INSTITUTO
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# An Extended TPB Model of Consumers' Green Furniture Purchase Intention and Purchase Behavior: The Roles of Green Perceived Value, Income, Environmental Awareness, and Willingness to Pay

LU Yun

Doctor of Management

Supervisors:
PhD Ana Brochado, Assistant Professor,
ISCTE University Institute of Lisbon
PhD Chai Junwu, Professor,
University of Electronic Science and Technology of China

May, 2023

BUSINESS
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Marketing, Operations and General Management Department

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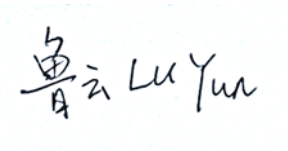
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LU Yun

**Declaration**

I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

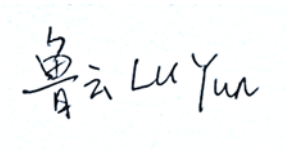


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# Abstract

Based on the consumption characteristics of Suzhou furniture market and an extended TPB model, this paper studies the influencing factors of consumers' green furniture purchase intention and purchase behavior, and empirically analyzes the impact of various factors. The following conclusions are drawn from the descriptive analysis of questionnaire sample data and the empirical analyses, including reliability and validity analysis of measurement scale and hypothesis test of the structural equation model: subjective norms, green perceived value, environmental awareness and willingness to pay all significantly affect consumers' green furniture purchase intention; perceived behavior control and purchase intention both significantly influence green purchase behavior; the willingness to pay plays a mediating role between environmental awareness and consumers' green purchase intention while income moderates the relationship between consumers' environmental awareness and their green purchase intention.

**Keywords:** green furniture, purchase intention, purchase behavior, TPB, SEM
**JEL:** M10, M12

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# Resumo

Com base nas características de consumo do mercado de móveis Suzhou e em um modelo de TPB estendido, este trabalho estuda os fatores influenciadores da intenção de compra e comportamento de compra de móveis verdes dos consumidores e analisa empiricamente o impacto de vários fatores. As seguintes conclusões são retiradas da análise descritiva dos dados amostrais do questionário e das análises empíricas, incluindo análise de confiabilidade e validade da escala de medida e teste de hipóteses do modelo de equações estruturais: normas subjetivas, valor percebido verde, a consciência ambiental e a vontade de pagar afetam significativamente a intenção de compra de móveis verdes dos consumidores; o controle do comportamento percebido e a intenção de compra influenciam significativamente o comportamento de compra verde; a vontade de pagar desempenha um papel mediador entre a conscientização ambiental e a intenção de compra verde dos consumidores, enquanto a renda modera a relação entre a conscientização ambiental dos consumidores e sua intenção de compra verde.

**Palavras-chave:** mobiliário de proteção ambiental, intenção de compra, comportamento de compra, teoria do comportamento do plano TPB, modelo de equações estruturais
**JEL:** M10, M12

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# 摘要

本篇文章主要是基于中国苏州家具市场消费特征，对原始 TPB 模型进行了拓展，旨在研究环保家具购买意向和购买行为的影响因素，实证分析各因素的影响程度。在问卷样本数据描述性分析，以及测量量表的信度和效度分析和结构方程模型的假设检验等实证分析下，得出结论：主观规范、绿色感知价值、环保意识、支付意愿显著影响消费者的环保家具购买意向；感知行为控制、购买意向显著影响购买行为；支付意愿在环保意识与消费者环保家具购买意向之间的关系中起到了中介作用，收入调节了消费者的环保意识和环保家具购买意向之间的关系。

**关键词：**环保家具，购买意愿，购买行为，TPB 计划行为理论，结构方程模型

**JEL:** M10, M12

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本篇论文是在导师 Ana Brochado 的悉心指导下完成的，从论文的选题、问卷设计、数据分析到论文的撰写,都离不开 Ana 教授的支持、指导、帮助。Ana 教授理论基础扎实，软件分析技术熟练，治学态度严谨，在本次博士论文撰写中使我受益匪浅，Ana 教授乐观、独特的人格魅力也深深影响着我,在今后的人生道路上,我将始终谨记恩师的谆谆教诲。在此,向导师致以最诚挚的敬意！

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# Chapter 1: Introduction

## 1.1 Research background

This chapter introduces the research background, including social background, industry background and theoretical background, identifies the research problem, puts forward the research aim and research questions, discusses the research significance, and presents the thesis structure.

### 1.1.1 Social and political background

Sustainability efforts are gaining unprecedented momentum in the 21st century as environmental challenges become increasingly pressing. Environmental problems manifested in such forms as global warming, reducing energy resources, as well as air and water pollution can potentially alter the human course of life on the earth (Lorey, 2002). Accordingly, the whole world is making efforts towards green economy and sustainable development (Pearce & Barbier, 2000). The outbreak of the 2008 financial crisis made the sustainable agenda even more important. In this context, the concept of "green economy", first coined in Blueprint for a Green Economy (Pearce et al., 1989), gained renewed importance. The United Nations Environment Programme (2010) (UNEP) defined the green economy as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". Following this, the United Nations Development Programme (UNDP) adopted an ecosystem approach to deal with environmental challenges, and one of the programs is the export and re-export of green products and technologies (Terdiman, 2012). Besides, the UN chief also reiterated at a conference on China's Belt and Road Initiative that "the green economy is the future" (UN News, 2019, April 27).

The global green economy wave is also gaining strong momentum in China backed up by strong policy support. In fact, China has been the world's largest $CO_2$ emitter. As shown in Figure 1.1, survey statistics show that by 2020, China's fossil fuel $CO_2$ emissions had accounted for 30.64% of the world's total $CO_2$ emissions (Statista, 2021). Undoubtedly, China's is under huge pressure to reduce emissions. In response to this situation, China's President Xi Jinping first put forward China's aim to reach CO2 peak emissions before 2030 and achieve carbon

neutrality before 2060 at the General Debate of the 75th Session of The United Nations General Assembly (Xinhua News Agency, 2020, September 23), which were known as "dual-carbon" goals. A year later, the Chinese government released the two most important policy documents for the "1+N" policy system for CO2 peaking and carbon neutrality, namely Opinions of the Central Committee of the Communist Party of China and the State Council on the Complete, Accurate and Comprehensive Implementation of the New Development Concept to Do a Good Job in Carbon Peak and Carbon Neutrality (Xinhua News Agency, 2021, October 24) and the Action Plan For Carbon Dioxide Peaking Before 2030 (Department of Resource Conservation and Environmental Protection, 2021, October 27). Guided by the "dual-carbon" goals policy, decarbonization has become a common goal of all industries, including the furniture industry. One of the important approaches to decarbonization is to advance green technology innovation as well as the R&D and application of low-carbon and green products and equipment (LYW ON, 2021, April 13). China's home decoration industry, which had reached a market size of 3.54 trillion yuan by 2021 (Stepin, April 30, 2021), will inevitably shoulder a significant responsibility in this green transition, which is bound to drive the development of green furniture.

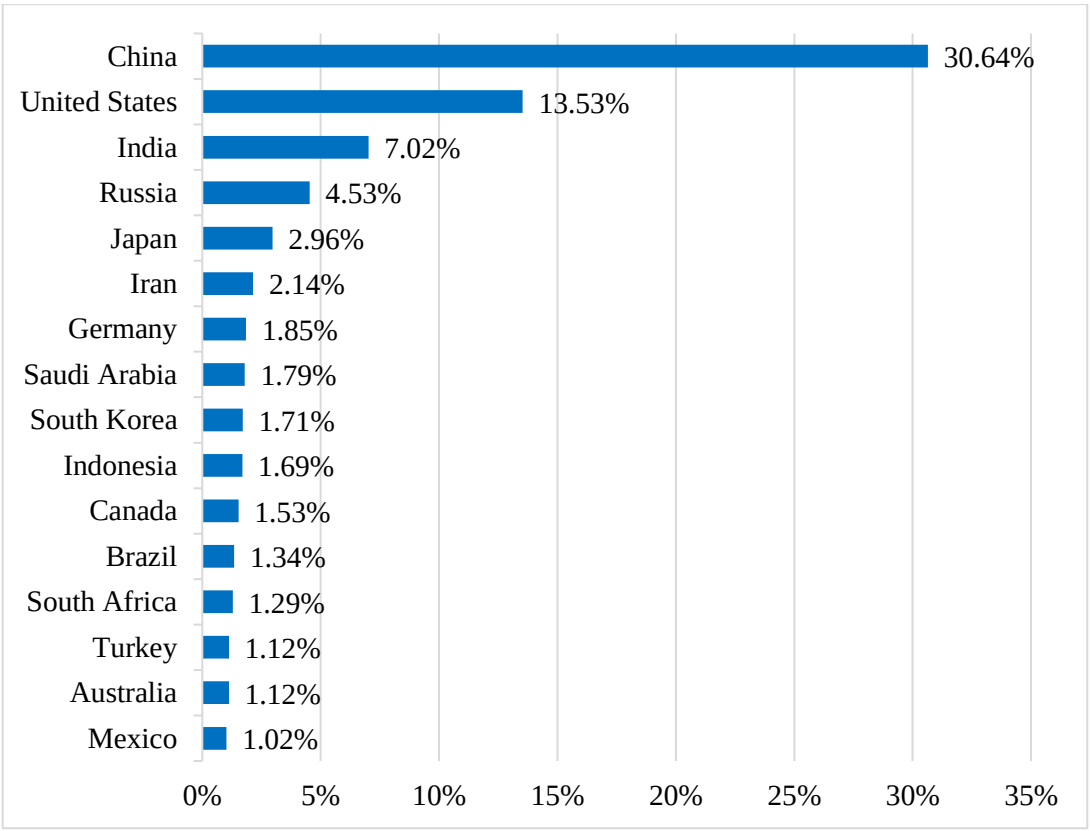



Figure 1.1 The relationship between career identity, burnout, and turnover intention of Chinese midwives

In addition to the sustainability and policy perspectives, another factor driving green furniture consumption has to do with people's increasing environmental and health awareness. Nowadays, people are increasingly concerned about the consequences of their actions on the environment, which to some extent influences their purchase decisions (Brochado et al., 2017). From the health perspective, indoor air quality is very important as nearly 90% of most people's time is spent indoors, mainly at home or in the workplace (Leech et al., 2002). Cases about indoor formaldehyde pollution and furniture pollution were reported (Gu, 2008). The Indoor Environment Testing Centre of China National Interior Decoration Association pointed out that indoor air pollution caused by furniture had become the third largest source of pollution following construction pollution and decoration pollution (Dai, 2008). The WHO Household Air Pollution and Health (2021, September 22) claimed that an annual death toll of 3.8 million is3ummarizeable to indoor air pollution. The U.S. Environmental Protection Agency identified all the top five air quality problems in its country to be indoor air problems caused by such indoor pollutants as volatile organic compounds (VOCs), dust particles, combustion products, bacteria, pesticides, excessive moisture, radon and viruses (SmarterHouse, 2022). As more and more people have started to attach importance to indoor air quality, the popularity of green furniture has been increasing in the furniture market. Survey statistics from the White Paper on the Green and Environmental Competitiveness of China's Home Furnishings Industry (Red Star Macalline Group Corporation Limited & China Quality Certification Centre, 2018) indicated that 97.96% of consumers in China will take environmental protection into consideration when purchasing furniture items.

The demand for green furniture driven by whether environmental or 3 ummarh considerations has prompted governments and organizations to introduce relevant certifications and standards. Representative existing eco-labels on green furniture in the world include Ecolabel by the European Union, the Blue Angel ecolabel of the German Federal Government, the Good Environmental Choice ecolabel run by Good Environmental Choice Australia (GECA) and the Canadian EcoLogo. In response to a mixture of ecolabels confusing consumers (China Network, 2012, September 7), China Environmental Labelling Programme (CELP), which was launched by China's Ministry of Ecology and Environment in 1993, set standards for green furniture based on the ISO14204 standards and the Nordic Swan Ecolabel and started to award green label to qualified green furniture products. At present, the ecolabel awarded by CELP, covering environmental system and environmental friendliness of products, is the highest and most widely recognized ecolabel in China (Furniture Today, 2020, December 17).

Consumers' increasing green awareness and increasing importance attached by the government have contributed to an increasing need for green furniture. In response, furniture companies are shifting their focus from conventional products to green products (Grand View Research, 2020). Such a shift requires a transformation of the whole product lifecycle, from design to materials selection, manufacturing, packaging, certification, marketing, utilization and recycling (Xiong et al., 2020). Undoubtably, to achieve relevant eco-standards, green furniture costs higher than non-green furniture. For example, the price of furniture with no formaldehyde is around 20% higher than that of ordinary furniture (NetEaseHome, 2012). This makes green furniture less competitive in terms of price. To boost sales, furniture companies have been adopting green marketing strategies that underline the health implications (Van Dam & Apeldoorn, 1996), yet the effect is not satisfactory. Though the public seem willing to purchase green furniture, willingness to buy does not necessarily translate into buying behavior. Therefore, it is of utmost importance for furniture companies to understand the determinants of consumers' green furniture purchase intention and Purchase behavior to take targeted measures to increase green furniture sales. A higher sales rate can in turn motivate companies to innovate and develop green technologies. Moreover, the government might increase regulation and policy support, thereby forming a virtuous green furniture ecosystem.

### 1.1.2 Industry background

Chinese furniture has a long history and profound culture and is an important part of the Chinese culture. Chinese furniture takes a wide range of forms, but mainly consists of tables, chairs, beds and benches. The history of the development of Chinese furniture also reflects the process of change in the Chinese society and culture as well as Chinese people's lifestyles.

During the Wei and Jin dynasties, Chinese furniture was mostly of a low shape, as people back then preferred to sit on the floor and were more accustomed to using low furniture (Zhihu.com, 2021).

By the Shang, Zhou, Qin and Han dynasties, the habit of sitting on the floor had hardly changed, but furniture such as screens, couches and side tables as well as desks and stools were derived, but they were not the mainstream furniture of society at that time (Zhihu.com, 2021).

During the Northern and Southern dynasties, people's habits changed considerably, and sitting on the floor gradually evolved into sitting on a chair with feet drooping naturally, resulting in the emergence of many tall pieces of furniture. Nevertheless, many people had kept

the habit of sitting on the floor. As a result, low furniture and tall furniture co-existed in society, and this custom continued all the way into the Tang dynasty (Zhihu.com, 2021).

Entering the Song dynasty, people's lifestyles changed further. In particular, after the Song dynasty, the urban economy developed very fast and people's living standards improved significantly. Many nobles lived a very extravagant lifestyle and began to build gardens and palaces. The improvement in the quality of housing also led to a direct upgrading of furniture, launching Chinese furniture into a period of rapid development. The Song dynasty saw the development of various furniture types as well as the increase and improvement of the functions of furniture. The traditional beds, tables, benches, chairs and couches were becoming more and more varied and functional. Besides, specialised bespoke furniture, functional furniture such as zither tables and chess tables, also came into being. Besides, people were more attentive to the decoration of their furniture and the decoration craftsmanship also improved. Sitting on the chair with feet drooping naturally replaced sitting on the floor to become the new social custom (Zhihu.com, 2021).

By the Ming dynasty, the crafting of furniture had become more refined, and special organisations for the design and manufacture of furniture had emerged. There were also more and more books of all kinds on furniture design and manufacture. These developments not only enabled the design and production of furniture to ascend to a higher level, but also enriched the theoretical basis of furniture culture (Zhihu.com, 2021).

Entering the Qing dynasty, the style of furniture became brighter, with luxury and comfort being the labels of Qing furniture. By the Republican of China period, the advantages of European and American furniture in terms of appearances, design and functions were drawn upon and the furniture in China formed a unique Republic of China style (Zhihu.com, 2021).

Since the modern era, Chinese furniture has become more modern. In addition to the traditional Chinese style, there are various other styles, such as minimalist style, American style, Mediterranean style, French style and modern style. Besides, a variety of different aesthetics also play different roles in promoting the contemporary Chinese furniture industry to upgrade in design, function, practicality and aesthetics.

According to China's National Bureau of Statistics, China's furniture industry mainly went through two stages of development before 2018. The first stage was the stage of high-speed development from 2001 to 2010, where the volume of production was on steady rise. In fact, back in 2006, the output value of China's furniture industry already ranked the first worldwide. The second stage was the industry adjustment stage from 2011 to 2018, during which China's furniture industry was faced with various challenges caused by gradual market saturation,

impact from import and export and the successive introduction of environmental protection policies (L. H. Zhu, 2019). Since 2018, the industry has been growing thanks to steady development of China's national economy. It is expected that the demand for Chinese furniture will reach 415 million pieces in 2022, and that number is expected to grow to 524 million in 2027 (Shi, 2022). Undoubtedly, China's furniture industry is both an important and a promising industry.

Given its utmost importance for the national economy and people's livelihood, the furniture industry must be guided towards green and sustainable development to serve China's "dual carbon" goals. China's national policies on the home furnishing industry has roughly gone through three stages. The first stage lasted from the "Eighth Five-Year Plan" period to the "Eleventh Five-Year Plan" period (1991-2010) when the State started to advocate the use of new building materials as well as green decoration materials to reduce environmental pollution; the second stage spanned the "Twelfth Five-Year Plan" period (2011-2015) when the State increased its environmental protection effort by strengthening pollutants treatment and restricting the use of polluting decoration materials; and the third stage spans from the "Thirteenth Five-Year Plan" period (2016) to the present. Particularly, it is stipulated in the "Outline of the 14$^{th}$ Five-Year Plan (2021-2025) for National Economic and Social Development and Vision 2035 of the People's Republic of China" that efforts should be made to popularize green building materials, prefabricated buildings and steel structure housing to achieve low-carbon development (Intelligence Research Group, 2022).

In this context, studying the factors influencing consumers' green furniture purchase intention and purchase behavior is highly relevant for facilitating the green development of the industry as it is an approach to guide the supply by knowing and driving the demand.

### 1.1.3 Theoretical background

In response to the emergence of "green economy" (Pearce et al., 1989), the concept of "green design" (design for environment or life cycle design) was introduced in the 1990s and quickly caught the attention of researchers. Specifically, green design refers to practices aimed at producing products with as small aggregate environmental impact as possible (Z. F. Liu & Liu, 1999). It is aimed at resource conservation, increased energy efficiency and environmental protection (Glantschnig, 1994). The result of green design are green products. Since the 1990s, there have been continuous studies on green design and green products. The early studies on green design mainly focus on the relevant policies (Choe & Fraser, 2001; Eichner & Runkel,

2005; Fullerton & Wu, 1998), green design challenges (Glantschnig, 1994) and green design strategies (Agrawal & Ülkü, 2013; Y. Liu et al., 2018; Rivera-Camino, 2007). The early studies on green products mainly focus on green product definition (Dangelico & Pontrandolfo, 2010; Durif et al., 2010; Sdrolia & Zarotiadis, 2019) and green product innovation (Dangelico, 2016; Dangelico & Pujari, 2010; R. J. Lin et al., 2013; Noci & Verganti, 1999). As green design became widely implemented and green products became available across industries, researchers' attention started to shift to the economic aspect of green design, especially to consumers, with a strong focus on consumers' behavioral intention.

