	PI	PSR	PUR
EA						
GBCP	0.405					
PER	0.510	0.655				
PI	0.508	0.813	0.534			
PSR	0.208	0.598	0.367	0.759		
PUR	0.335	0.701	0.438	0.829	0.565	

4. Findings

4.1. Descriptive Statistical Analysis

Table 5 shows the descriptive statistical results of the research samples of this study. First of all, from the basic information of the sample reflected by the control variables, with 363 valid samples in the gender composition, of which 172 men, accounting for 47.4%, and 191 women, accounting for 52.6%, the proportion of male and female samples is relatively balanced; in the age distribution, the majority is represented by 19–30 year olds, for a total of 163 people, accounting for 44.9%, and 31–40 year olds, for a total of 102 people, accounting for 28.1%. Although most of the samples were selected from young adults, all age groups were involved; in terms of marital status, 196 people were married, accounting for 54%, and 167 people were unmarried, accounting for 46%; in terms of self-assessment of health status, 197 people, accounting for 54.3%, thought that their own health was at a good level, and 166, accounting for 45.7%, thought that their own health was average or poor; in terms of the type of hukou, 137 people, accounting for 37.7%, came from the urban areas, and 137 people, accounting for 37.1%, came from the rural areas; in terms of education level, 280 people, accounting for 77.1%, had high school education or above, and 83 people, accounting for 22.9%, had less than high school education; in the research sample, 60.9% of the people had fitness habits or physical exercise habits, and 71.6% of the people had heard of green building. From the perspective of the overall descriptive statistical distribution of the sample demographic characteristics, the proportionate distribution of the sample data in this study is more reasonable and has a certain degree of data representativeness.

Table 5. Descriptive analysis of basic information.

Name (of a Thing)	Options (as in Computer Software Settings)	N Sample Size	Percentage
Distinguishing between the sexes	male	172	47.4
	female	191	52.6
(A person's) age	16–18	33	9.1
	19–30	163	44.9
	31–40	102	28.1
	41–50	52	14.3
	51–60	13	3.6
Marital status	married	196	54
	Unmarried	167	46
Self-assessed health status	favorable	197	54.3
	Fair or poor	166	45.7
Account type	municipalities	137	37.7
	Countryside	226	62.3
Educational attainment	Bachelor's degree or higher	280	77.1
	Less than high school education	83	22.9
Have a fitness habit or physical activity habit	yes	221	60.9
	no	142	39.1
Ever heard of green building	yes	260	71.6
	no	103	28.4

4.2. Structural Equation Modeling Analysis

4.2.1. Modeling

In this study, the PLS-SEM model was constructed on the basis of previous related studies, and the collected data were examined by the partial least squares method using SmartPLS 4.0 statistical analysis software. The partial least squares method belongs to the multivariate statistical data analysis method, which finds the best function match for a set of data by minimizing the square of the error, and is able to regressively model multiple dependent variables on multiple independent variables, and the test of the structural model includes the estimation of path coefficients and the value of R Square in PLS analysis. The path coefficients reflect the direction and degree of influence between the latent variables. The value of R Square reflects the degree to which the endogenous latent variables can be explained by the exogenous latent variables in the structural model, and also the explanatory power of the model. In the theoretical model constructed in this chapter, in order to verify the model and hypotheses proposed in this study, this study used the visualization Smart PLS 4.0 software to perform data analysis and calculated the significance of the path coefficients in the constructed model using the Bootstrapping = 5000 sampling method.

PLS-SEM, as a kind of structural equation modeling, has more relaxed requirements for data and higher practicality, and has a greater advantage in addressing complex causal relationships. In general, PLS-SEM can address general linear structural relationships as well as reactive and formative relational models, and in the face of interfering data and missing values, it can also carry out the interpretation of model relationships that provide better predictions. In this study, a model was constructed to test the hypotheses in accordance with the research hypotheses, and the specific model setup is shown in Figure 3.