After all, a product is designed and manufactured to be sold, and green products are no exception. Since the beginning of this century, scholars have made ceaseless efforts to explore the antecedents or determinants or predictors of consumers' green purchase intention (GPI) and green Purchase behavior (GPB) (Moslehpour et al., 2021).

Existing literature shows a consensus among scholars that environmental awareness, which may be referred to as environmental consciousness (Kumar et al., 2021), environmental concern (Al-Kumaim et al., 2021; Chaudhary, 2018; Chaudhary & Bisai, 2018; Koenig-Lewis et al., 2014; Nekmahmud & Fekete-Farkas, 2020), concern for environment (Kumar, 2021), or environmental drive (Chauhan et al., 2021), is positively related to GPI and GPB. In other words, a higher level of environmental awareness translates into a stronger intention to purchase green products (M. F. Chen & Tung, 2014; S. Lee, 2011; Paul et al., 2016; Prakash & Pathak, 2017; X. P. Xu et al., 2020b; D. Zhang, 2022) and has positive influence on actual Purchase behavior (S. Lee, 2011; Naz et al., 2020). The role of environmental awareness is also supported by Wijekoon and Sabri (2021), who reviewed 108 studies on GPI and GPB published from 2015 and 2021 and identified a total of 212 variables that affect GPI and 135 determinants of GPB. The authors found that major positive drivers of both GPI and GPB are environmental knowledge, environmental concerns, perceived consumer effectiveness and awareness.

Another recognized determinant of GPI and GPB is the willingness to pay (WTP), which refers to consumers' willingness to pay a price premium. Price has been proven to be an important factor influencing purchase intention (Chu & Lu, 2007; Giovanis et al., 2013; Kumar & Mohan, 2021). Consumers normally prefer lower priced goods given the same functions (Niedermeier et al., 2021). As mentioned before, green products generally entail a higher price than non-green products due to the eco-friendly materials and green technologies used. This makes WTP an important factor affecting their GPI.

Existing studies generally indicate that WTP is positively linked to GPI for eco-friendly products in general (Biswas & Roy, 2016; Dangelico et al., 2021; Khoiriyah & Toro, 2013,

2018; Naz et al., 2020; Yadav & Pathak, 2017), and with regard to eco-friendly apparels (Kumar et al., 2021), green energy facilities (Chau et al., 2010), eco-friendly packaged products (Prakash & Pathak, 2017), organic food (Katt & Meixner, 2020), and environmentally-certified products (Husted et al., 2014).

Although both environmental awareness and WTP are proven to be determinants of GPI, existing literature suggests that WTP is predominantly influenced by environmental awareness, suggesting that WTP might be a sequential mediator of the relationship between environmental awareness and GPI. For example, Vlosky et al. (1999) noted an association between environmental awareness and consumers' willingness to pay a premium for environmentally certified wood products. Some scholars studied the renewable energy sector and found that environmental awareness is positively associated with WTP (Bang et al., 2000; Hansla et al., 2008). S. Lee (2011) observed a stronger green apparel WTP among college student with greater environmental awareness; Chinese consumers' willingness to pay for seafood with an eco-label is found to be positively related to their environmental awareness (P. Xu et al., 2012). The empirical study conducted by Khoiriyah and Toro (2013) showed that environmental awareness is significantly and positively related to WTP, which will drive GPI, their follow-up study give years later also pointed to the possible mediating role of WTP between environmental awareness and GPI (Khoiriyah & Toro, 2018). However, despite the linkages between the three variables, namely environmental awareness, WTP and GPI, there has been no study explicitly exploring the possible mediating role of WTP between the other two variables.

Existing literature also identifies perceived value to be a positive predictor of consumers' purchase intention and Purchase behavior (Chang & Dibb, 2012; Chi et al., 2011). For example, the additional construct of perceived value in an extended TPB model turned out to increase the power of the model in predicting GPI and GPB (Yadav & Pathak, 2017). Specific to the field of green product purchase, the concept of green perceived value was put forward and believed to better capture the perceived value of a green product or service (Y. S. Chen, 2013). Y. S. Chen and Chang (2012) identified a positive link between green perceived value and GPI, which was validated gain in another study conducted by Y. S. Chen (2013). Evidence from research on a variety of green products across countries also indicated the same association (Chaudhary, 2018; Chaudhary & Bisai, 2018; L. Chen et al., 2021; Y. S. Chen & Chang, 2012; Colombage & Galahitiyawe, 2020; De Medeiros et al., 2016; Lim et al., 2014; Sandi et al., 2021), and the same is true with eco-friendly durable goods (L. Chen et al., 2012; Koller et al., 2011).

Socio-demographic variables are often considered in empirical studies to be related to GPI and GPB as they play a considerable role in decision making (Wijekoon & Sabri, 2021). The most frequently considered variables include gender, age, education level and income (Wijekoon & Sabri, 2021) and occasionally whether there are children in the household (X. J. Li & Teng, 2014). Some studies considered the influence of socio-demographic variables insignificant (Akehurst et al., 2012; Ansar, 2013; Cavite et al., 2022; Rosner et al., 2021), but more studies showed different results. Existing literature suggests that any of the four variables, namely gender (Lobo & Greenland, 2017; Patel et al., 2017; Pinem, 2019; Rahim et al., 2017; L. Wang et al., 2020), age (Patel et al., 2017; Wee et al., 2014), education level (Nath et al., 2015; Patel et al., 2017; Rezai et al., 2011), and income (Rezai et al., 2011; Wijekoon & Sabri, 2021; Witek & Kuzniar, 2021), could have a significant influence on GPI. With due consideration of the existing studies, the high value of furniture and household decision nature of furniture purchase, income emerges as the most relevant out of all socio-demographic variables. And in addition to directly influencing GPI, income may also indirectly influence GPI through WTP (Liobikienė & Dagiliūtė, 2021; L. Zhang & Wu, 2012; Zorić & Hrovatin, 2012).

More systematic research efforts were represented by the adoption of the theory of planned behavior (TPB). Some scholars constructed an extended TPB model to study consumers' GPI (Diyah & Wijaya, 2017; Yadav & Pathak, 2017). Most of these TPB-based studies proved attitude to be a robust antecedent of GPI (M. F. Chen, 2020; Ha et al., 2019; Kamalanon et al., 2022; M. T. Liu et al., 2020; Patel & Vaghela, 2018; Paul et al., 2016; Yadav & Pathak, 2017); some found subjective norm to have a positive effect on GPI (M. F. Chen, 2020; Ha et al., 2019; Patel & Vaghela, 2018; Yadav & Pathak, 2017); and a few identified perceived behavioral control (PBC) to be a relevant factor influencing GPI (M. F. Chen, 2020; Müller et al., 2021; Patel & Vaghela, 2018; X. P. Xu et al., 2020b; Yadav & Pathak, 2017) or GPB (Kumar, 2021; Yadav & Pathak, 2017). Though there is strong empirical evidence showing that attitude is a significant predictor of GPI, it has been found that a favorable attitude does not necessarily lead to GPB (Jaiswal & Kant, 2018; Kamalanon et al., 2022; Paul et al., 2016; Trivedi et al., 2018).

Despite the considerable number of studies on GPI and GPB, green products include a wide variety of categories, and different categories of products have different attributes. In particular, furniture is a type of durable goods. Different from soft goods that are often purchased online and at a high frequency, furniture purchase is often characterized by live experience, large payment for a single purchase and low frequency of purchase (Y. Li et al., 2020). Besides, furniture purchase is an emotional experience for many consumers as it is a vehicle for family

members and friends to spend time together. Due to these characteristics, research on GPI and GPB in general may not be entirely relevant for green furniture. There is a need to study green furniture purchase intention (GFPI) and Purchase behavior (GFPB) independently.

A search of existing literature shows limited studies on GFPI and GFPB. Nevertheless, these existing studies have shed some light on the determinants or predictors of GFPI and GFPB. For example, consumer perceived credibility of eco-labels, past green furniture purchase experience and green furniture awareness were also found to have a positive influence on GFPI (Cai et al., 2017). X. P. Xu et al. (2020a) adopted the theory of planned behavior (TPB) and identified physical health concern and environmental consciousness to be relevant; X. P. Xu et al. (2020b) added environmental awareness and health consciousness to form the extended TPB model, which could better explain consumers' purchasing intention. Andaç and Güzel (2017) explored GFPI in terms of children's furniture and identified parents' ecological awareness and level of income to be positive predictors of GFPI. Guzel (2020) explored the preferences of Generation Z (14-25 years old) and found gender differences in GFPI with girls showing stronger inclination to buy green furniture though boys have more information about green furniture products.

Based on a comprehensive review of existing literature on both GPI/GPB the author learning the following main conclusions:

(1) Environmental awareness and WTP are generally believed to be positively associated with GPI/GPB. WTP is likely to mediate the relationship between environmental awareness and GPI, yet there is a lack of empirical evidence.

(2) Perceived value is generally believed to be positively associated with GPI/GPB. But there is a lack of empirical evidence in the field of green furniture.

(3) Income is considered to have a direct effect on GPI and an indirect effect on GPI through WTP. Empirical evidence in the case of green furniture is lacking.

(4) TPB is effective for studying consumers' purchase intention and Purchase behavior. Existing TPB-based studies on GPI/GPB have arrived at different conclusions. There is a consensus on attitude as a determinant of GPI/GPB. But there is a lack of consensus on the roles of subjective norms and PBC.

(5) The extended models of TPB constructed by different scholars have added different variables, and there is a lack of such model specific to the field of green furniture.

(6) Most studies explore either GPI or GPB. Very few studies explore both GPI and GPB at the same time.

(7) Studies on GFPI and GFPB are very limited, and there is a lack of systematic research

on the determinants of GFPI and GFPB.

## 1.2 Research problem

It can be seen from the research background that Chinese furniture companies are under triple forms of pressure to go green, namely pressure from the green economy trend, pressure from the "dual-carbon" goals, and pressure from consumers' need for minimal health concern. Yet in their transition towards a green furniture-dominated business model, they are faced with higher cost (Degirmenci & Breitner, 2017) and confused consumers (Y. S. Chen & Chang, 2013), which translate into competitive disadvantages.

Consumers may have a favorable attitude towards green products, but such attitudes do not necessarily translate into actual Purchase behavior, resulting in the "green attitude-behavior gap" (Kamalanon et al., 2022; White et al., 2019). Besides, existing studies on green product consumption in general may not be relevant for green furniture, which is a type of durable goods. Specifically, existing studies have mainly covered non-durable consumer goods such as green apparels (Kumar & Mohan, 2021; S. Lee, 2011) and green food (Rezai et al., 2011; Shin et al., 2017; P. Xu et al., 2012; Yu et al., 2014), the service sector such as green hotels (L. Wang et al., 2020), the utility sector such as green electricity (Hansla et al., 2008; L. Zhang & Wu, 2012; Zorić & Hrovatin, 2012), and the real estate sector such as green building solutions (Chau et al., 2010; Hwang & Tan, 2012). The type of durable goods most studied is green vehicles (Afroz et al., 2015; Carley et al., 2013; Degirmenci & Breitner, 2017; Okada et al., 2019; S. Y. Wang et al., 2016; Y. Zhang et al., 2011).

However, all these products and services are of different natures from that of green furniture. Furthermore, existing studies (Andaç & Güzel, 2017; Bogdanovs et al., 2019; Z. Li, 2012; Shen, 2017; X. P. Xu et al., 2020a; X. P. Xu et al., 2020b; Ying & Sharon, 2021; Zeng, 2015) on green furniture purchase intention and Purchase behavior are limited and point to different directions, and even less such studies (Z. Li, 2012; Shen, 2017; X. P. Xu et al., 2020a; X. P. Xu et al., 2020b; Zeng, 2015) were conducted in the Chinese context. As a result, furniture companies in China struggle to identify their target customers, develop new customers, and increase green furniture sales, which exert a negative influence on their operation, growth and continued green commitment.

## 1.3 Research aim and research questions

Following the research background and research problem, this section points out the aim of this study and puts forwards relevant questions to achieve the aim.

### 1.3.1 Research aim

The aim of this study is to analyse the determinants of purchase intention and purchase using a modified version of the TPB, targeting green furniture in China as the research context.

Given companies' struggle in green furniture sales and the lack of systematic research on GFPI and GFPB, this study aims to explore the determinants of GFPI and GFPB from the perspective of TPB. Specifically, based on the findings of existing literature, this study adds the three most relevant variables, namely, environmental awareness, willingness to pay and green perceived value, together with the socio-demographic variable of income, to the initial TPB model to form an extended TPB model to investigate both GFPI and GFPB of Chinese consumers. To sum up, this study adds to the literature first, by developing and tested a modified version of the TPB by proposing new variables that are expected to be relevant for the specific context of green furniture. Second although previous studies only addressed the purchase intention of green products, the present research studies both purchase intention and purchase behavior. Third, this study targets as research context one of the main world economies, the Chinese market. Finally the model includes the socio-demographic variable of income and tests for the existence of heterogeneity on consumer behavior based on the TBP framework. The study is expected also to shed light on furniture companies' marketing strategies. Moreover, this study also offers societal implications, by considering a sustainable product, green furniture. Therefore, it is expected to contribute to increase the wellbeing of the population with an more in-dept understanding of the determinants of the consumption of this products.

### 1.3.2 Research questions

To achieve the research aim, the present study puts forward the following five research questions?

(1) Are the three variables of TPB (attitude and subjective norm and perceived behavioral control) related to consumers' green furniture purchase intention and behavior?

(2) Is green perceived value associated with consumers' green furniture purchase intention?

(3) Does willingness to pay mediate the relationship between environmental awareness

and consumers' green furniture purchase intention?

(4) Does income moderate the relationship between consumers' willingness to pay and green furniture purchase intention?

(5) Does income moderate the relationship between consumers' environmental awareness and green furniture purchase intention?

## 1.4 Research significance

By answering the above research questions based on an empirical study, the present thesis bears the following practical and theoretical significance.

### 1.4.1 Practical significance

Green furniture is the future of the furniture industry. This study seeks to empirically test the influence of several variables on consumers' GFPI and GFPB based on an extended TPB model. It bears the following three layers of practical significance.

First, the present study will help furniture companies gain a more in-depth understanding of the determinants of consumers' GFPI and GFPB, which will help them formulate more targeted marketing strategies to increase their green furniture sales. In particular, furniture companies will be able to take more effective measures to make up for the price disadvantage of green furniture compared with non-green options.

Second, a deeper knowledge into consumers' GFPI and GFPB is conducive to steering the development of the furniture industry towards a greener future. Currently, the furniture industry, same as other industries, is faced with the decarbonization commitment as part of China's commitment to peak $CO_2$ emissions in 2030 and carbon neutrality in 2060. The furniture industry, as a whole, needs to explore effective ways to become greener, such as improving the existing green technologies. Whatever efforts the industry makes, ultimately consumers have the final say. So, consumers' behavioral intention plays a guiding role for industry development that makes economic sense.

Third, this study will help policymakers introduce more effective policies to guide consumers' green furniture consumption behavior as it will shed light on consumers' considerations faced with the choice between green furniture or non-green furniture options. A sound policy environment will undoubtedly contribute to development of the furniture industry, and the green economy landscape at large.

### 1.4.2 Theoretical significance

Given the limited literature on green furniture consumption and particularly on GFPI and GFPB, the present study bears theoretical significance in the following ways:

First, this study will be the first one that employs TPB to explore green furniture purchase intention and Purchase behavior of Chinese consumers. Though there are some studies using TPB to explore consumers' green purchase intention (Asih et al., 2020; Ha et al., 2019; Kumar & Mohan, 2021; M. T. Liu et al., 2020; Nguyen et al., 2019; Patel & Vaghela, 2018; Paul et al., 2016; S. Y. Wang et al., 2016), studies focusing on the furniture industry are very limited. This study will fill this research gap.

Second, this study will construct an extended TPB model (Kamalanon et al., 2022; M. T. Liu et al., 2020; Müller et al., 2021; X. P. Xu et al., 2020b) of consumers' GFPI and GFPB by adding most widely recognized variables such as perceived value, environmental awareness and willingness to pay, which will contribute to a systematic undertesting of the determinants of GFPI and GFPB with regard to green furniture.

Third, this study will be the first one to explicitly explore the possible mediating role of willingness to pay between environmental awareness and consumers' GFPI. Existing literature (Chaudhary, 2018; M. F. Chen & Tung, 2014; Choi & Parsa, 2007; Kang et al., 2012; Khoiriyah & Toro, 2013; Kumar et al., 2021) almost unanimously validated the positive association between environmental awareness and GFPI, the positive relation between willingness to pay and GFPI, and the positive link between environmental awareness and willingness to pay. Some literature (Biswas & Roy, 2016; Lasuin & Ng, 2014; X. P. Xu et al., 2020a; X. P. Xu et al., 2020b) seems to suggest a mediating role of willingness to pay between the other two variables. But there is a lack of empirical evidence. This study will fill this research gap.

Fourth, this study explores the possible moderating role of the socio-demographic variable of income in the extended TPB model, which will provide a novel perspective for green marketing researchers.

Fifth, although previous studies mainly studied the intention to by green products (Chaudhary, 2018)., this research considers both the intention to buy and the purchase behavior. This approach addresses the class from previous studies to include the purchase intention in the model design.

Finally, this study targets one of the main consumption markets (Cai et al., 2017), the Chine market.

## 1.5 Thesis structure

The present thesis explores the determinants of consumers' green furniture purchase intention and Purchase behavior based on an extended TPB model by adding another four variables, namely green perceived value, environmental awareness, willingness to pay and income. It consists of the following five chapters:

Chapter 1: Introduction. Research background is provided, research problem identified, research aim, and research questions put forward, research significance lighted upon, and thesis structure presented.

Chapter 2: Literature Review. Existing studies on the key concept "green furniture" as well as key variables, namely theory of planned behavior, perceived value, environmental awareness, willingness to pay, income, purchase intention and Purchase behavior, are reviewed. On this basis, an extended TPB model is constructed, and hypotheses put forward.

Chapter 3: Research Methods. This chapter presents the research context for this study. The research design includes the description of the questionnaire design process and sampling procedure. Data analysis methods based on the structural equation modelling, together with measuring tools and their reliability and validity analyses are elaborated on. This chapter presents both the approach to estimate the structural model and the measurement model that allow to test the model hypothesis.

Chapter 4: Results and Discussion. This section offers a descriptive analysis of all variables includes in the model. Relationships between research variables are analyzed based on structural equational modelling, on which basis the hypotheses testing results are arrived at.

Chapter 5: Conclusions and Prospects. The findings of the present study are discussed, and conclusions drawn. Both theoretical and managerial implications of this study are highlighted, suggestions put forward, limitations pointed out, and suggestions for future research lighted upon.

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# Chapter 2: Literature Review

This chapter provides a review of the existing studies on the core concepts of the present study, including green furniture, theory of planned behavior, perceived value, environmental awareness, willingness to pay, purchase intention and Purchase behavior. The determinants of consumers' green furniture purchase intention and Purchase behavior are identified through the literature review, on which basis the research hypotheses are put forward, and the research model constructed.

## 2.1 Green furniture

This section introduces the concept of green design, the definition of green product and the definition of green furniture as a type of green product. Moreover, existing studies on green furniture consumption both in foreign countries and in China are discussed to lay a foundation for the present study.

### 2.1.1 The concept of green design

Green design, alternatively known as "eco-design", "sustainable design", "eco-friendly design", "design for environment", "life cycle design" (Wen & Li, 2019; Yeang & Woo, 2010) or "environmental conscious design" (Gu, 2008), is a new design concept and method introduced in the early 1990s for the purpose of conserving resources, using energy efficiently and protecting the environment while developing the economy to ultimately achieve sustainable development in the manufacturing industry (Z. F. Liu & Liu, 1999; Wen & Li, 2019; P. Xu & Pan, 2001). Different from traditional design characterized by a process "from cradle to grave", green design is a process "from cradle to reproduction" as it deals with the entire product life cycle to minimize pollution, conserve resources and energy, protect human health, and prevent the environmental and side effects of products and their processes in advance (Wen & Li, 2019).

Green design has evolved to be an important concept for companies and industries to sustain future growth and development (Tseng et al., 2013). As pointed out by Dai (2008), as China shifts from an industrial society to an information society, its industrial civilization is also moving towards sustainable civilization which emphasizes the harmonious coexistence of

man and nature, rendering green design an inevitable trend. In line with the core idea of "sustainability", green design encompasses the entire life cycle of a product, including production, usage and disposal. The core is to protect environmental resources while ensuring the functions, performance, service life and the quality of products (Wen & Li, 2019).

Specific to green furniture design, choices of materials least harmful to the nature precedes function and shape (Yüksel & Kiliç, 2015). The ultimate objective of the green design is to realize the harmony and unity of man, furniture and the ecological environment while paying attention to the ecological functions and environmental impact in the whole furniture product lifecycle from design to recycling (Dai, 2008). Besides, green furniture design is characterized by affinity with the ecological environment, an extended lifecycle and ecological design thinking (Gu, 2008). It is the result of incorporating sustainability in furniture product design to integrate ecological environment and economic development as an organic whole of cause and effect (L. L. Li et al., 2006).

### 2.1.2 Definition of "green product"

"Green products" are also referred to as "environmentally friendly products" (Bhate & Lawler, 1997) or "ecologically compatible products" (Laroche et al., 2001) or "eco-friendly products (Cai et al., 2017). For the purpose of this study, the author will use the term "green products". Studies (Laroche et al., 2001) have shown that more and more people are willing to pay more for green products as they get more and more environmentally conscious. However, it is not clear in the literature what constitutes a green product. Despite numerous attempts to define the term "green product", there is still a lack of a universally recognized, effective and well-structured definition (Dangelico & Pontrandolfo, 2010; Durif et al., 2010; Fraccascia et al., 2018; Hartmann & Ibáñez, 2006; Ritter et al., 2015).

Shamdasani et al. (1993) were among the first scholars to define green products. Their definition argues that green products are the products that can be recycled or reused without polluting the earth or wasting natural resources. Dai (2008) described green products as the ultimate embodiment of green design. This definition was adopted by X. M. Zhang et al. (2019) in their study on the effects of cognitive factors across green products from a TPB perspective. Peattie (1995) took a comparative perspective and highlighted the improvement in environmental and societal performance, in production, use and disposal as compared to conventional or competitive product offerings to be the key characteristics of a green product. Different from the definition by Peattie (1995) emphasizing on the product's environmentally

friendly features across different life cycle phases, Reinhardt (1998) deemed environmental benefits and environmental costs to be crucial identifiers. Specifically, he defined "green products" to be "products that provide greater environmental benefits, or that imposes smaller environmental costs, than similar products" (Reinhardt, 1998). Despite the seeming differences, all the above three definitions are focused on the single dimension of environmental impact.

Compared to them, other scholars have adopted a multi-dimensional perspective. For example. McDonagh and Prothero (1997) perceived green product to be a multi-dimensional concept composed of ecological, sustainability, corporate social responsiveness, political, non-profit, and other aspects. This rendered a precise definition difficult given the broad range of factors at play.

Similarly, Baumann et al. (2002) held that the concept of green product needs to be viewed from a synthetic perspective, with emphasis on the internal process of product development, its dynamics with other links of the product chain, as well as relevant policies.

Ottman et al. (2006) highlighted the importance to take energy conservation, recourse efficiency as well as pollution and waste reduction into consideration. Their definition takes into consideration the production, performance and consequences of a product.

Albino et al. (2009) defined green product to be a product designed to minimize its environmental impact during its whole life cycle. This definition was adopted by Fraccascia et al. (2018) and B. Xu et al. (2018) in their study on green product development. A notable definition was given by the European Commission (2015), according to which green products are products that "help save energy, are free of toxic compounds, are made of recycled or reused materials, are durable and easily repaired, and minimize environmental impact during their entire life cycles" (European Commission, 2015).

In light of the varied definitions of "green products", Dangelico and Pontrandolfo (2010) made a notable effort to review green product definitions and classifications and constructed a green option matrix on that basis. Specifically, they identified three key dimensions to characterize green products, namely environmental focus (materials, energy, pollution/toxic waste), main life cycle phase (production or before usage, usage, and disposal or after usage), and type of environmental impact (C. Chen, 2001; Dewberry & Goggin, 1996; Roy et al., 1996). The type of environmental impact is further divided into three levels: less negative, null and positive. Through an empirical study, they mapped out the steps to characterize green products and practices (see Figure 2.1), which provides a significant reference for companies focused on green product or marketing strategies.

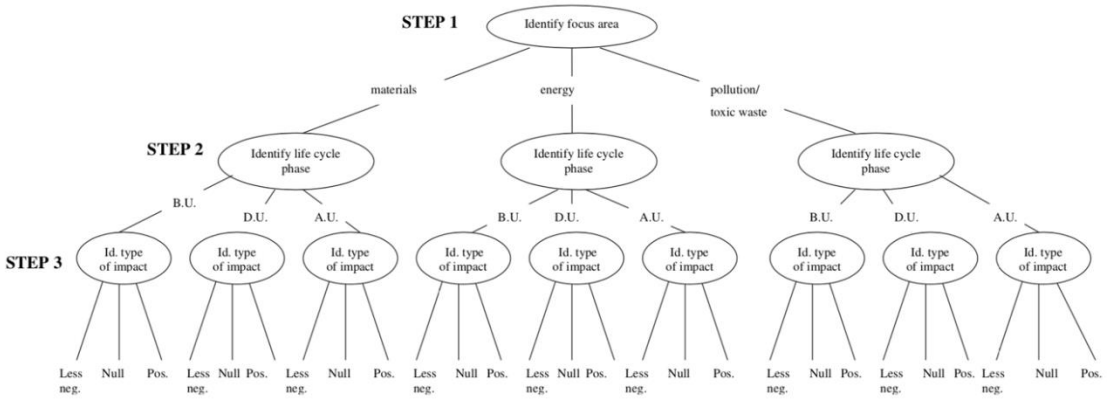



Figure 2.1 Steps to characterize green products and practices

Source: Dangelico and Pontrandolfo (2010)

Despite the above comprehensive definition, Lim et al. (2013) found in their study that customers have a lack of understanding of green products because they tend to only focus on products' consequences on the environment without considering their production and manufacturing processes. Cai et al. (2017) used the term "eco-friendly products" to refer to "green products" and defined them as products "constituted of materials and associated with production practices along its entire life cycle recognized for being socially and environmentally responsible". This definition was adopted by Wijekoon and Sabri (2021) in their study on the factors influencing consumers' green product purchase intention and behavior. Following the idea of Watt and Van Den Berg (2002) that a scientific concept shall consist of a label, a theoretical definition and an operational definition, a comprehensive review of the green product term was conducted and a definition put forward: A green product is "a product (tangible or intangible) that minimizes its environmental impact (direct and indirect) during its whole life-cycle, subject to the present technological and scientific status" (Sdrolia & Zarotiadis, 2019).

It can be seen from the above literature that existing definitions share some common focuses on one or more of the three aspects: technological capacity, product life cycle and environmental impact. The author holds that these three aspects provide a comprehensive coverage of the concept of "green" as they encompass what is possible (before production), what is done (production and usage), and what is affected (after usage). In the context of the present study, a green product is a tangible product. So, for the purpose of clarity and this study, the author hereby defines a green product as "a product manufactured with available technologies that minimizes its environmental impact during its whole life cycle" (Albino et al., 2009; European Commission, 2015; Reinhardt, 1998; Sdrolia & Zarotiadis, 2019).

### 2.1.3 Definition of green furniture

Green furniture, as its name suggests, is a type of green product. Similar to green product, green furniture also has a few alternative names, such as "eco-friendly furniture" (Shahsavar et al., 2020), "environmentally friendly furniture" (Khojasteh-Khosro et al., 2020) and "environmentally sound furniture" (Parikka-Alhola, 2008). For the purpose of clarity, the term "green furniture" will be used consistently in the present study. As per the definition of green product, it is safe to say that green furniture is a type of furniture manufactured with available technologies that minimizes its environmental impact during its whole life cycle (Albino et al., 2009; European Commission, 2015; Reinhardt, 1998; Sdrolia & Zarotiadis, 2019). However, there is more to the story than what appears given the specific characteristics of the furniture industry.

Parikka-Alhola (2008) defined green furniture as furniture designed with the aim of avoiding or minimizing environmental impacts throughout its life cycle. He pointed out that green purchasing criteria focused on two aspects: the human and environmental toxicity of furniture and reducing the depletion of natural resources. This definition was adopted by X. P. Xu et al. (2020b) in their study on the impacts of health consciousness and environmental awareness on consumers' intention to purchase green furniture.

Gu (2008) defined green furniture as furniture products that are made of materials with no or little pollution, that do not harm or pollute the environment in the processes of manufacturing and usage, that will not pollute the environment after abandonment, that can realize low consumption of resources such as energy and fuel, easy disassembly of parts and components, and recycling of some parts.

The definition given by S. Q. Li (2008) emphasized the detachability of furniture and reuse of parts and components after treatment. J. G. Zhu and Wu (2013) defined green furniture as furniture produced using green and environmentally friendly raw materials, environmentally friendly clean production methods and green packaging materials in line with green and humanized disassembly design (Xiong et al., 2020). This definition is also from the perspective of the whole life cycle. According to Wikipedia, green furniture refers to "products that use materials from sustainable forests, have low toxic material levels, are locally manufactured and durable enough to last" (Wikipedia, 2021).

It also emphasized the convenience of repair, detachability and recyclability. Yüksel and Kiliç (2015) regarded green furniture to be furniture designed using less energy and less material and producing less harm to environment. In addition, they emphasized the need to be

functional and aesthetic as a synonym for utility, high quality and available cost. Oberti (2017) considered green furniture to be furniture produced with green materials characterized by recyclability, resource renewability, minimal waste, local or regional production, low embodied energy, low environmental and human impact, and durability.

Shahsavar et al. (2020) deemed "green furniture" to be furniture designed to minimize negative impact on environment during the product lifecycle's stages. In a study on the factors influencing consumers' intention to purchase authentic green furniture, green furniture was defined as "a kind of environmentally friendly furniture that takes environmental factors into account in the manufacturing process and it has less negative impact on human health and the environment" (X. P. Xu et al., 2020a).

It can be seen from existing literature that most definitions of green furniture consider the whole life cycle perspective and focus on the environmental impact dimension. Yet the definition by X. P. Xu et al. (2020a) also highlights the human health aspect. As we all know, furniture, especially home furniture, is used on a daily basis and has a long lifecycle. Therefore, its influence on human health cannot be neglected. For this reason, the present thesis mainly adopts the definition put forward by X. P. Xu et al. (2020a) and incorporates other definitions. Specifically, green furniture in this thesis is defined as "environmentally friendly furniture designed to avoid or minimize environmental impacts throughout its life cycle and has less negative impact on human health" (X. P. Xu et al., 2020a).

### 2.1.4 Existing studies on green furniture consumption

Along with the development of green design and green marketing, green consumption is also gaining increasing popularity. More and more scholars are studying motivations of consumers' green consumption, covering products such as eco-friendly food (Katt & Meixner, 2020; P. Xu et al., 2012) and eco-friendly apparels (Kumar & Mohan, 2021; S. Lee, 2011). Green furniture is no exception. With the increasing research related to green design, some scholars around the world (Andaç & Güzel, 2017; Cai et al., 2017; Lange et al., 2019; X. P. Xu et al., 2020a) have also turned their attention to green furniture consumption.

However, a review of existing studies shows that research on the consumption of green furniture outside China, mostly home furniture, is quite limited. An emerging body of literature is targeting at green furniture consumption in developing countries such as India (Kumar et al., 2021; Kumar, 2021; Paul et al., 2016; Sharma & Foropon, 2019; Yadav & Pathak, 2017), Mexico (Müller et al., 2021) and Turkey (Andaç & Güzel, 2017), and the scope of research is

mainly concerned with consumers' perception of green furniture (Andaç & Güzel, 2017; Ying & Sharon, 2021), consumers' attitudes toward or willingness to buy green furniture (Guzel, 2020; Papadopoulos et al., 2013), green public procurement (Lange et al., 2019, September; Parikka-Alhola, 2008), and determinants of consumers' GFPI and GFPB.

With regard to consumers' perception of green furniture, Andaç and Güzel (2017) targeted at the Kayseri population and investigated how parents perceive eco-friendly design and act toward green furniture. The results confirmed parents' awareness of ecology and preference for green furniture, and such preference is positively related to income. Empirical evidence from the Malaysian market indicates that environmental concern and health consciousness are associated with customers' perception of green furniture (Ying & Sharon, 2021). As to consumers' attitudes toward or willingness to buy green furniture, Papadopoulos et al. (2013) investigated consumers' willingness to buy green furniture in the context of economic crisis environments and found that consumers are generally willing to buy green furniture at a price 7% to 11% higher than that of conventional furniture. Moreover, authors also concluded that the willingness to buy green furniture is not influenced by economic depression. Another study targeting at Generation Z in Turkey indicated positive attitudes toward green furniture and furnishings, but green furniture is considered expensive products (Guzel, 2020).

Another focus of green furniture consumption research is on green public procurement, which is believed to directly influence furniture design, method of production, and utilization. Lange et al. (2019, September) found that implementation of green public procurement can help companies cope environmental challenges, yet furniture companies lack knowledge in this area. Parikka-Alhola (2008) analyzed 15 Finnish and 16 Swedish calls for tenders of office furniture and concluded that green public procurement could positively contribute to green furniture development in these two countries by exerting pressure on furniture manufacturers to comply with relevant green criteria. In terms of the determinants of consumers' GFPI and GFPB, evidence from Czech indicated the relevance of demographic factors, particularly age (Shahsavar et al., 2020). Specifically, younger consumers were found to have stronger GFPI compared to older groups.

In summary, though international studies on green consumption abound, studies on green furniture consumption are very limited. This may be attributed to the short history of green economy and green design concepts. Though recent years have seen increased academic interest in the furniture sector, the research gap in this area is yet to be filled. More systematic studies on green furniture consumption are needed to shed light on more effective green development strategies of the furniture industry in general.

In China, the academic attention to green furniture started in 1994 when six articles on green furniture were published in magazines and journals, highlighting the popularity of furniture made of such eco-friendly materials as wood, cloth, bamboo and rattan, the absence of painting process in furniture production, replacement of complicated color design with simple patterns, and reusability (Gan, 1994; X. Y. Lin, 1994; Shen, 1994; S. L. Wang & Liu, 1994). Since then, there have been continuous studies on green furniture. Specifically, a search on China National Knowledge Infrastructure (CNKI), one of China's key research and information publishing platform, with "green furniture" as keywords by February 2022 led to 340 search results, including 41 degree theses and 299 journal papers, newspaper articles, conference papers, as well as scientific and technological achievements. Most of these studies deal with the material selection, design, production, packaging, recyclability and marketing strategies of green furniture, and there are heavy emphases on green furniture design and marketing strategies. However, there are very few studies on green furniture consumption, particularly on factors influencing consumers' green furniture purchase intention (X. P. Xu et al., 2020b).

J. G. Zhu and Wu (2001) were among the first scholars in China to draw people's attention to "green consumption", which means consumption of green products in daily life. Particularly, they mentioned green furniture consumption as part of green residential consumption. Shi et al. (2005) also emphasized the importance of green consumption. They urged consumers to choose green furniture free from smell, harm and pollution for the sake of health. In May 2004, China's Ministry of Ecology and Environment (2006a) (then China's State Environmental Protection Administration) promulgated "HBC22-2004 Technical Requirements for Environmental Labelling Products: Furniture", which was replaced by "Technical Requirements for Environmental Labelling Products: Furniture H/J 303-2006" two years later. The Requirements provided a guidance for consumers to choose green furniture on the market (China's Ministry of Ecology and Environment, 2006b).

As regards the factors influencing consumer's green furniture purchase intention and behavior, a report released in Beijing Business Today showed that the two major indicators influencing consumers' furniture Purchase behavior were environmental friendliness and fashion, and green furniture companies must seek to incorporate fashion into green furniture design to achieve a sales breakthrough. Wu (2011) conducted a quantitative study on the relationship between consumers' green furniture understanding and purchase intention based on a survey of 210 respondents in three furniture stores in Nanjing City. The study revealed serious information asymmetry in the furniture market and a mixture of factors influencing

consumers' green furniture purchase intention, such as the price of green furniture, consumers' gender and income, consumers' degree of trust in information from different sources and whether consumers live with children.