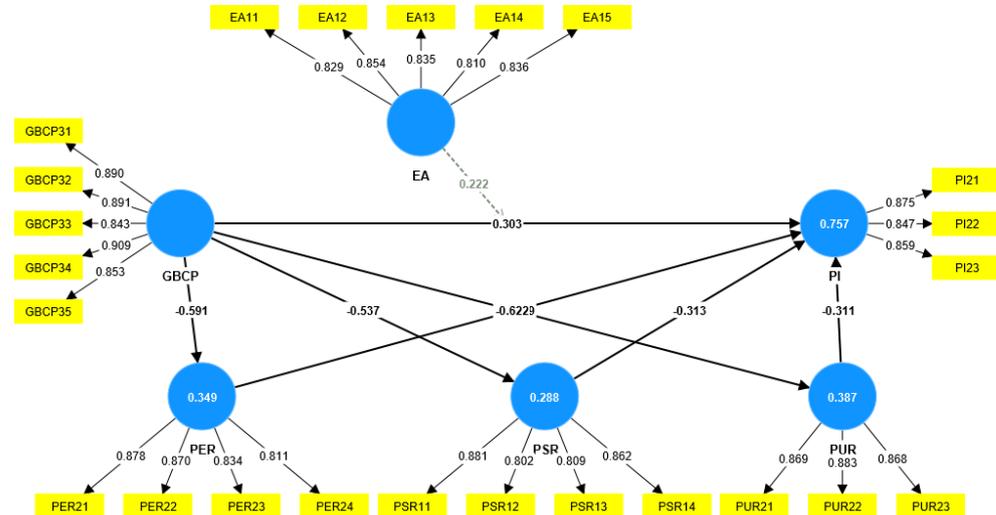


Figure 3. Model setup diagram.

4.2.2. Multicollinearity Test

Higher multicollinearity increases the parameter estimates and reduces the accuracy of the proposed model. To determine whether this indicator meets the requirements of the study, the variance inflation factor (VIF) is usually used for testing. As shown in Table 6, the variance inflation factor values of the variables designed in this study are less than 5, indicating that there is no serious multicollinearity among the variables.

Table 6. Multiple covariance test table.

	PER	PI	PSR	PUR
EA		1.328		
GBCP	1	2.386	1	1
PER		1.712		
PI				
PSR		1.486		
PUR		1.734		
EA × GBCP		1.085		

4.2.3. Model Evaluation

In order to visualize the fitness of the proposed model, SmartPLS 4.0 provides R Square, Q Square, and SRMR as reference indicators. Among them, R Square represents the proportion of variation in the dependent variable that can be explained by the independent variable, Q Square is to predict the correlation between the explicit variables, and SRMR is an important indicator of model fitness. In this study, Bootstrapping sampling 5000 times and the Blindfolding algorithm were used to derive the correlation evaluation indices of the structural model, and the results of the data analysis showed the following: the R Square of each variable in this study was in the range of 0.288–0.757, which indicated that the variables had a better explanatory power; the Q Square was in the range of 0.2–0.542, all exceeding the 0 limit level; the SRMR value is 0.048, which is lower than the limiting level of 0.08. The results of the above analysis indicate that the proposed model in this study has good explanatory power and predictive power (as shown in Table 7).

Table 7. Structural model evaluation form.