The recent decade since 2012 has seen the publication of a few studies on green furniture consumption in China. Specifically, Z. Li (2012) analyzed consumers' intention to buy green furniture and its influencing factors based on a survey among 190 consumers in Beijing. The results showed that consumers' emphasis on price, their emphasis on brand, and their ability to distinguish green furniture from general furniture are negatively related to their purchase intention, whereas other variables such as consumers' emphasis on the environmental performance of furniture, whether they live with the elderly, their level of education and the industries they work in all positively influence their intention to buy green furniture.

Zeng (2015) studied the impact of green cognition on consumers' green furniture purchase intention. Green cognition was defined as consumers' perception of resource and environmental issues formed through an understanding of such issues. It was consumers' psychological process of actively undertaking the obligation to conserve resources and protect the environment by learning or acquiring through experience the knowledge about relevant green products. The results (Zeng, 2015) indicated that resources and environmental perception do not directly influence consumers' purchase behavior, but indirectly influence consumers' Purchase behavior through green product evaluation and green consumption attitude. The empirical data also revealed that green product knowledge does not have a significant impact on consumers' green furniture purchase decision, and that green consumption awareness indirectly influences consumers' green furniture purchase decision through green consumption attitude (X. Y. Zhang & Dong, 2020). Moreover, both green product evaluation and green consumption attitude have a strongly positive influence on consumers' green furniture purchase decision (X. Y. Zhang & Dong, 2020).

Shen (2017) explored the influence of health belief on consumers' green furniture purchase intention and found that consumers' susceptibility to the perception of safety accidents caused by furniture products, perceived severity of such accidents, perceived interests of buying green furniture and self-efficacy have a positive influence on their intention to purchase green furniture, respectively, whereas their perceived barriers to purchasing green furniture have a negative influence on their purchase intention. Besides, consumers' level of education and per-capita monthly household income can also moderate such influences.

Chinese consumers are generally aware of green certification (eco-labels) and green furniture (Cai et al., 2017; Shen, 2012). Whether they intend to buy green furniture in the future

seems to be related to their past purchase experience, level of education, and whether they have an elderly family member above 60 years old (Cai et al., 2017).

The impact of green certification was also explored by G. Y. Li (2021) who conducted an empirical study based on consumer value theory. The results showed that both green certification of wooden furniture and consumer value positively influence consumers' purchase intention, that consumer value mediates the influence from green certification of wooden furniture on consumers' purchase intention, and that price tolerance moderates the influence from consumer value on consumers' purchase intention.

In summary, the research on green furniture consumption in China started quite late in the beginning of the 21st century. Besides, relevant studies are quite limited. Particularly, only a few studies explored the factors influencing consumers' green furniture purchase intention, and the factors identified by these studies are not consistent, which may confuse furniture companies and policymakers.

As the world becomes increasing green-oriented (Martelo-Landroguez et al., 2018), guiding consumers to involve in green consumption, and in this case green furniture consumption, is of great significance. To this end, not only should the government introduce more green incentive policies, but furniture enterprises should also better understand the motivations behind consumers' GFPI and GFPB. This is where TPB, as a sophisticated theory into behavioral intention, comes into play.

In fact, a few revealing studies have been conducted recently using TPB, which have yielded meaningful results for reality. Detailed introductions to this body of research will be given in the next section. As pointed out by Cai et al. (2017), as Chinese people's living standards rise and consumers' concerns over environmental impacts of their purchases increase, it is expected that Chinese consumers' demand for green furniture will increase. Therefore, an in-depth study into the factors influencing consumers' green furniture purchase intention will help furniture companies formulate more targeted marketing strategies and urge policymakers to improve relevant laws, regulations, and standards, ultimately contributing to a well-organized green furniture market.

## 2.2 Theory of planned behavior (TPB)

This section introduces the theory of planned behavior, its three dimensions, attitude, subjective norms and perceived behavioral control, and how each of these dimensions is related to consumers' green furniture purchase intention and/or Purchase behavior.

### 2.2.1 The origin and development of TPB

The Theory of Planned Behavior (TPB) (Ajzen, 1985) was developed on the basis of the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1977) by adding the variable of perceived behavioral control (PBC). So, TPB consists of three dimensions: attitude, subjective norm and perceived behavioral control. According to Ajzen (1991), attitude is defined as the degree to which an individual has a favorable or unfavorable assessment of the behavior of interest; subjective norm refers to the perceived social pressure to perform or not to perform the behavior; perceived behavioral control is defined as the extent of difficulty of performing the behavior of interest perceived by an individual; intention is seen as an indication of how much effort an individual is planning to make to perform a given behavior; and behavior was seen as a joint function of intentions and perceived behavioral control.

Ajzen and Fishbein (1969) first tested the factors influencing behavioral choice based on the decision theory and the theoretical model of Fishbein (1967). The results showed that in addition to attitudes, individuals' normative beliefs towards behaviors also influence their behavioral intentions. Besides, the behaviors intentions towards certain behaviors are highly correlated with such behaviors. The two findings were later validated again in another study conducted by Ajzen and Fishbein (1970), which found that attitude and normative beliefs mediated the influence of behavioral intention on actual behaviors. Later, Ajzen and Fishbein (1977) made a theoretical analysis of available empirical research and concluded that the strong relations between attitude and behavior are subject to association between attitudinal and behavioral entities, specifically in terms of target and action elements. Besides, the two researchers also drew academic attention to correlation in the contextual element. In 1985, Ajzen (1985) first proposed TPB, arguing that performance of a given behavior is subject to one's intention to try performing the behavior which is measured by attitude towards trying and the subjective norm with regard to trying. One year later, Ajzen and Timko (1986) conducted a study exploring the relationship between health attitudes and behaviors with college students as respondents. The results revealed two determinants of behaviors, namely attitudes and PBC, the latter of which referred to the perceived difficulty of performing a given behavior. In the same year, Ajzen and Madden (1986) tested their proposed TPB with two experiments and found that the addition of PBC increased the model's predictability of behavioral intention. In 1991, Ajzen officially put forward the initial TPB model (see Figure 2.2), according to which three independently conceptualized factors, namely attitude, subjective norm and PBC, are

closely related to intentions; and these intentions, together with PBC, are highly associated with actual behavior (Ajzen, 1991).

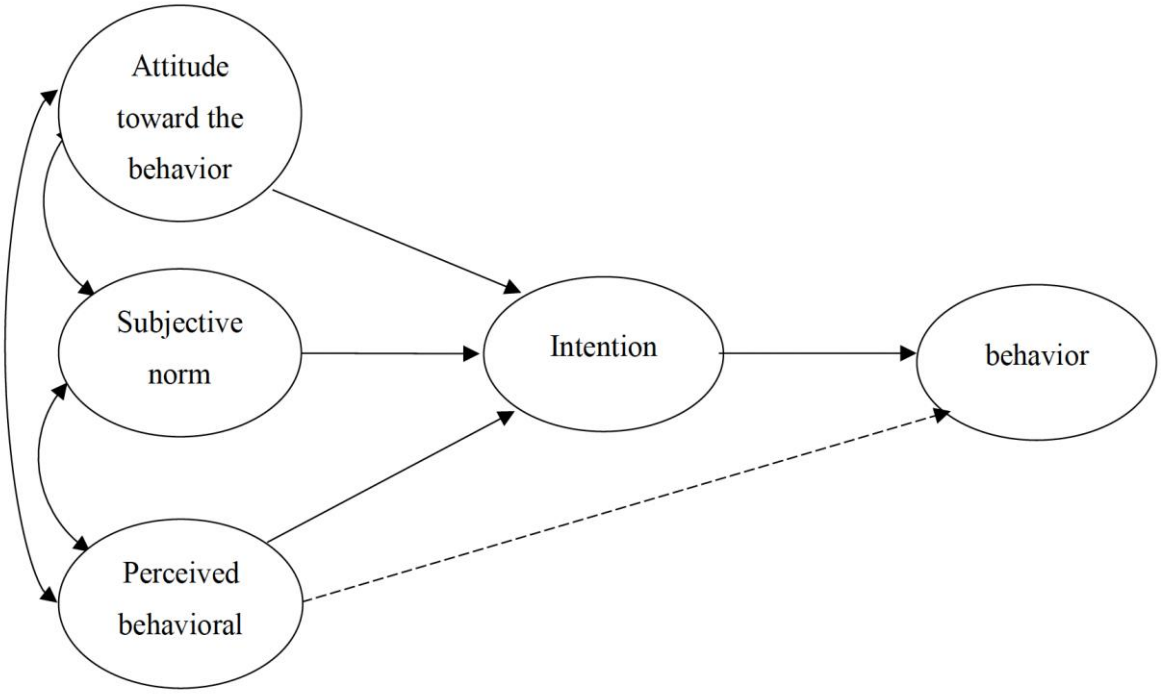



Figure 2.2 The initial TPB model

Source: Adapted from Ajzen (1991)

One year after the introduction of the initial TPB model, Ajzen and Driver (1992) applied it to a time-lag study of college students' leisure choice. The results were consistent with the proposition of TPB. Specifically, leisure intentions can be predicted by attitudes, subjective norms and perceived behavior control, and leisure behavior by intentions and perceived behavior control. In the beginning of the 21st century, Hrubes et al. (2001) applied TPB to the study of hunting behavior based on a mail survey of 395 outdoor recreationists. The results were basically consistent with the underlying beliefs of TPB.

Specifically, attitudes, subjective norms and PBC strongly influenced hunting intentions, which significantly predicted hunting behavior (self-reported hunting frequency). A year later, Ajzen (2002) clarified the concept of PBC as an independent variable of TPB and further revealed that PBC is composed of two components, namely, perceived self-efficacy (the extent of difficulty of performing a given behavior) and perceived controllability (the extent to which the performance is decided by the actor) (see Figure 2.3).

Most recently, Ajzen (2020) published an article answering the frequency asked questions about TPB. He pointed out that additional predictor variables could be added to the TPB model to form an extended TPB model, though such addition should be made with caution.

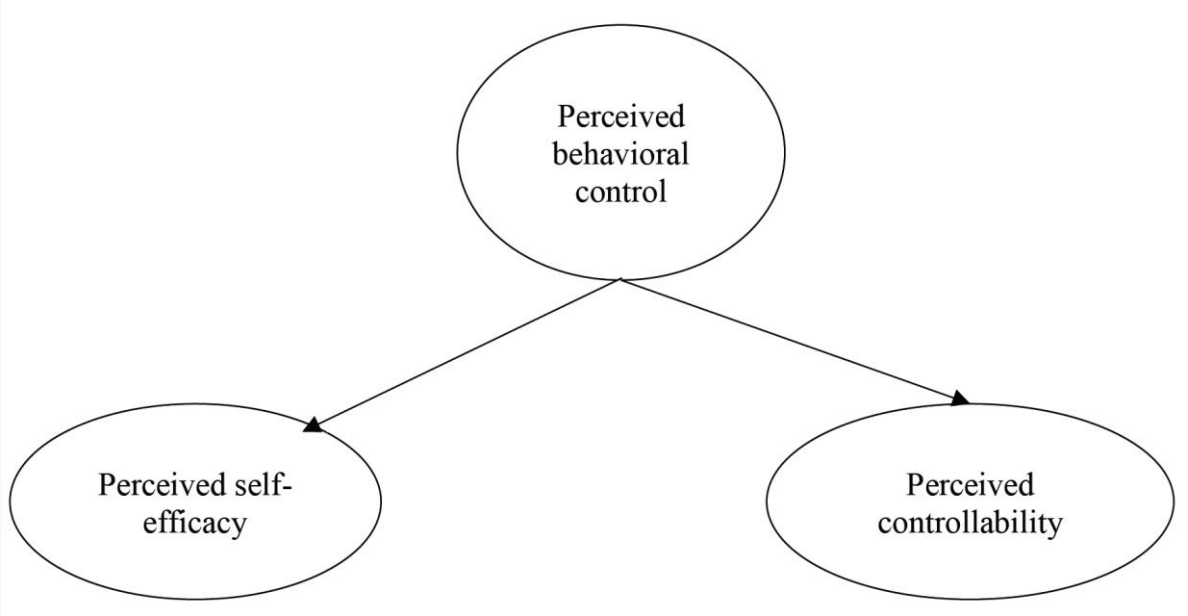



Figure 2.3 Hierarchical model of perceived behavioral control

Source: Adapted from Ajzen (2002)

Since its introduction, the TPB model has been widely applied and considered a useful model for studying behavioral intentions and behaviors. Its validity in explaining behaviors has been confirmed by a large number of researchers. Scholars have used the TPB model to explore the determinants of individuals' different types of intention and behavior, such as entrepreneurial intention (Al-Jubari, 2019; Moriano et al., 2012; Robledo et al., 2015), health-related behaviors (Andrykowski et al., 2006; Conner et al., 2015; Hagger et al., 2007), voting behavior (Flynn et al., 1997; Lenoci et al., 2021), and most frequently in consumption with a heavy focus on consumers' purchase intention and Purchase behavior including GPI and GPB (Emekci, 2019; Hassan et al., 2016; H. V. Nguyen et al., 2019).

### 2.2.2 Application of TPB in research on green consumption

Over the past two decades, the academia has seen an emerging trend of studies on green consumption based on the TPB model. Given the "green attitude-behavior gap" reflected in the discrepancy between consumers' favorable attitude toward green products and their actual consumption (Kamalanon et al., 2022), scholars have attempted to add other variables to the initial TPB model to form extended TPB models to better explain the predictors of consumers' GPI and GPB.

Paul et al. (2016) explored consumers' GPI in the Indian market based on an extended TPB model formed by adding the variable of environmental concern referring to "values, attitudes, emotions, perceptions, knowledge and behaviors related to the environment". Results of their survey among 521 respondents reported significantly positive associations between two

dimensions of TPB (attitudes and PBC) and GPI and a mediating role of TPB between environmental concern and GPI. Another study targeting at the Indian market was conducted by Yadav and Pathak (2017) who added perceived value, defined as an overall evaluation of the utility of the product based on an individual's perception of what is gained and what is paid, and WTP, defined as consumers' willingness to pay a premium for green products, to form a theoretical framework to investigate consumers' GPI and GPB. Inclusion of these two constructs turned out to have improved the predictive power of the framework.

A similar study was conducted in the Indonesian market based on an extended TPB model formed by adding the variable of environmental knowledge. The results suggested that environmental knowledge significantly influences attitude and that attitude fully mediates the relationship between environmental knowledge and GPI (Indriani et al., 2019).

Nguyen et al. (2019) collected data in the Vietnamese market concerning consumers' intention to purchase green vegetable for an empirical analysis based on an extended TPB model with green perceived risk added. All the four variables, namely attitude, subjective norm, PBC and green perceived risk were found to be predictive of GPI.

Sharma and Foropon (2019) expanded the TPB model by adding environmental knowledge and perceived consumer effectiveness in place of subjective norms and perceived behavior control to explore the relationship between green product attributes, which consist of product benefits and product risks, and consumers' GPB. They innovatively classified GPB into unconditional purchase, conditional purchase and accidental purchase. The results validated the main hypothesis that green product attributes, mainly product benefits, influenced consumers' GPB, and the influence of environmental attitude on GPI was found to be insignificant.

Entering the 2020s, the academia has seen an increasing number of studies on GPI or GPB in emerging markets using TPB. To start with, M. F. Chen (2020) included perceived moral obligation, sustainability self-identity and climate change skepticism to the TPB model to explore Taiwanese consumers' intention to purchase sustainability-labelled coffee. Climate change skepticism was proven to be a moderator of the positive relationship between sustainability self-identity and GPI, and both perceived moral obligation, defined as the extent to which an individual feels obliged to perform a given behavior in a moral context (Beck & Ajzen, 1991), and sustainability self-identity were found positively associated with consumers' GPI. The moral perspective was also considered in the study by M. T. Liu et al. (2020) which added moral norm as an additional construct and established an extended TPB model on this basis to explore Chinese consumers' GPI.

A questionnaire survey and two experiments were carried out, and the results indicated that moral norm mediates the relationship between subjective norms and GPI. Müller et al. (2021) explored the effectiveness of three additional constructs, namely ecological conscience, moral obligation and willingness to pay, in predicting Mexican consumers' GPI. The findings supported the inclusion of the first two additional constructs to an extended TPB model for determining consumers' GPI.

The feasibility of adding the construct of environmental and health awareness to the TPB framework to explain consumers' GPI in the Indian market was explored by Kumar (2021). The added construct composed of three determinants, environmental knowledge, concern for the environment and concern for health was found to have a direct and strong influence on GPB as well as an indirect influence on GPB through PBC.

In the same year, Kumar and Mohan (2021) applied TPB to explore Indian consumers' intention to purchase eco-friendly apparels. Apart from environmental concern, two additional constructs, namely price sensitivity and collectivism cultural orientation, were added in the extended TPB model.

A cross-sectional survey was conducted with millennials as the target respondents. Results confirmed the direct influences of environmental concern and collectivism cultural orientation on GPB as well as the moderating effect of price sensitivity. Al-Swidi and Saleh (2021) integrated TPB with the cognitive-affective-behavioral (CAB) model and Stern's value-belief-norm (VBN) theory of environmentalism to explore consumers' GPB in Qatar based on a questionnaire survey among university students. The results of their study showed that the TPB model is applicable to elucidating consumers' GPB and that GPB is directly influenced by green attitudes, green PBC and green social influence. Besides, indirect influences on GPB are found to be exerted by variables such as knowledge of the green products, green government initiatives and perceived consumer effectiveness.

Most recently, Kamalanon et al. (2022) made a more ambitious effort by adding five variables to the initial TPB model, namely environmental concern, a company's perceived green image, consumer innovativeness, environmental knowledge and perceived consumer effectiveness. Testing results of the proposed extended TPB model showed that two of these five additional variables, namely environmental concern and perceived consumer effectiveness, are significant antecedents of GPI, a company's perceived green image acts as a mediator between other antecedents and GPI.

A list of existing TPB-based studies on GPI and GPB are presented in Table 2.1 below.

Table 2.1 A list of existing studies on green purchase intention and Purchase behavior based on the theory of planned behavior

| No. | Researcher(s) & Year | Products of study | Additional variable(s) to the TPB model | Dependent variable | Country of market |
|---|---|---|---|---|---|
| 1 | Paul et al. (2016) | Green products in general | Environmental concern | GPI | India |
| 2 | Yadav & Pathak (2017) | Green products in general | Perceived value; Willingness to pay | GPI and GPB | India |
| 3 | Indriani et al. (2019) | Green products in general | Environmental knowledge | GPI | Indonesia |
| 4 | T. T. H. Nguyen et al. (2019) | Green vegetable | Green perceived risk | GPI | Vietnam |
| 5 | Sharma & Foropon (2019) | Green products in general | Green product attributes | GPB | India |
| 6 | M. F. Chen (2020) | Sustainability-labelled coffee | Perceived moral obligation; Sustainability self-identity; Climate change skepticism | GPI | Taiwan |
| 7 | M. T. Liu et al. (2020) | Green products in general | Moral norm | GPI | China |
| 8 | Müller et al. (2021) | Green products in general | Ecological conscience; Moral obligation; Willingness to pay | GPI | Mexico |
| 9 | Kumar (2021) | Green products in general | Environmental and health awareness | GPB | India |
| 10 | Kumar & Mohan (2021) | Eco-friendly apparels | Collectivism cultural orientation; Environmental concern; Price sensitivity | GPI | India |
| 11 | Al-Swidi & Saleh (2021) | Green products in general | Green social influence; Perceived consumer effectiveness; Knowledge of the green products; | GPB | Qatar |

| | | | | | |
|---|---|---|---|---|---|
| 12 | Kamalanon et al. (2022) | Green products in general | Government green initiatives; Green values; Awareness of the environmental outcomes; Ascription responsibility Environmental concern; A company's perceived green image; Consumer innovativeness; Environmental knowledge; Perceived consumer effectiveness | GPI and GPB | Worldwide |

As regards the research context, India is the most researched market (Paul et al., 2016; Yadav & Pathak, 2017; Sharma & Foropon, 2019; Kumar, 2021; Kumar & Mohan, 2021). Other markets were considered, such as Indonesia (Indriani et al., 2019); Vietnam (T.T.H.Nguyen et al., 2019); Taiwan (M. F. Chen,2020); China (M. T. Liu et al., 2020); Mexico (Müller et al., 2021); Qatar (Al-Swidi & Saleh, 2021); Worldwide (Kamalanon et al., 2022).

The literature review also revealed that majority of studies analyzed the green purchase intentions (Paul et al., 2016; Indriani et al., 2019; T. T. H. Nguyen et al., 2019; M. F. Chen, 2020; M. T. Liu et al., 2020; Müller et al., 2021; Kumar & Mohan, 2021). Only a few studies analyzed the green purchase behavior (Sharma & Foropon, 2019; Kumar, 2021), and only one study included both green purchase intentions and green purchase behavior (Yadav & Pathak, 2017; Kamalanon et al., 2022).

As regards the research context, previous studies mainly considered green products in general (Paul et al., 2016; Yadav & Pathak, 2017; Indriani et al., 2019; Sharma & Foropon, 2019; M. T. Liu et al., 2020; Müller et al., 2021; Müller et al., 2021; Al-Swidi & Saleh, 2021; Kamalanon et al., 2022). Other products have also been studied, such as Nguyen et al. (2019) analyzing green vegetables, M. F. Chen (2020) analyzing coffee with sustainability labels, Kumar and Mohan (2021) analyzing eco-friendly clothing.

The above literature shows that most studies on green purchase are focused on emerging markets, particularly on India. This can be attributed to India's pressing green commitment due to increasing environmental pressure. In fact, India is the world's third largest $CO_2$ emitter

(Blokhin, 2022). To join the global trend of going green, the Indian government has been making major efforts to cut down emissions. India's latest net zero pledge made by its prime minister Narendra Modi promised carbon neutrality by 2070 (BBC News, 2021, November 2).

In addition to the market features, the Table 2.1 shows that existing literature is predominantly focused on GPI, while GPB is also explored by a few studies, and very few studies explored both GPI and GPB at the same time. In addition, only one TPB-based study focused on the Chinese market, pointing to the need to increase TPB-based green purchase studies in the Chinese market.

### 2.2.3 Application of TPB in research on green furniture consumption

As shown in the previous section, an increasing number of researchers are using TPB as a framework for studying consumers' eco-friendly (green) buying behavior (Al-Swidi & Saleh, 2021; Kumar, 2021; Sharma & Foropon, 2019; Yadav & Pathak, 2017). Researchers have extended the TPB model by adding new variables to the three basic variables of "attitude, subjective norm and perceived behavioral control" to better study consumers' eco-friendly (green) purchase decision and behavior.

The existing literature adopting TPB mainly studied green products in general (Indriani et al., 2019; Kamalanon et al., 2022; Kumar, 2021; M. T. Liu et al., 2020; Müller et al., 2021; Paul et al., 2016; Sharma & Foropon, 2019; Yadav & Pathak, 2017), while the rest sporadically studied specific types green products, such as green vegetable (T. T. H. Nguyen et al., 2019), sustainability-labelled coffee (M. F. Chen, 2020) and eco-friendly apparels (Kumar & Mohan, 2021). As the present study is focused on green furniture, TPB-based literature on furniture, especially green furniture, would be most relevant. However, as far as the author knows, such studies are very limited.

Bogdanovs et al. (2019) explored the influence of syncretic decision-making on families' intention to purchase children's furniture by adding the variable of spousal influence to form an adapted conceptual model of TPB. Spousal influence was found to be positively associated with purchase intention but negatively associated with perceived behavior control, and subjective norms turned out to be positively associated with furniture purchase intention.

Ying and Sharon (2021) analyzed consumers' perception of the shift from conventional furniture to green furniture and identified a positive association between all the three dimensions of TPB and purchase intention. Besides, the results also proved purchase intention to be one of the most effective predictors of GPB.

One of the most relevant studies on GFPI was carried out by X. P. Xu et al. (2020a) who surveyed a Chinese sample of 452 consumers and constructed an extended TPB model of consumers' GFPI by adding three variables, namely environmental consciousness, physical health concern, and past experience of green furniture purchase (see Figure 2.4 below). The former variable could indirectly influence GFPI through perceived behavior control while the latter two variables turned out to be significantly and positively associated with GFPI.

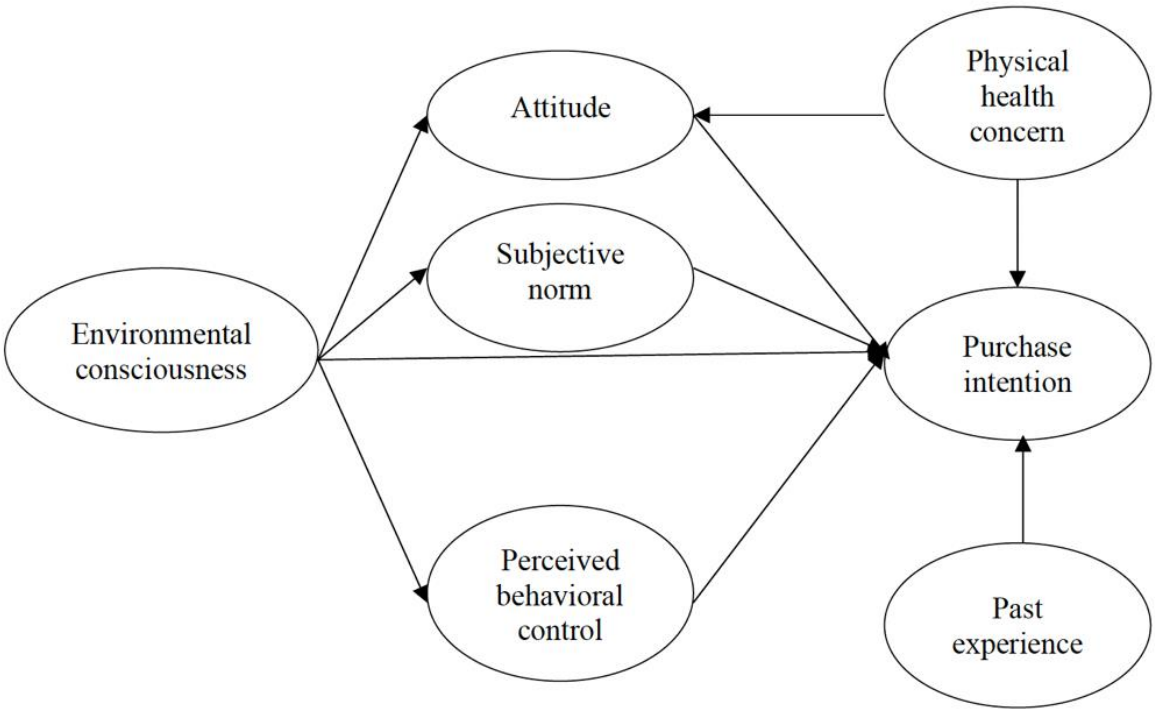



Figure 2.4 An extended TPB model of green furniture purchase intention adapted from X. P. Xu et al. (2020a)

Another relevant study in the Chinese context was conducted by X. P. Xu et al. (2020b) who made an extensive review of previous studies and identified three variables, respectively environmental awareness, willingness to pay and health consciousness to be related to GFI. On this basis, they added these three variables to the original TPB model and conducted a questionnaire survey to test the model.

The results indicated perceived behavior control to be the strongest predictor of consumers' GFPI while an attitude is not significantly associated with GFPI due to the existence of an attitude-behavior gap. The remaining three variables, willingness to pay, health consciousness, and subjective norm, are all positively related to consumers' GFPI. Their extended TPB model is shown in Figure 2.5 below.

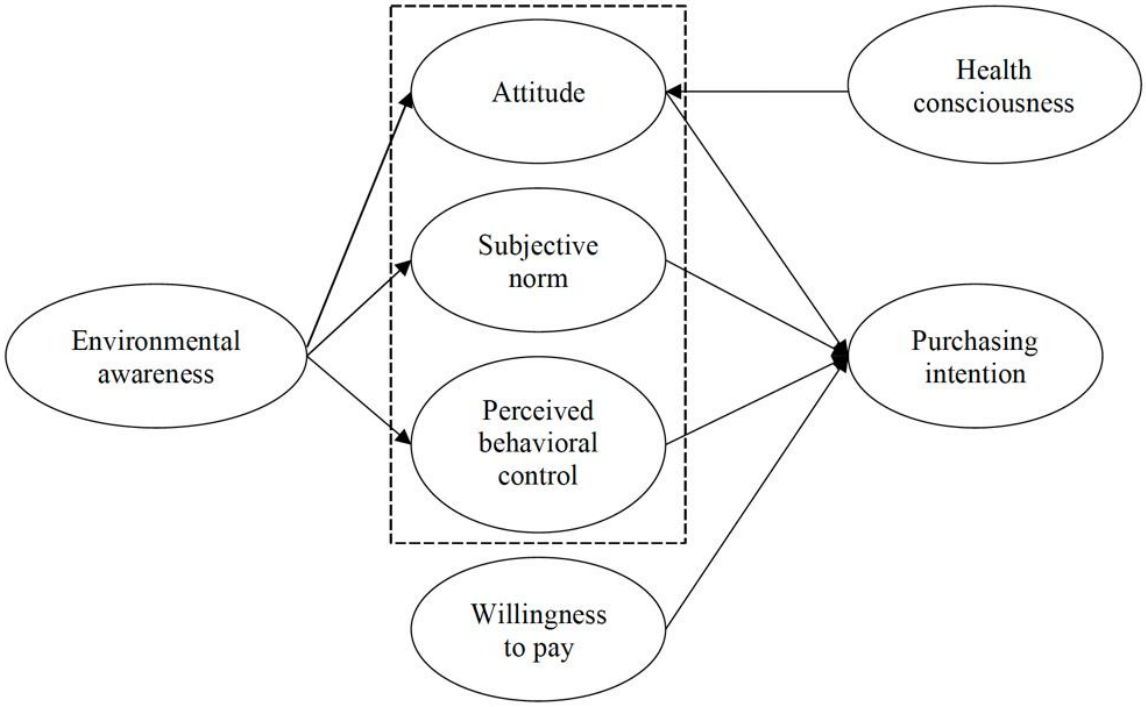



Figure 2.5 An extended TPB model of green furniture purchase intention adapted from X. P. Xu et al. (2020b)

Table 2.2 below shows the list of existing studies on GFPI based on TPB. The studies are limited in number, and they do not echo each other in their findings. For example, there are conflicting findings regarding whether attitude is a significant predictor of GFPI, and the other variables added to the extended TPB model are also not consistent (X. P. Xu et al., 2020a; X. P. Xu et al., 2020b; Ying & Sharon, 2021).

Table 2.2 A list of existing studies on green furniture purchase intention based on the theory of planned behavior

| No. | Researcher(s) & Year | Products of study | Additional variable(s) to the TPB model | Dependent variable | Country of market |
|---|---|---|---|---|---|
| 1 | Bogdanovs et al. (2019) | Children's furniture | Spousal influence | Purchase intention | India |
| 2 | Ying & Sharon (2021) | Green furniture | Environmental concern<br>Health consciousness<br>Value perception | GFPI | Malaysia |
| 3 | X. P. Xu et al. (2020a) | Green furniture | Environmental consciousness<br>Physical health<br>Past experience | GFPI | China |
| 4 | X. P. Xu et al. (2020b) | Green furniture | Environmental awareness<br>Willingness to pay<br>Health consciousness | GFPI | China |

Given the gap in the literature on the use of TPB to study GFPI, the following section will discuss in detail how each variable of TPB is related to consumers' GFPI, identify the relevant variables for the extended TPB model, and formulate hypotheses.

### 2.2.4 Attitude and green furniture purchase intention

Attitude is one of the most important factors influencing consumer behavior in green product purchase decisions. Attitude refers to the degree to which a person has a favorable or unfavorable evaluation or assessment of the behavior in question (Ajzen, 1991). Attitude, in turn, can be defined as a collection of beliefs about a particular thing or a behavior that may be transformed into an intention to perform that behavior (Schwartz, 1992). Attitude, to a large extent, influences consumers' purchase intentions.

Though sporadic studies denied the impact of attitude on GPI (Müller et al., 2021), a growing body of literature has revealed that consumers are more likely to learn about and purchase eco-friendly/green products when they have positive attitudes towards such products. In other words, attitude toward green product is positively associated with consumers' GPI (M. F. Chen, 2020; Kumar et al., 2021; T. T. H. Nguyen et al., 2019). For example, Paul et al. (2016) investigated green product consumption based on a survey among 521 respondents and found attitude to be a significant predictor of GPI. In fact, attitude has been found to be the most significant predictor or determinant of consumers' GPI (Kamalanon et al., 2022; M. T. Liu et al., 2020; Yadav & Pathak, 2017), there is also empirical evidence in China (Hao, 2020). Some studies point to the mediation effect of attitude between other variables and GPI. For example, attitude was found to fully mediate the relationship between environmental knowledge and GPI (Indriani et al., 2019).

Apart from influencing GPI, a small amount of research also suggests that attitude is a significant predictor of GPB. For example, Al-Swidi and Saleh (2021) used university students in Qatar as sample and concluded from research that green attitudes, or attitudes toward green products, has a direct influence on consumers' GPB. The Indian market also provided support for this association, showing that eco-buying attitude has a significant impact on green buying behavior (Kumar, 2021). Nevertheless, a more popular belief in academia recognizes the existence of the "attitude-behavior" gap, due to which a positive attitude toward certain products or concepts does not directly translates into actual Purchase behavior (Boulstridge & Carrigan, 2000). And the "attitude-behavior" gap has become a recurring theme in literature and gaining widespread recognition (H. V. Nguyen et al., 2019). It has been evidenced in

marketing literature in different countries, including Spain (Papaoikonomou et al., 2011), Canada (Durif et al., 2012), China (K. Lee, 2008), India (Sadiq et al., 2022), and U.K. (W. Young et al., 2010). In fact, Ajzen et al. (2018) conducted a dedicated study to explore the influence of attitude on behavior. They concluded from a review of previous research that general attitudes towards people, events, policies or organizations are highly correlated with behavioral patterns but not specific behaviors. The MODE model put forward by Fazio (1990), according to which attitude-behavior processes are a function of motivation and opportunity, argues in favor of the correlation between general attitudes and specific behaviors (Fazio & Towles-Schwen, 1999; Fazio & Williams, 1986). However, the model is under increasing criticism for lack of abundant empirical support (Ajzen et al., 2018). Hence, this study agrees with the mainstream literature that attitude is not directly related to behavior but is indirectly related to behavior through the mediation or moderation of other variables (Conner et al., 2007; Kaiser & Schultz, 2009; Thapa, 2010).

Based on the above review and analysis, this study assumes that:

H1: Consumers' attitude toward green furniture is positively associated with their intention to purchase green furniture.

### 2.2.5 Subjective norms and green furniture purchase intention

Subjective norms (written as "subjective norm" in the initial TPB model) refer to the perceived social pressure to perform or not perform an act or influence of the opinions of others in individuals' decision making (Ajzen, 1991). In the decision-making process, people are generally influenced by those around them (Frederiks et al., 2015). According to the original TPB model, subjective norms are positively associated with individuals' intention to perform a given act (Ajzen, 1991). The present thesis studies consumers' GFPI and GFPB. As furniture is a type of durable goods and often of high value, decisions to purchase furniture are made with more discretion than other daily items. So, it makes sense if individuals/households listen to more opinions and suggestions of others and conduct investigations before they make a decision of whether to buy green furniture (Cerri et al., 2018).

Part of the existing literature concluded that subjective norm has no significant influence on consumers' GPI. For example, Paul et al. (2016) investigated Indian consumers' GPI and found subjective norm not a significant predictor of consumers' GPI. They attributed the reason to the fact that the Indian society is generally not highly environmentally conscious, so people's "significant others" tend not to exert a strong influence on them to buy green furniture. A similar

finding was found in the Mexican market, implying that other people's opinions do not matter to Mexican consumers when they buy green products (Müller et al., 2021). However, another study conducted also in India led to different findings. Though not a strong determinant as attitude and perceived behavior control, subjective norm is still a determinant of consumers' GPI (Yadav & Pathak, 2017). Some studies in the Indian market even pointed out that subjective norms have a significant impact on GPB (Kumar, 2021; Sreen et al., 2018; Taufique & Vaithianathan, 2018). Such inconsistency in the results of studies conducted in the Indian market may be attributed to differences in the value of green products concerned and in the demographic characteristics of the sampled population.

Part of the existing literature argued in favor of the positive association between subjective norms and GPI. For example, empirical evidence in Vietnam indicated subjective norms to be significantly related to GPI (Nguyen et al., 2019). In the case of sustainability-labelled coffee, subjective norms were also found to be positively associated with consumers' GPI in Taiwan (M. F. Chen, 2020). Empirical evidence in Thai market (Maichum et al., 2016) and the Chinese market (Hao, 2020) also supported the direct influence of subjective norms on GPI. More persuasively, Zhuang et al. (2021) conducted a meta-analysis of 54 empirical studies which also suggested that subjective norm has a strong positive influence on GPI. There are also studies indicting subjective norms to be an indirect predictor of GPI as its predicting power is subject to the mediation of other variables (Kamalanon et al., 2022; M. T. Liu et al., 2020; Welsch & Kühling, 2009). However, there is no consensus on the model mediators.