	R-Square	Q-Square	SRMR
PER	0.349	0.247	
PI	0.757	0.542	0.048
PSR	0.288	0.200	
PUR	0.387	0.291	

4.3. Hypothesis Testing

4.3.1. Overall Path Factor

According to the results of data analysis in Table 8, the hypotheses H1, H2, H3, H4, and H5 are valid in the preliminary stage of this study. Specific exhaustive path analysis and hypothesis testing results are as follows:

H1: *There is a significant positive effect of green building consumption perception on consumers' willingness to purchase fitness services in commercial health clubs ($\beta = 0.591$, $p < 0.05$), and the hypothesis is valid.*

H2: *Perceived economic risk does not have a significant negative effect on consumers' willingness to purchase commercial health club fitness services ($\beta = -0.009$, $p > 0.05$), and the path is not valid; perceived security risk has a significant negative effect on consumers' willingness to purchase commercial health club fitness services ($\beta = -0.313$, $p < 0.05$); perceived utility risk has a significant negative effect on consumers' commercial health club fitness service purchase intention ($\beta = -0.311$, $p < 0.05$), which has a significant negative effect, and the hypothesis is valid.*

H3: *Green building consumption perception has a significant negative effect on consumer perceived economic risk ($\beta = -0.591$, $p < 0.05$), and the hypothesis is valid; green building consumption perception has a significant negative effect on consumer perceived safety risk ($\beta = -0.537$, $p < 0.05$), and the hypothesis is valid; and green building consumption perception has a significant negative effect on consumer perceived utility risk ($\beta = -0.311$, $p < 0.05$), which has a significant negative effect, and the hypothesis is valid.*

Table 8. Table of path coefficients.

Path	β	STDEV	T	<i>p</i> Values
GBCP -> PER	−0.591	0.042	14.132	0.000
GBCP -> PI	0.303	0.052	5.811	0.000
GBCP -> PSR	−0.537	0.046	11.597	0.000
GBCP -> PUR	−0.622	0.037	16.969	0.000
PER -> PI	−0.009	0.033	0.281	0.778
PSR -> PI	−0.313	0.024	12.816	0.000
PUR -> PI	−0.311	0.026	12.141	0.000
EA -> PI	0.236	0.042	5.637	0.000

4.3.2. Tests for Mediating Effects

In this study, in order to prove the mediating effect, the Bootstrap mediation effect test is used to test whether the mediation effect is significant, and the number of repetitive samples is 5000 times to test the mediation effect results. As shown in Table 9, (1) the point estimate of the total effect in this study is positive, and the absolute value of the T-statistic is greater than 1.96 while the confidence interval does not include 0, indicating the existence of the total effect of the latent variable. (2) The indirect effect of perceived security risk in this study is 0.168, $p < 0.05$, and the corresponding confidence interval does not include 0, indicating a significant mediation effect; the indirect effect of perceived utility risk is 0.193, $p < 0.05$, and the corresponding confidence interval does not include 0, indicating a significant mediation effect; the indirect effect of perceived economic risk is 0.006, $p > 0.05$ and the corresponding confidence interval includes 0, indicating that the mediation effect is not significant. (3) The point estimate of the direct effect in this study is positive, the absolute value of the t-statistic is more than 1.96, and the confidence interval does not include 0, indicating the existence of direct effects of latent variables.

It can be concluded that H4: Perceived safety risk and perceived utility risk, have a mediating role between consumers' commercial fitness club green building consumption perceptions and fitness service purchase intentions, and the hypothesis is valid. Meanwhile, the perceived economic risk does not have a mediating role between consumers' green building consumption perceptions and fitness service purchase intentions.

Table 9. Intermediation test table.