Different from some of the countries mentioned above, China is a society with growing, if not high, environmental consciousness. This is largely due to the implementation of the dual carbon national goal of reaching peak carbon emissions by 2030 and achieving carbon neutrality by 2060 (Xinhua News Agency, 2021). Companies are under the pressure to cut down emissions, which has forced them to go green and change their marketing campaigns in favor of green concepts (Xinhua News Agency, 2021, December 31). The "dual-carbon" policy is all over television and media. Chinese citizens are educated about the importance of going green. Besides, there were reports where apartments with higher-than-normal levels of formaldehyde led to deaths, which caused nationwide concerns (Tencent News, 2020, January 3). As a result, Chinese people are more environmentally conscious in general and are thus more likely to receive positive influences in favor of green furniture from their significant others.

Based on the above analysis, this study assumes that:

H2: Subjective norms are positively associated with consumers' intention to purchase green furniture.

### 2.2.6 Perceived behavioral control and green furniture purchase intention and behavior

Perceived behavioral control refers to people's perception of ease or difficulty in performing a behavior (Ajzen, 1991). It is thought to reflect experience and anticipated obstacles. The resources and opportunities available to a person must, to some extent, determine the likelihood of behavioral achievement (Ajzen, 1991). When consumers encounter external factors in making purchase decisions, those who perceive themselves to have more resources and opportunities will have higher levels of behavioral control, feel more confident in their purchasing power, and are more likely to purchase the product (Zhuang et al., 2021). Consumers cannot choose products based solely on their preferences. Instead, they also consider price, availability and other factors. The prices of eco-friendly furniture in the market are often higher than those of traditional furniture. So, it is necessary for consumers to consider their spending power and perceive whether they are capable of purchasing the product (X. Y. Zhang & Dong, 2020).

The initial TPB model suggests that consumers' PBC is an antecedent of their purchase intention. The construct of PBC is thought to be composed of different dimensions, such as perceived controllability and perceived difficulty (M. T. Liu et al., 2020) or perceived benefit and perceived difficulty (Wijayaningtyas et al., 2019). Recent decades have seen the application of TPB model to the field of green consumption. Empirical studies in different countries have almost unanimously shown that PBC is a determinant of consumers' GPI regarding green products in general and specific types of green products. For example, Karatu and Nik Mat (2015, Aug 17-20) conducted a survey among respondents in Nigeria and found that PBC has a significant and direct relationship with GPI. PBC was also found to have significant and positive influences on GPI in Thailand (Maichum et al., 2016).

Existing literature also shows that PBC significantly predicts Indian consumers' GPI (Paul et al., 2016; Yadav & Pathak, 2017). The same result was found by empirical research in Vietnam (T. T. H. Nguyen et al., 2019) , China (Hao, 2020; M. T. Liu et al., 2020) and Mexico (Müller et al., 2021). As to specific types of green products, empirical evidence from Kuala Lumpur, Malaysia indicated that PBC is a significant predictor of consumers' intention to purchase environmentally friendly vehicles (Afroz et al., 2015). Wijayaningtyas et al. (2019) found that PBC of millennials in Indonesia toward buying an eco-friendly house is significantly related to their purchase intention. PBC is the most important prerequisite for purchase intention, which indicates the availability of resources (such as time and money) for green furniture purchases (X. P. Xu et al., 2020b).

Based on the previous studies, this study assumes that:

H3: Perceived behavioral control is positively associated with consumers' intention to purchase green furniture.

In addition, the initial TPB model also suggests a direct influence of PBC on behavior (Ajzen, 1991). Ajzen (1991) pointed out that volitional control is a prerequisite for intention to manifest itself as behavior, which means the person can fully decide whether to perform the given behavior a lot. However, the performance of most behaviors also depends on the availability of resources and opportunities, which are collectively known as people's actual control over behaviors, or actual behavioral control. And people's perception of behavioral control, which refers to people's perception of the level of difficulty to perform a given behavior, is believed to have a direct impact on the performance of behaviors. The addition of PBC thus became the major distinction between TRA and TPB (Ajzen, 1991). Though perceived behavioral control may be composed of separable components that reflects individuals' perception of self-efficacy and controllability, it can still be regarded as a unitary latent variable in the TPB model (Ajzen, 2002).

The relationship between PBC and behavior has been tested in empirical studies on green consumption behaviors, though such studies are limited. For example, Al-Swidi and Saleh (2021) developed an extended TPB model to investigate the factors influencing consumers' GPB in Qatar and found PBC to be a direct determinant of GPB. A similar finding was revealed by another study in India (Kumar, 2021). Though empirical evidence is not abundant, the high value of furniture compared to ordinary consumer goods determines that the availability of money is important. Besides, the distinction between green furniture and conventional furniture is not common sense. Consumers who wish to buy green furniture need to acquire the knowledge to know which types or brands of furniture are green furniture. For example, they will need to familiarize themselves with the knowledge of various eco-labels. This means the availability of information is also important. In other words, PBC is an important prerequisite for consumers' actual GPB. Therefore, this study assumes that:

H4: Perceived behavioral control is positively associated with consumers' green furniture Purchase behavior.

### 2.2.7 Green furniture purchase intention and behavior

A central factor in the theory of planned behavior is the intention to perform a given behavior. Intention is considered as the motivation to be willing to perform a particular behavior, without

which no further action is possible (Al Mamun et al., 2018). Intention indicates the extent to which people are willing to try and the level of effort they plan to put in to perform the behavior. In general, the stronger the intention to perform a behavior, the greater the likelihood of its performance (Ajzen, 1991). Many behaviors in daily life can be considered to be controlled by intention, and people can easily perform these behaviors if they tend to perform them (Ajzen, 1985). For example, under normal circumstances, most people could, if they wanted to, watch the evening news on television, vote for a candidate of their choice in an election, buy toothpaste at the drugstore, pray 42ummare going to bed, or donate blood to the Red Cross.

As mentioned in the previous section, intention alone does not necessarily find expression in specific behaviors for people are not able to make every decision at will. Constraints of opportunities and resources (PBC) also affect the translation of intention into behavior. In other words, there is an intention-behavior gap, which can be bridged with the help of other variables. For example, in the case of organic food consumption, trust, satisfaction and perceived communication were proven effective in lessening the gap between intention and behavior (Sultan et al., 2020). Despite the existence of the intention-behavior gap, intention has been consistently proven in literature to be a significant predictor of behavior, and Purchase behavior is no exception.

Wee et al. (2014) conducted an empirical study on consumers' purchase of organic food products in Malaysia, and the results showed that consumes' GPI will lead to actual GPB. In the study carried out by Yadav and Pathak (2017), the relationship between intention and green buying behavior was positive and strong. Empirical evidence from the Indian market also indicated a significant and positive association between GPI and GPB (Chaudhary, 2018). Chauhan et al. (2021) explored the factors influencing the online purchase of green products and surveyed 182 consumers. Their findings revealed that green purchase intention significantly influenced green purchasing behavior. Most notably, a comprehensive analysis of 108 green purchase-related studies published from 2015 to 2021 identified 135 determinants of GPB. Intention was found to be one of the major positive drivers of GPB. This was cross validated as attitudes, subjective norms and PBC, which together form intention, were also found to be major positive drivers of GPB.

More relevantly, empirical evidence in China also supported the association between GPI and GPB. For example, D. D. Wang (2013) collected data from a nationwide survey on the factors motivating consumers' to engage in GPB. The analyses showed that consumers with stronger GPI are more likely to engaged in actual GPB. Lao and Wang (2015) chose fluoride-free frequency conversion air conditioner as the green product in question to investigate the

effect of traditional Chinese culture values on Chinese consumers' pro-environmental behavior. GPI was found to have a positive influence on GPB. Fan et al. (2018) investigated the drivers of teenagers and young adults' GPB in China based on a valid sample size of 532 respondents. The path analyses results showed a strongly positive correlation between GPI and GPB, indicating that GPI is a significant determinant of GPB. Though people may not always act on their intentions, the formation of a positive intention toward a given behavior increases their likelihood to perform the said behavior (Ajzen, 2020). Based on the above literature, this study assumes that:

H5: Consumers' intention to purchase green furniture is positively associated with their actual Purchase behavior.

## 2.3 Green perceived value

Existing marketing literature is dedicated to understanding what factors can increase customers' willingness to purchase, namely, purchase intention (Agarwal & Teas, 2001). Perceived value is believed by some scholars to be a major determinant as studies show that customers tend to buy products that offer them the greatest perceived value (Zeithaml, 1988). This section introduces the definition and dimensions of perceived value, followed by the application of perceived value in green furniture consumption research, on which basis a hypothesis about the relationship between perceived value and GFPI is put forward.

### 2.3.1 Definition and dimensions of perceived value and green perceived value

The concept of perceived value was first investigated by Dodds and Monroe (1985), who found price to be positively associated with perceived quality which then positively influences perceived value and purchase intention, and brand information seemed to be positively related to price. Dodds and Monroe (1985) put forward an initial model to reflect the relationships between price, quality and value.

Building on their study, Zeithaml (1988) defined perceived value as "consumers' overall assessment of the utility of a product based on perceptions of what is received and what is given" in his exploratory study and adapted the Dodds-Monroe model to form what is now one of the most well-known and influential models in research dealing with perceived value (see Figure 2.6).

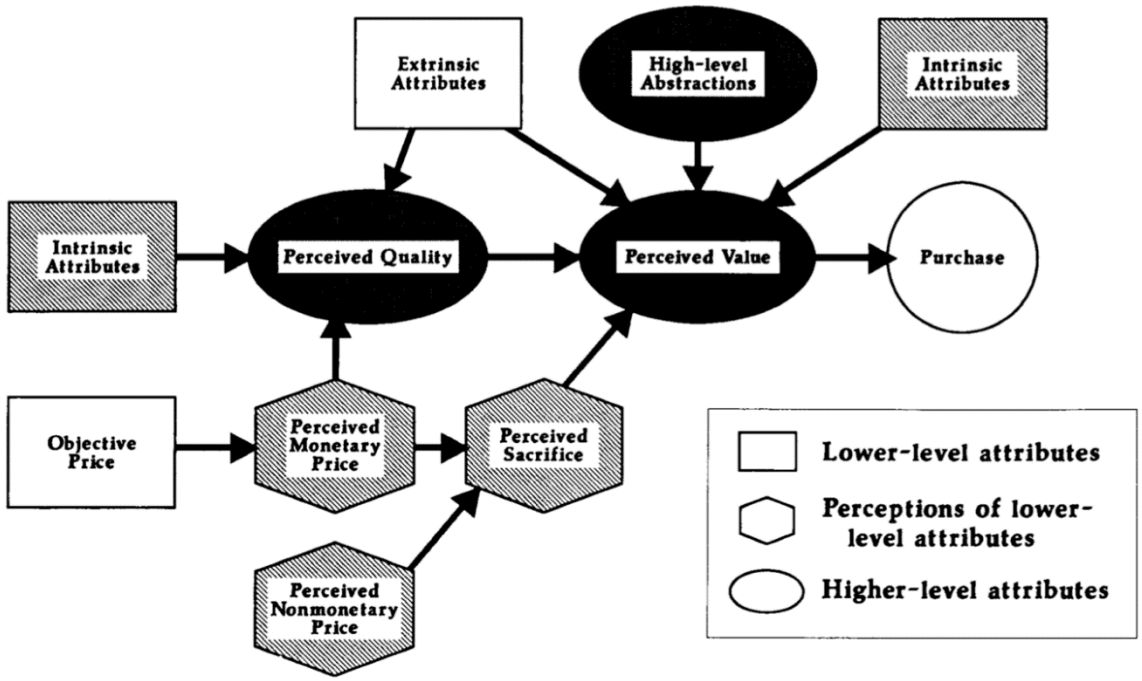



Figure 2.6 A means-end model relating price, quality and value

Source: Adapted from Journal of Marketing (Zeithaml, 1988)

According to this model, perceived value is composed of five dimensions, namely, intrinsic attributes, extrinsic attributes, perceived quality, high-level abstractions and perceived sacrifice. Specifically, intrinsic attributes refer to physical attributes of a product that cannot be changed without changing the nature of the product (Olson, 1977); extrinsic attributes refer to a product's external features that are not part of the physical product itself, such as price, brand, level of advertising and country of origin (Agarwal & Teas, 2001); perceived quality is defined as "the consumer's judgment about the superiority or excellence of a products; high-level abstractions are equivalent to emotional payoff (S. Young & Feigin, 1975); and perceived sacrifice is composed of monetary prices and non-monetary prices.

From a simplified perspective, the Zeithaml (1988) model of perceived value is, in essence, a two-dimensional model composed of benefit components and cost components. Specifically, intrinsic attributes, extrinsic attributes, perceived quality and high-level abstractions belong to the benefit components, i.e., what is received by the consumer, while perceived sacrifice belongs to the cost components, i.e., what is given by the consumer (Zeithaml, 1988). Perceived value is caused by differences in the assessment of all benefits and costs associated with a particular product. Therefore, if the balance of this assessment is positive according to the decision maker, he/she will perceive that there is better value in the offer.

The Zeithaml model was developed by Dodds et al. (1991) which examined the role of extrinsic cues in shaping consumers' perceived value by way of shaping their perceptions of

quality (or benefits) and sacrifice (or costs). Teas and Agarwal (2000) further included country-of-origin as an extrinsic cue to expand the Dodds et al. (1991) model. In the meantime, other scholars (Baur, 1960; Bearden & Shimp, 1982) argued that perceived risks also influence consumers' perceived value and that consumers tend to purchase products with the least perceived risk. Agarwal and Teas (2001) conducted two experiments to explore the role of perceived quality, perceived sacrifice and perceived risks on consumers' perceived value of products. The results indicated that consumers' perceived value is based on a combined assessment of perceived quality, perceived sacrifice and perceived risks. Thus, the concept of perceived value evolved from a two-dimensional construct to a multi-dimensional construct.

As the concept of perceived value gained increasing attention, more and more scholars studied it in different domains. Despite Zeithaml's definition, later scholars generally consider perceived value a subjective and dynamic construct that varies across time and experience (Eggert & Ulaga, 2002; Flint et al., 2002) and according to individuals and situations (Chang & Dibb, 2012; Sanchez et al., 2006). And its dimensions varied in the studies by different researchers. For example, Sheth et al. (1991) proposed that consumers' perceived value is a five-dimensional construct consisting of social value, emotional value, functional value, epistemic value and conditional value. Petrick (2002) considered perceived value to be composed of five dimensions, namely quality, behavioral price, monetary price, emotional response and reputation. A three-dimensional perspective decomposed perceived value into functional, emotional and social dimensions (Sanchez et al., 2006; Sweeney & Soutar, 2001). Chang and Dibb (2012) adopted a holistic perspective and built a conceptual framework of customer perceived value synthesizing the concept and nature of perceived value from four disciplines, namely axiology, psychology, economics and marketing. Z. W. Li et al. (2017) proposed that customer perceived value consists of three dimensions: perceived product value, perceived service value and perceived social value. Specifically, perceived product value comes from the judgment of cost performance; perceived service value comes from the merchant's service level and service capability; and perceived social value reflects the consumer's social evaluation of the merchant and the product.

Despite the divergent definitions put forward by different scholars, Chang and Dibb (2012) identified two areas of consistency across all definitions. First, perceived value is determined by customers instead of by sellers; and second, a trade-off between what is received by customers and what they must sacrifice to acquire a product or service is essential to the definitions of customer perceived value. Based on a holistic review of existing literature, Chang and Dibb (2012) put forward a new definition of customer perceived value as follows:

Customer-perceived value is the customer's overall assessment of what is received and what is given (sacrifice) by a particular supplier compared with other competitors. Customers make this judgement by considering the combination of product quality, service quality, price affordability, and shopping experience. Value is a need-satisfying experience which yields customer satisfaction.

This new definition is based on the initial definition by Zeithaml (1988) and reflective of subsequent research efforts from different perspectives, in different domains, in relation to different types of products (both tangible and intangible), in a competitive sense, and at different stages of the purchase (both before and after). However, in the context of green purchase, a more appropriate term to describe the perceived value of a green product would be green perceived value, which was defined by Y. S. Chen (2013) with reference to the benefit-cost dichotomy of Zeithaml (1988) while adding environmental desires, sustainable expectations and green needs, which can be summarized into "the level of green commitment". Considering the relative nature of value (Sánchez-Fernández & Iniesta-Bonillo, 2007), the present thesis draws on the perceived value definition by Chang and Dibb (2012) and the green perceived value definition by Y. S. Chen (2013), and puts forward a definition of green perceived value as follows:

"Green perceived value is the customer's overall assessment of the net benefit of a product (tangible or intangible) by a particular supplier between what is received (benefit) and what is given (sacrifice) compared with other competitors. Customers make this judgement based on an overall consideration of perceived quality (product and service), price affordability, shopping experience and level of green commitment."

Therefore, the dimensions of green perceived value are perceived quality (product and service), price affordability, shopping experience and level of green commitment.

### 2.3.2 Application of green perceived value in research on green purchase intention

Given the positive association between perceived value and purchase intention (DAM, 2020; Dodds & Monroe, 1985; Zeithaml, 1988), green perceived value has been widely studied in the context of GPI. For example, Y. S. Chen and Chang (2012) employed an empirical study based on a questionnaire survey to explore the relationships among four constructs: green trust, green perceived value, green perceived risk and GPI. Their empirical results showed a positive association between green perceived value and GPI and further revealed that such association is partially mediated by green trust. Similarly, a recent study also showed that green perceived

value has a dominant influence on green trust, which has a significant and positive effect on GPI (Sandi et al., 2021). An empirical study in Brazil also provided evidence that green perceived value increases GPI by increasing consumers' willingness to pay (De Medeiros et al., 2016). L. Chen et al. (2021) focused their research on the fashion industry and found that perceived value, reflected in perceived novelty and perceived usefulness, promotes GPI. Evidence from the organic food industry suggested that consumers who are able to capture the green perceived value of organic food have a stronger intention to purchase organic food (Lim et al., 2014). A more in-depth study that explored the influences of the different dimensions of perceived value on GPI showed that the social value and emotional value dimensions of perceived value have significant impacts on GPI (Colombage & Galahitiyawe, 2020).