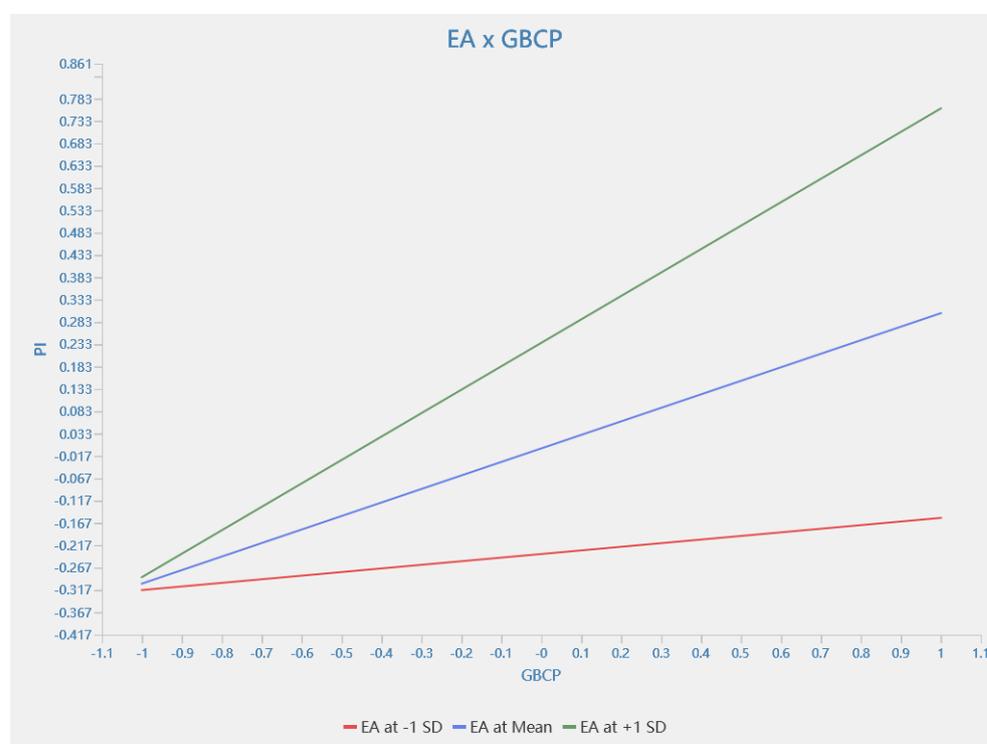
Path	Effect	STDEV	T	P	2.5%	97.5%
aggregate effect						
GBCP -> PI	0.670	0.048	13.876	0.000	0.565	0.753
indirect effect						
GBCP -> PSR -> PI	0.168	0.019	8.956	0.000	0.131	0.206
GBCP -> PUR -> PI	0.193	0.018	10.969	0.000	0.158	0.227
GBCP -> PER -> PI	0.006	0.020	0.279	0.780	−0.031	0.047
direct effect						
GBCP -> PI	0.303	0.052	5.811	0.000	0.191	0.395

4.3.3. Moderating Effects Test

As can be seen from Table 10, environmental awareness has a significant positive effect between consumers' perception of green building consumption in commercial fitness clubs and their willingness to purchase fitness services ($\beta = 0.222$, $p < 0.05$), i.e., environmental awareness has a positive moderating effect, and the hypothesis is valid. And it can be seen from Figure 4 that the moderating effect is increasing as the environmental awareness becomes greater.

Table 10. Reconciliation effect test table.

Path	β	STDEV	T	p Values
EA × GBCP → PI	0.222	0.040	5.611	0.000

**Figure 4.** Diagram of moderating effects.

5. Discussion and Analysis

Before analyzing the specifics, let us first discuss a real-life practical example: the Marina Bay Sands Hotel, one of Singapore's landmarks. Not only has its unique design style aroused extensive curiosity among a large number of consumers, it has also attracted a large number of consumers to participate in experiential consumption due to its green architectural design. On the one hand, a sense of environmental responsibility has prompted some consumers to choose to stay in "environmentally friendly" hotels, and green building hotels reduce environmental pollution to a certain extent, which is in line with the consumers' environmental values. On the other hand, out of social identity considerations, some consumers believe that participation in green building hotel consumption has the important function of showing their social identity. In order to show their environmental responsibility to their friends or others, and to emphasize their sense of environmental responsibility, they are eager to participate in green building consumption.