Studies in China had similar findings. For example, Guo (2016) constructed a theoretical model of green perceived value, green trust and GPI and explored the respective influences of green perceived value and green trust on GPI. The results suggested that green perceived value not only directly affects GPI but also significantly and positively moderates the influence of green trust on GPI. A similar study exploring explored the relationships among green perceived value, green trust and consumers' intention to stay in green hotels based on a questionnaire survey among 400 respondents showed that green perceived value, reflected in functional, emotional, social and green dimensions, has a significant and positive effect on consumers' green hotel consumption intention (Y. Xu, 2019). Empirical evidence from the area of green housing also indicated that green perceived value is positively associated with consumers' GPI (Zhou et al., 2021).

### 2.3.3 Green perceived value and green furniture purchase intention

Existing literature suggests that green perceived value directly affects purchase intentions. In other words, green perceived value is a direct antecedent to consumers' GPI (Chaudhary & Bisai, 2018; L. Chen et al., 2021; Y. S. Chen, 2013; Y. S. Chen & Chang, 2012). For example, evidence from the Indian market (Chaudhary, 2018), the Indonesian market (Zulfanizy & Wahyono, 2019) and the Pakistani market (Rizwan et al., 2013) all indicated that green perceived value is positively associated with GPI. Though there is a lack of literature on the relationship between green perceived value and GFPI, a few existing studies can provide insights.

As is known to all, furniture is a type of durable goods. It is featured by low purchase frequency and a high cost of a single purchase. As noted by Degirmenci and Breitner (2017),

purchase of furniture, as a type of durable goods, is similar to purchase of cars. The average households usually consider its value for money when making a purchase. Compared to non-green furniture, green furniture tends to be more expensive due to its cost and process technology. Because of this, buyers usually consider carefully when making purchase decisions. The biggest difference between green products and traditional products is their green attributes, and the attributes of green products are key factors that consumers should consider when making purchases. In this sense, studies on other types of green durable goods would be relevant. For example, a study by Koller et al. (2011) explored the ecological aspect of perceived value. The results indicated that perceived ecological value has a significant impact on the perceived functional, economic, emotional, and social dimensions of value, which together increase customer loyalty, i.e., customers' intention to repurchase cars of the same brand. Another study on hydrogen-electric motorcycle purchase intention conducted by H. S. Chen et al. (2012) showed that green perceived value is significantly related to purchase intention. A more relevant case is the study on green housing purchase intention, which validated the crucial predicting effect of perceived value in green housing purchase intention (Zhao & Chen, 2021).

Based on the above studies, this study proposed the following hypothesis:

H6: Green perceived value is positively associated with consumers' intention to purchase green furniture.

## 2.4 Environmental awareness

With the rapid development of industry, increase in the amount of household waste, growing environmental pollution, and serious damage to the ecological environment, various diseases and hazards keep emerging in life. In the face of nature's "revenge", more and more people are beginning to change the ways they think and behave, recognizing the importance of environmental protection. Driven by this form, consumers are consciously avoiding harm to the environment by buying green products (Joshi & Rahman, 2019; X. Y. Zhang & Dong, 2020).

### 2.4.1 Definition of environmental awareness

The concept of environmental awareness derived from the concept of "environmental literacy", which was first introduced in an article entitled "Massachusetts Audubon" by Roth (1968). It is a multi-dimensional concept composed of environmental sensitivity, personal investment and responsibility, attitude and values, skills, knowledge and active involvement (Roth, 1992). In the narrow sense, environmental awareness, as its name suggests, refers to an individual's

understanding of the nature as well as the value of human behavior related to the nature (Gong, 2013). It has been extensively researched by scholars under different names, such as environmental consciousness (Kumar et al., 2021), environmental concern (Al-Kumaim et al., 2021; Chaudhary, 2018; Koenig-Lewis et al., 2014; Nekmahmud & Fekete-Farkas, 2020) or concern for environment (Kumar, 2021), and environmental drive (Chauhan et al., 2021). The present study adopts the term "environmental awareness" (M. F. Chen & Tung, 2014; Okada et al., 2019; Paul et al., 2016; X. P. Xu et al., 2020b) and will use the term throughout this thesis for the purpose of consistency.

The definition of environmental awareness proposed by Hu et al. (2010) emphasized the extent to which individuals are aware of environmental problems and support efforts to solve them. They believed that environmental awareness denotes an individual's willingness to make positive contributions to environmental solutions. Okada et al. (2019) reviewed previous studies on environmental awareness and found that environmental awareness is mainly concerned with individuals' sense about global warming, especially about reduction of CO2 emissions (Carley et al., 2013; Flamm, 2009; Noppers et al., 2015; Y. Zhang et al., 2011). X. P. Xu et al. (2020b) defined environmental awareness as an individual's awareness or understanding of environmental problems which significantly influences the individual's behavior to be more environmentally friendly. Notably, X. P. Xu et al. (2020b) also added the variable health consciousness into their extended TPB model and found a positive association between health consciousness and consumers' GPI. Existing definitions of environmental awareness unanimously concern people's attention to environmental problems and some extent of their pro-environmental behavior, and the underlying concern is sustainability. Specific to the topic of green furniture, environmental problems can be not only problems in the ecological environment, but also problems in indoor environment. As mentioned in previous sections, indoor air quality has a huge impact on people's health (Leech et al., 2002). In this sense, environmental awareness in the scope of furniture research also encompasses health consciousness. On this basis, the present study defines environmental awareness as "an individual's awareness or understanding of environmental problems that have a negative impact on sustainability and/or people's health as well as the efforts to address such problems" (Leech et al., 2002; X. P. Xu et al., 2020b).

### 2.4.2 Environmental awareness and green furniture purchase intention

Existing studies have found that people who care about the environment are more inclined to purchase green products, and consumers with environmental awareness tend to prefer environmentally friendly lifestyles (Chauhan et al., 2021). In other words, there is a positive association between willingness to pay and consumer behavioral intentions (Choi & Parsa, 2007; Kang et al., 2012; Khoiriyah & Toro, 2013). However, increased environmental awareness does not necessarily induce increased purchase intention. Some studies pointed out that environmental awareness influences GPI and/or GPB in an indirect way through other elements (M. F. Chen & Tung, 2014; S. Y. Wang et al., 2016; X. P. Xu et al., 2020b). For example, X. P. Xu et al. (2020b) explored the determinants of consumers' willingness to purchase authentic green furniture from consumers' perspective, and the survey data showed no significant or direct effect of environmental awareness on purchase intention. Instead, environmental awareness can have an indirect effect on purchase intention through other factors such as attitude, subjective norms, PBC and WTP. In other words, environmental awareness can positively influence willingness to pay (X. P. Xu et al., 2020b), and people with higher levels of ecological and environmental knowledge are more willing to pay more for green products (H. L. Wei et al., 2020). Another study revealed that environmental awareness has a significant and positive influence on attitude toward green products, and such an attitude increases consumers' WTP for green products, which then acts positively on consumers' GPI (Khoiriyah & Toro, 2018).

Different from the above literature, another stream of studies points to the direct association between environmental awareness and GPI. For example, Mostafa (2006) found empirical evidence in the Egyptian market that environmental awareness is related to not only consumers' GPI but actual frequency of purchase of green products, namely GPB. Y. K. Lee et al. (2014) found that environmental awareness positively influences green citizenship behaviors and GPI. Naz et al. (2020) studied the GPB of university students in Hungary based on a questionnaire survey among 1,185 respondents. The results showed that environmental knowledge, which is a prerequisite of environmental awareness, has a significant and positive influence on consumers' GPI. A similar conclusion was made that environmental awareness positively affects GPI (Alzubaidi et al., 2021).

Whether the association between environmental awareness and GPI is direct or indirect, there is a general consensus that environmental awareness is positively associated with GPI (M. F. Chen & Tung, 2014; Dangelico et al., 2021; Shen, 2012). On the whole, consumers are likely

to pay for green products when they are aware of their benefits to the ecological environment and their own lives. With the rapid development of industry and the increase in the amount of household waste, environmental pollution is becoming more and more serious, the ecological environment has been seriously damaged, and various diseases and hidden dangers have emerged in life. Faced with the "revenge" of nature, more and more people have started to change their ways of thinking and doing things and realized the importance of environmental protection. Driven by this trend, consumers are consciously avoiding harming the environment by buying green products (Joshi & Rahman, 2019; X. Y. Zhang & Dong, 2020). Based on the previous studies, we hypothesize that:

H7: Environmental awareness is positively associated with consumers' willingness to pay.

H8: Environmental awareness is positively associated with consumers' intention to purchase green furniture.

## 2.5 Willingness to pay

It has been widely recognized that green products are generally sold at higher prices than non-green products of the same kind due to the high cost incurred to be green, such as the cost of eco-friendly materials, the cost of manufacturing processes that minimize impact on the environment and the cost to obtain certifications and ecolabels (Hwang & Tan, 2012; Ling, 2013; Olson, 2013). This has led scholars to pay attention to consumers' willingness to pay for the price difference and yielded some research findings. This section first introduces the definition and connotations of WTP in the green furniture context, followed by an exploration of the relationships among the three most researched variables in green purchase literature, namely environmental awareness, WTP and GPI. On this basis, hypotheses about the relationships are put forward.

### 2.5.1 Definition and connotations of willingness to pay in the context of green furniture consumption

Willingness to pay (WTP) is defined by some scholars as "the affordable price that buyers are prepared to pay for the product in that amount" (Schmidt & Bijmolt, 2020) and by other scholar as "the maximum amount a person is willing to pay for obtaining goods and services" (Didier & Lucie, 2008; Hartono & Harahap, 2007; Wertenbroch & Skiera, 2002). The keywords in these two definitions are willingness and affordability. As mentioned before, green products are generally more expensive than non-green products due to the high cost incurred from eco-

friendly materials to green certification (Hwang & Tan, 2012; Ling, 2013). And price is an important factor influencing purchase intention, which then influences Purchase behavior (Chu & Lu, 2007; Giovanis et al., 2013; Kumar & Mohan, 2021). This is also true in the furniture sector. Bednárik and Pakainé Kováts (2010) studied the impact of household structure and environmental factors on furniture purchasing behavior. In one part of their study, they emphasized price as the main factor influencing furniture purchasing behavior. Based on these considerations, the definition given by Khoiriyah and Toro (2018) is more relevant in the green consumption context. Specifically, WTP is a variable that measures the level of a person's willingness to pay the price difference that exists between non-green products and green products (Khoiriyah & Toro, 2018). To draw from these definitions, WTP in the present study is defined as a measure of the level of a person's willingness to pay the price difference existing between non-green furniture and green furniture.

WTP is a subtle concept that is sometimes confused with green purchase intention. But the two are not equivalent concepts though they are highly correlated. In fact, behavioral willingness and behavioral intention are independent predictors of behavior (Pomery et al., 2009). Specifically, willingness reflects a person's openness to opportunity. It involves little precontemplation of the behavior or its consequences (Gerrard et al., 2002; Gibbons et al., 1998; Pomery et al., 2009) and adds to the predictive validity of the intention to perform risky behavior (Pomery et al., 2009). In comparison, intention denotes the extent of effort a person is planning to make to perform a specific behavior and is the proximal antecedent to behavior (Ajzen, 1991). Studies have shown that the combination of WTP and green purchase intention are chief factors affecting GPB (Naz et al., 2020). But consumers with high GPI that stated strong WTP do not necessarily pay the price as they stated (Barber et al., 2012).

### 2.5.2 Willingness to pay and green furniture purchase intention

In general, consumers' WTP for green products has been increasing in recent years. For example, Papadopoulos et al. (2013) found that in an economic crisis, consumer awareness and interest in green furniture may increase despite the increased cost of green products. The study also found that consumers are typically willing to pay 7-11% more for green furniture than other types of furniture due to the rise in interest. Previous surveys have shown that American consumers' willingness to pay a premium for green products had been growing, with a 3% increase in 2017 compared to 2010 (MarketingCharts, 2017, April 24). Besides, demand for green products had been increasing in Western countries, with average spending on green

products and services increasing to 10% of household budgets. Meanwhile, demand for green products had also been growing year on year in China (Shahsavar et al., 2020).

Some studies also show that consumers' WTP for green furniture has also been rising. For example, a survey conducted by Kucher et al. (2019) in Europe and the United States showed that most consumers expressed a willingness to pay an extra 5% for green products such as furniture when equivalent alternatives were available, and when the price premium rose to 25%, only a very small number of consumers chose green products (Kucher et al., 2019). Chinese scholars Wan et al. (2018) found in an empirical study based on a questionnaire survey among 320 consumers in Shanghai and Shenzhen that 98% of respondents had the WTP for children's green furniture.

Most existing studies indicate a positive relationship between WTP and GPI (Choi & Parsa, 2007; Kang et al., 2012). For example, Khoiriyah and Toro (2013) conducted a questionnaire survey among 200 women concerning and found that WTP will drive consumers' GPI. Evidence from the Indian market concerning eco-friendly apparels also supported this positive association (Kumar et al., 2021). The study conducted by Yadav and Pathak (2017) also showed that the addition of the variable WTP to an extended TPB model increased the predictive power in predicting consumers' GPI. Chinese scholars X. P. Xu et al. (2020b) explored the determinants of consumers' GFPI and found that apart from the three dimensions of TPB and health consciences, WTP also has a strong influence on consumers' GFPI.

Most younger consumers are more likely to pay a high price for green products, and these younger consumers tend to be environmentally conscious (Chaudhary & Bisai, 2018; Shahsavar et al., 2020). In fact, people with higher levels of eco-friendly knowledge are more willing to pay more for green products (S. Q. Wei et al., 2018). This has been evidenced in the areas of furniture (Shen, 2012), green hotels (Kang et al., 2012), green apparels (Prakash et al., 2019) and green food (Moon & Balasubramanian, 2001), and the increased WTP is positively associated with GPI (Prakash et al., 2019; Yadav & Pathak, 2017). The positive association between environmental awareness and WTP was also empirically evidenced in the study conducted by Vlosky et al. (1999) targeted at U.S. consumers. As mentioned in the previous section, increased environmental awareness is associated with increased purchase intentions because when consumers are aware of the benefits of green products for the ecological environment and their own lives, they are more likely to pay for them, meaning that environmental awareness can positively influence WTP (Lasuin & Ng, 2014; X. P. Xu et al., 2020a; X. P. Xu et al., 2020b). Besides, Biswas and Roy (2016) identified that stronger

environmental awareness is associated with stronger WTP, which will lead to consumers' stronger GPI. Based on the above studies, this thesis puts forward the following hypothesis:

H9: Willingness to pay is positively associated with consumers' intention to purchase green furniture.

## 2.6 Socio-demographic variables and green purchase intention and behavior

Out of the existing studies on consumers' green purchase intention, some explored the influence of socio-demographic variables on consumers' GPI and GPB. This section will introduce these studies in detail and formulate relevant hypotheses regarding green furniture.

Socio-demographic variables refer to characteristics of a population, such as age, gender, level of education, marital status, employment status and income. They are often considered in quantitative studies. In behavioral studies, socio-demographic variables are also considered as people with different characterizes may exhibit different behavioral patterns, including purchase intention and Purchase behavior.

As pointed out by Wijekoon and Sabri (2021), most existing studies on GPI and GPB have examined the influence of different socio-demographic variables, most regularly gender, age, education and income. Wijekoon and Sabri (2021) discovered through a review of 108 green consumption-related studies published between 2015 and 2021 that socio-demographic variables are considered more commonly in Asian countries than Western countries, which may be attributable to the fact that developed countries in the west pay more attention to health and quality dimensions of green products.

Some studies identified associations between socio-demographic variables and WTP. For example, a study on urban residents' WTP for green electricity in Jiangsu Province showed that income and level of education are positively related to WTP for green electricity (L. Zhang & Wu, 2012). Empirical evidence from green food sector indicated the relevance of age and income in consumers' WTP for green food (Yu et al., 2014). When renewable energy became the green product in question, only age and income turned out to have a significant influence on WTP in Lithuania out of socio-demographic variables (Liobikienė & Dagiliūtė, 2021). In the case of green electricity, WTP was found to be dependent on household income in Slovenia (Zorić & Hrovatin, 2012).

Though some studies suggest that socio-demographic variables are not significantly related to GPI (Akehurst et al., 2012; Ansar, 2013; Cavite et al., 2022; Rosner et al., 2021), most studies revealed contradictory results. For example, a study dedicated to exploring the influence of

demographic variables on GPI in Malaysia found gender to be significantly associated with GPI with female respondents showing stronger GPI than male respondents, while income, age, level of education and occupation turned out insignificant, and the researchers attributed the reason to women's higher environmental concerns compared to men (Rahim et al., 2017). Instead of being a direct antecedent of GPI, gender can also function as a moderator between other determinants and consumers' GPI (Lobo & Greenland, 2017; Pinem, 2019). Another study targeting at Indian consumers suggested only education level to be a significant predictor of GPI (Nath et al., 2015). There are also cases where gender, marital status, age and education all turned out to significantly influence GPB (Patel et al., 2017), where only education and income were found to significantly influence GPI (Rezai et al., 2011), where age, education and income were found to significantly influence GPI (Wee et al., 2014), and where gender, income and education were all found to significantly influence GPB (L. Wang et al., 2020) .

A high proportion of the existing research revealed income (alternatively known as personal financial situation) to have a significant and positive association with GPI and GPB in developing countries. And Wijekoon and Sabri (2021) attributed the reason to the fact that consumers in developing countries spend a higher percentage of disposable income on green products, which makes green products premium products. Witek and Kuzniar (2021) surveyed 650 Polish consumers across a range of socio-demographic variables and found income to be a significant factor influencing GPI.

The above review shows that the academia has no consensus on whether socio-demographic variables have an influence on GPI and GPB and which socio-demographic variables are significant predictors of GPI and GPB. The author holds that such discrepancies exist mainly because the existing studies are conducted in different markets and regarding different types of green products. Specifically, people in developed countries and developing countries generally differ in terms of average education level and disposable income. Besides, the value of green food is much lower than that of green furniture, which is also much lower than that of green housing. All these differences may lead to different research findings. Despite the discrepancies, Wijekoon and Sabri (2021) reviewed 108 studies on GPI and GPB published between 2015 and 2021 and pointed out that most studies suggest socio-demographic variables to be essentially unrelated to GPI and GPB.

Undoubtedly, the existing findings should be given due consideration. In the meantime, the characteristics of the target market and green furniture itself should not be neglected. In reality, the purchase of furniture, as a type of durable goods, is a household decision instead of individual decision. China is a collectivist economy where family decisions are typically made

jointly, especially by the young couple. So, age, education and gender are not necessarily relevant. Besides, as pointed out in the previous chapter, green furniture is sold at higher prices than conventional furniture in China. When affordability is factored in, the influence of income becomes more pronounced. Therefore, based on the analysis and existing findings, the present study postulates that:

H10: Income positively moderates the relationship between consumers' willingness to pay for green furniture and their green furniture purchase intention.