5.1. Positive Contribution of Green Building Consumption Perceptions on Consumers' Willingness to Purchase Fitness Services in Commercial Health Clubs

Green building is central to the sustainable evolution of the construction industry, marking its anticipated trajectory. For sports and fitness facilities, embracing green building principles offers multifaceted benefits throughout their life cycle. These include resource conservation, environmental protection, pollution reduction, and delivering a healthful, efficient space for users. Such an approach accentuates the harmonious coexistence of humans with nature. The choice of green building design for fitness clubs can largely influence consumers' willingness to buy fitness services. Based on the combination of previous research, this paper divides the influence of green building consumption perception on fitness service purchase willingness into three aspects. First, green building consumption

social value perception. On the one hand, due to the influence of symbolic stimuli, consumers learn about the performance, attributes, quality, and other information related to green building fitness venues through a variety of media, such as the government's green evaluation, etc., which affects fitness users' willingness to purchase fitness services. On the other hand, people will be affected by external stimuli when choosing green building fitness clubs to participate in fitness services, such as family recommendations, friends' evaluations, and social calls. Second, green building consumer environmental value perception. For consumers who are deeply influenced by environmentalism, the concept of green consumption has been deeply integrated into their minds and influences their consumption methods, so when they choose fitness services, they will naturally choose fitness venues that embody their green philosophy. Thirdly, green building consumption function value perception. Consumers who often exercise will pay attention to the professionalism, quality, and comfort of the services provided by the fitness clubs, and the green building fitness clubs happen to provide a satisfactory place for them. Consumers will only generate green consumption intention if they feel enough value can be retrieved from green buildings. A high green building consumption perception of consumers around the concept of sustainable development relates to the hopes of the consumer that certain places can provide a comfortable and healthy fitness environment on the basis of the use of green technology, minimize the damage to the surrounding environment, and further highlight the concept of health, so as to meet the needs of consumers, and thus affect the consumer's willingness to buy.

5.2. The Mediating Role of Perceived Risk between Consumers' Green Building Consumption Perceptions and Fitness Service Purchase Intentions in Commercial Health Clubs

The level of perceived risk is an important psychological assessment criterion for consumers in deciding whether to execute the purchase. Before analyzing the specific impact of the various dimensions of perceived risk, we will first discuss the impact of "brand marketing", which is the largest element of consumer-perceived risk. Here, we say "brand" to refer to the consumer of green building fitness clubs as a consumer object of the overall cognitive process and the processing of relevant information, and at the same time, the brand effect is also accompanied by the gradual occurrence of the brand cognitive process. Regarding green buildings, this can be considered a "marketing gimmick"; even if the perceived risk is high, for consumers in the process of making purchasing decisions, it is often difficult to be in a state of absolute rationality, and coupled with the brand effect of the depth of the impact of the consumer, it is difficult not to be "flocked" to participate in the consumption. Before making a purchase decision related to green building consumption, consumers can rely on their own high degree of consumer perception to identify whether a green building fitness club brand is "real material", or whether the health advantages are exaggerated to cover up the real disadvantages of a series of marketing scams. This "skepticism" enables consumers with a high degree of green building consumer perception to avoid the influence of brand concepts in a rational manner, gradually reducing the perceived risk, and then participating in the experience of consumption.

And from the dimensions of perceived risk, perceived security risk is significantly influenced by the integration of green principles into health club services. The association with a "green label" conveys notions of environmental responsibility, cleanliness, and health. This reduces the consumers' perceived risks, fostering greater trust and subsequently bolstering their purchasing intentions. As consumers gather information about green fitness facilities, they develop a perception of these establishments as both environmentally friendly and safe. This eco-conscious and safety-oriented image substantially diminishes the perceived security risks. Furthermore, the perception of green fitness clubs as safer and more dependable elicits positive emotional responses in the consumers. This heightened sense of security and environmental responsibility enhances the emotional value consumers associate with these establishments.

Perceived utility risk refers to the fact that, when consumers make consumption choices, they prejudge the functional value of the product in advance and compare it with the expectations in their minds, and the level of expected risk affects the consumption decision. In the perceived utility risk, consumers pursue the maximization of benefits, and purchase products not only to pursue the use value, but also to pursue the maximization of emotional value and social value. When consumers make fitness service choices, traditional fitness venues are dominated by use efficiency, and provide little benefit to consumers in terms of emotional and social value, so the perceived risk borne by consumers in terms of social value is higher. When consumers choose green building fitness clubs for consumption services, they not only satisfy the interests of consumers, but also contribute to environmental protection. One of the purposes of green consumption for customers is to show their own environmental attitude, so as to obtain social acceptance and improve the opinions of others of themselves, thus enhancing their social value, so the functional characteristics of green building fitness clubs reduce the perceived risk of consumers in the emotional and social utility, which in turn affects the willingness to buy.

In terms of perceived economic risk, on the one hand, the purchase price of green building health clubs in the current market is relatively high, which makes it difficult for some consumers to accept them. Although the maintenance costs of green building health clubs are lower than those of ordinary clubs, operators will still invest a large amount of money in green upgrading of health clubs, and the costs borne by consumers who choose the services of green building health clubs will be correspondingly higher. On the other hand, although the government has introduced tax incentives to encourage producers and consumers to choose green venues, consumers still have a wait-and-see attitude in the face of new things, and do not dare to take the risk to bear the economic risks of new fitness venues. For consumers, price is still an important influence on whether or not to choose green building health clubs for fitness exercise.

5.3. The Moderating Role of Environmental Awareness between Consumers' Perceptions of Green Building Consumption and Fitness Service Purchase Intentions in Commercial Fitness Clubs

Environmental awareness reflects the degree of individual awareness of the environmental situation, which in practice represents the participation of people in environmental protection activities, the adjustments of their economic activities and social behavior, regulating the relationship between man and nature consciously. For consumers, the stronger the environmental awareness, the more they can feel the harm caused by environmental damage, and the more they are willing to adhere to the concept of green consumption in all aspects of life, and therefore will be more willing to choose green building fitness clubs in the consumption of fitness services, and further encourage friends and family members to choose green building fitness clubs. In addition, if consumers perceive the outstanding value of green buildings on the basis of their environmental awareness also being strong, in the fitness service consumption choice, they are more likely to experience the benefits of green building fitness places, but also more willing to buy green building fitness club fitness services. If consumers' environmental awareness is weak, they are more likely to ignore the green features of green buildings, and their willingness to purchase green building fitness services will be reduced.

6. Concluding Remarks

This study statistically analyzes the screened 363 samples through questionnaires, uses the IAD extension model to analyze the influence effect between green building consumption perception on consumers' willingness to purchase fitness services for commercial health clubs based on perceived risk theory and other related theories, and further explores the role that perceived risk and environmental awareness play in it on this basis. The following conclusions are drawn: (1) Green building consumption perception has a positive promotion effect on the purchase intention of commercial health club fitness services. (2) Perceived risk mediates the relationship between green building consumption

perceptions and commercial health club fitness service purchase intentions. (3) Environmental awareness plays a positive moderating role between green building consumption perception and commercial health club fitness service purchase intention.

Green building integration within commercial health clubs offers distinct advantages for fitness enthusiasts. Primarily, green structures prioritize internal conditions such as lighting, humidity, and temperature more than conventional edifices. For instance, the incorporation of green roofs reduces the reliance on air conditioning, fostering a more organic and agreeable exercise ambiance. Furthermore, numerous sociological and anthropological investigations have elucidated the psychological rewards of pro-social behavior, encompassing feelings of gratification and well-being. Pro-social actions align with societal expectations and benefit individuals, groups, and the broader community. Engaging in green building consumption can be viewed as an eco-friendly act and a nod to societal environmental advocacies, classifying it as pro-social behavior. Such engagement not only carries profound “significance” but also addresses the public’s self-actualization aspirations.

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