H11: Income positively moderates the relationship between environmental awareness and consumers' intention to purchase green furniture.

## 2.7 Research model and research hypotheses

The author hereby proposes the TPB extension model, and the hypotheses as shown in Figure 2.7 and Table 2.3, respectively.

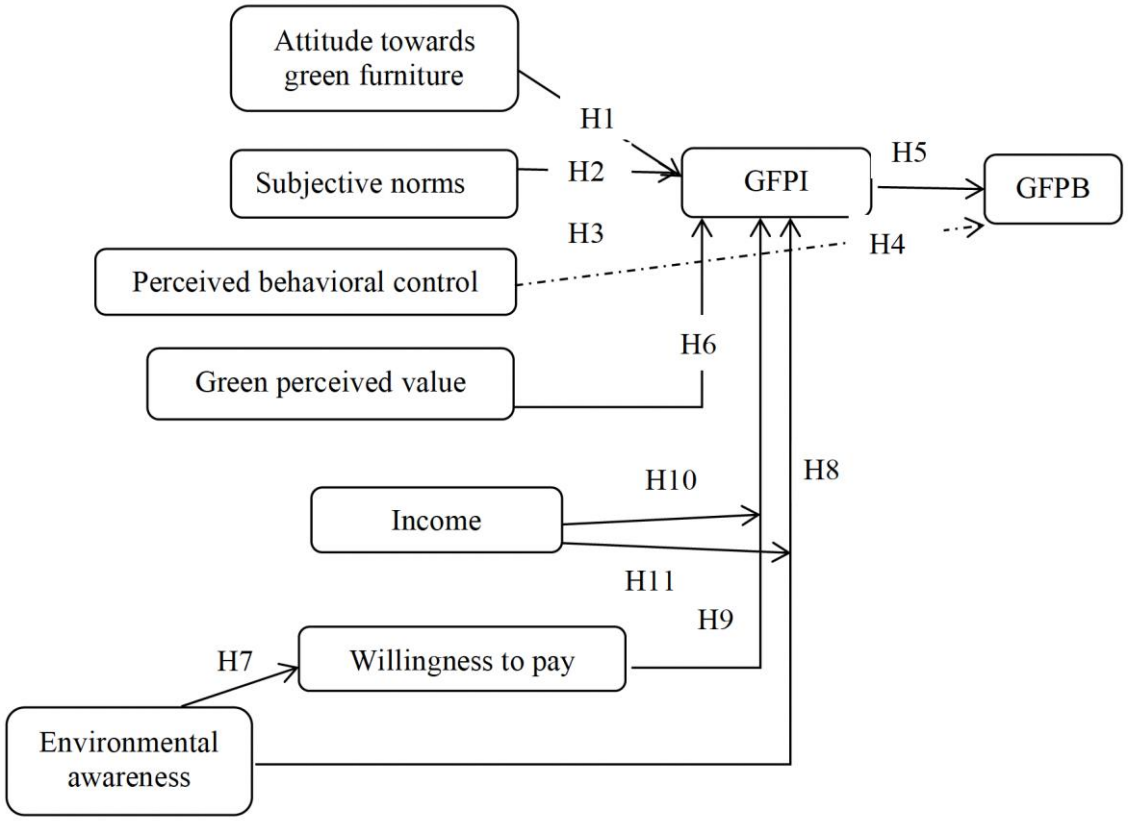



Figure 2.7 An extended model of TPB of consumers' green furniture purchase intention

Source: Adapted from Ajzen (1991)

Table 2.3 List of hypotheses

| No. | Hypotheses |
|---|---|
| H1 | Consumers' attitude toward green furniture is positively associated with their intention to purchase green furniture. |
| H2 | Subjective norms are positively associated with consumers' intention to purchase green furniture. |
| H3 | Perceived behavioral control is positively associated with consumers' intention to purchase green furniture. |
| H4 | Perceived behavioral control is positively associated with consumers' green furniture Purchase behavior. |
| H5 | Consumers' green furniture purchase intention is positively associated with their actual Purchase behavior. |
| H6 | Green perceived value is positively associated with consumers' green furniture purchase intention. |
| H7 | Environmental awareness is positively associated with consumers' willingness to pay for green furniture. |
| H8 | Environmental awareness is positively associated with consumers' green furniture purchase intention. |
| H9 | Willingness to pay is positively associated with consumers' green furniture purchase intention. |
| H10 | Income positively moderates the relationship between consumers' willingness to pay for green furniture and their green furniture purchase intention. |
| H11 | Income positively moderates the relationship between environmental awareness and consumers' intention to purchase green furniture. |

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# Chapter 3: Research Methods

## 3.1 Questionnaire survey background

### 3.1.1 Background of the Chinese furniture industry

Furniture industry is directly related to people's life interests and enjoys an outstanding international competitiveness. It plays a significant role in various aspects such as meeting consumer demand, improving life quality, facilitating international trade, providing employment opportunities, developing regional economy, and building a harmonious society.

The furniture industry, as a durable consumer goods industry, has suffered a huge impact from the COVID-19 pandemic (see Figure 3.1). In 2020, China's furniture industry generated an operating income of 687.54 billion yuan, down by 3.8% compared to 2019. Its performance rebounded in 2021. According to the statistics released by China National Furniture Association (CNFA): in 2021, the number of furniture enterprises above designated size was 6,647, which generated a cumulative revenue of 800.46 billion yuan, an increase of 13.5% over the previous year; the cumulative total profit was 43.37 billion yuan, a year-on-year increase of 0.9%; these enterprises produced a total of 1.12 billion pieces of furniture, an increase of 14.01% year-on-year; the furniture enterprises above designated size nationwide achieved a total volume of retail sales of 116.68 billion yuan, an increase of 14.5% year-on-year.

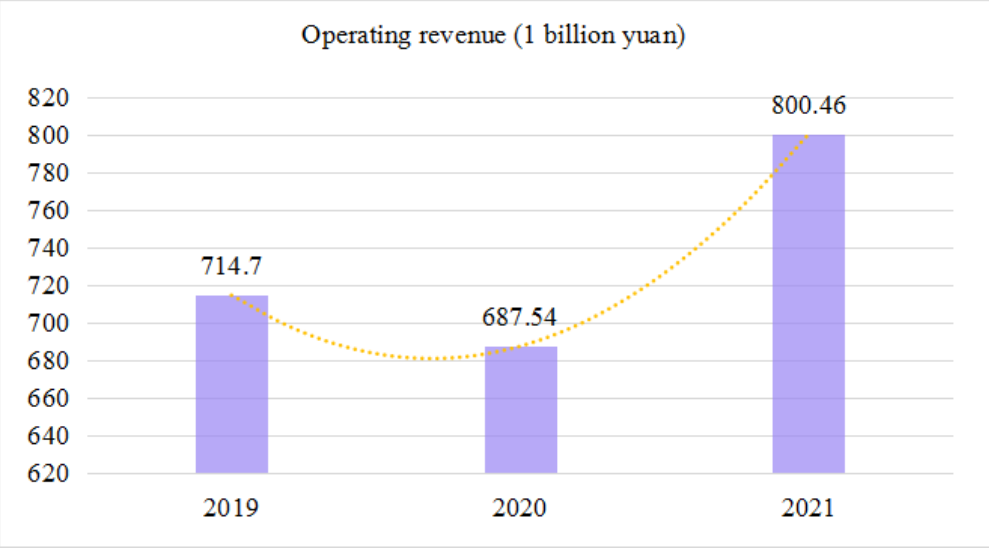



Figure 3.1 The operating income of Chinese furniture enterprises from 2019 to 2021 (billion yuan)

Source: China Construction Association (2020)

The operating income increased by 13.5% year-on-year, and the production increased by 14.01% year-on-year, both of which are relatively high increases, but the profit growth was only 0.9% year-on-year. Industry experts believe that the slow profit growth in 2021 is caused by the substantial increase in various costs of furniture companies, and the profit of the enterprises was seriously squeezed. Meanwhile, the COVID-19 pandemic broke out in many places, exerting huge pressure on the international and domestic markets. For many enterprises, to survive and maintain stable development is already victory.

### 3.1.2 The furniture buying trend of Chinese consumers: Green and environmentally friendly

With the improvement of the national economy and residents' income, the consumption structure of household products has been upgraded and China's home building materials industry is gradually restructured: its furniture products focus more on the needs of quality, emotion, health and environmental protection, rather than functions. In the new social situation, consumers pay more attention to their health and environmental protection, thus green and healthy consumption has become a big trend in the home building materials industry.

According to "2020 Market Status and Development Trend Analysis of China's Home Building Materials Industry: Green Building Materials Are the Future Development Trend" issued by the Qianzhan Industry Research Institute, with the development of China's economy, the trend of consumption upgrading and consumers' strengthened health awareness, China's furniture products attach more importance to quality, emotion, health and environmental protection, instead of functions. Therefore, when purchasing household products, most consumers tend to choose green products that will not impair their health. Currently, the main group of home consumption is the post-80s and the post-90s, of whom the post-80s account for 51% and the post-90s account for 33%. Most of them have a bachelor's degree or above, accounting for 83%. In the next five to ten years, this group will still be the main force of home consumption. "The post-80s and the post-90s have relatively superior living conditions and enjoy richer material resources during their growth, so they have more "demanding" requirements for the products they want to consume. They are trustworthy consumers of quality, and green and environmental protection is one of the main dimensions to measure the quality (China Construction Association, 2020).

"The Development Trend of China's Home Furnishing Industry in 2022: Raw Materials and Environmental Protection of Household Products Have Become the Most Important Factors

for Consumers" released by iiMedia Research Group (2022) in June 2022 also points out that 67.8% of Chinese home users will consider the raw materials of products when buying hard decoration materials; 60.5% of Chinese furniture users consider whether the products they buy are environmentally friendly. In the era of pursuing high quality of life, the raw materials and environmental friendliness of household products have become the most important factors for consumers.

### 3.1.3 Status of Suzhou's furniture market

According to the data released by Suzhou Bureau of Statistics, in 2019, the city's per capita disposable income of permanent residents was 60,109 yuan. Specifically, the per capita disposable income for urban residents was 68,629 yuan, and that for rural residents was 35,152 yuan. The per capita consumption expenditure for all permanent residents was 35,414 yuan. Specifically, the per capita consumption expenditure for urban residents was 39,648 yuan, and that for rural residents was 23,012 yuan. In 2020, the per capita disposable income of the city's permanent residents will be 62,582 yuan, an increase of 4.1% over the previous year. Specifically, the per capita disposable income of the permanent urban residents was 70,966 yuan, an increase of 3.4%; the per capita disposable income of the permanent residents in rural areas was 37,563 yuan, an increase of 6.9%. The per capita consumption expenditure of all permanent residents was 34,770 yuan, down by 1.8% over the previous year.

Specifically, the per capita consumption expenditure of urban residents was 39,005 yuan, down 1.6%; the per capita consumption expenditure of rural residents was 22,129 yuan, down 3.8%. In 2021, the city's per capita disposable income of permanent residents was 68,191 yuan, an increase of 9.0% over the previous year. Specifically, the per capita disposable income of urban residents was 76,888 yuan, an increase of 8.3%; the per capita disposable income of rural residents was 41,487 yuan, an increase of 10.4%. The per capita consumption expenditure of all permanent residents was 41,818 yuan, an increase of 20.3% over the previous year. Specifically, the per capita consumption expenditure of urban permanent residents was 46,566 yuan, an increase of 19.4%; and that of rural permanent residents was 27,240 yuan, an increase of 23.1%.

Statistics suggested that the per capita disposable income of all residents in Suzhou exceeded the 60,000 yuan threshold in 2020, reaching 62,582 yuan, an increase of 4.1% over 2019. The per capita disposable income of the city's permanent residents in 2021 was 68,191 yuan, an increase of 9.0% over 2019, showing a good trend of year-on-year growth. The

stabilization and improvement of Suzhou's economy provided a solid guarantee for the rebounding growth of residents' wage income.

Statistics indicated that in 2020, hit by the COVID-19 pandemic, Suzhou residents' per capita living consumption expenditure still reached 34,770 yuan, down 1.8% year-on-year. As the pandemic got under effective control, the per capita consumption expenditure of all permanent residents in 2021 increased to 41,818 yuan, an increase of 20.3% over the previous year. The economic and social order recovered at an accelerated speed. Besides, with the implementation of various consumption stimulus measures in Suzhou, residents' consumption showed a continuous rebound. Residents' ever-increasing purchasing power lays a good foundation for the rapid development of the furniture industry in Suzhou, which will further promote its consumption upgrade. In the meantime, residents' consumption structure and consumption philosophy have also undergone some changes. The factors affecting their consumption behavior have extended from pure price to brand, quality, environmental protection, reputation, service and shopping environment. Meanwhile, the increase in disposable income of urban residents has also provided strong support for the demand growth in the furniture industry.

To continue facilitating the development of "Beautiful Suzhou" and to promote the synergy between high-quality socio-economic development and high-level ecological protection, Suzhou has released the "The 14$^{th}$ Five-Year Plan of Suzhou for Ecological and Environmental Protection", which advocates a simple and moderate, green and low-carbon lifestyle. The Plan calls for steady improvement of the city's air quality, improvement of the quality of the water environment, comprehensive control of environmental risks, as well as consolidation and improvement of the safe use of soil.

The Plan focuses on the following tasks:

(1) Strengthen source management and promote green, low-carbon and circular development; optimize the pattern of land development and protection; facilitate the green transformation and upgrading of industrial structure; construct a clean and efficient modern energy system; and create a green and low-carbon transportation system.

(2) Comprehensively advance the action plan for carbon peaking, and enhance the ability to cope with climate change; thoroughly implement the action plan for carbon dioxide emission peaking; increase control of greenhouse gas emissions in key areas; and enhance the ability to adapt to the impact of climate change.

(3) Strengthen synergistic management of PM2.5H and O3; improve the comprehensive "gas quality". Strengthen synergistic control of PM2.5H and O3; increase VOCS treatment;

facilitate deep treatment of stationary sources; strengthen mobile source pollution prevention and control; strengthen urban and rural surface pollution control; improve the level of heavy pollution weather response; and continue to strengthen noise pollution prevention and control.

(4) adhere to the integrated management and improve the quality of the water environment. Implement water environment quality management goals, to effectively protect regional water safety, continue to deepen water pollution prevention, continue to better protect the "one river, two lakes and two rivers", vigorously promote the construction of ecologically beautiful rivers and lakes, vigorously improve water resources utilization, and carry on and promote water culture.

(5) Promote the system of coordinated prevention and control and improve the soil and rural environment. Strengthen the prevention and control of soil and groundwater pollution system; comprehensively promote the safe use of soil; and build a beautiful and livable rural environment.

(6) Strengthen system protection and restoration and improve ecological product supply. Strengthen the construction of ecological security system; strengthen the natural ecosystem management and restoration; and enhance biodiversity protection.

(7) Strictly control regional environmental risks, and effectively protect environmental safety. Strengthen the control of environmental risks at source; improve solid waste pollution prevention and control; strengthen the prevention and control of heavy metal risks; and strengthen the security of the radiation environment.

(8) Improve the environmental governance system and strive to build a social governance pattern. Improve environmental regulations, policies and standards; improve the ecological and environmental management mechanism; optimize the ecological and environmental law enforcement and supervision system; improve the green, low-carbon and circular development mechanism; and establish a national action system.

(9) Improve monitoring and supervision capabilities and solidify the foundation of ecological environmental protection. Improve ecological environment detection and monitoring capacity; improve ecological environment law enforcement and supervision capacity; improve environmental management informatization capacity; improve ecological environment infrastructure support capacity; and strengthen ecological environment protection technology support capacity.

(10) Strengthen joint protection and common governance and integrate into the green development of the Yangtze River Delta. Strengthen the common development and guarding of ecological protection space; strengthen the joint prevention and treatment of regional

environmental pollution; and innovate the collaboration mechanism of ecological and environmental management.

### 3.1.4 The main features of Suzhou's furniture industry

Suzhou furniture industry enjoys a long history and an overall sound development. Under this background, large-scale finished furniture enterprises can operate and maintain a good development trend without causing any pressure on inventory. However, as for micro and small enterprises, their development is hindered by various factors from rising labor costs, rising raw material costs and low prices of finished products to low originality and serious homogenization. And the general atmosphere of the overall development of the industry has intensified the competition among Suzhou furniture manufacturers and foreign enterprises. In addition to the insufficient protection of product property rights and serious product homogenization, furniture companies have to reduce their own product profits to scramble for a decent market share.

With the rapid development of the Suzhou furniture industry and the increasing contribution of the Suzhou furniture industry to the regional economy, the Suzhou furniture industry is increasingly viewed as an important industry for the regional economy. To promote the sustainable development of the furniture industry, relevant government departments use economic and legal means to carry out macro-control and promote services to make the development of the industry more standardized, scientific, and moving towards the direction of modern enterprise clusters.

The development of the industry has given rise to the birth and application of more new models and technologies. The Suzhou furniture industry has followed the development trend and actively made breakthroughs in product originality. In model innovation, Suzhou furniture enterprises have actively embraced e-commerce, expanded their influence through the Internet, and implemented services in offline stores, making significant progress.

Suzhou furniture industry is facing a development crisis and problems while making achievements. Specifically, the homogenization of furniture product types and quality in the market is very serious; and the lack of originality has led to very fierce competition among local enterprises in Suzhou. The cost of raw materials, labor costs, transportation costs and other costs continue to rise, while furniture enterprises need to respond to the national production of environmental protection, green, low-carbon call.

As a result, enterprise profits have been significantly reduced; and transformation of enterprise equipment and facilities has become a problem. These challenges will affect the

future development of furniture enterprises in Suzhou. Besides, brand image and reputation are particularly important for the furniture industry, which is a traditional industry. Although after years of development, Suzhou furniture enterprises have gradually improved themselves in all aspects and constantly improved the ability of hardware and software, the service consciousness is yet to be improved, which also undermines the transmission of the brand awareness.

Furniture consumers in Suzhou can be classified into three main groups. The first group consists of active consumers who rarely take into account the price factor and are more inclined to expensive products and have a preference for mahogany furniture. The second group consists of consumers who attach more importance to the purchase of furniture, value the style and quality of furniture, enjoy the aesthetic and cultural pleasure, and require furniture to reflect their taste and personality. They often do not have too high expectation for prices. The third group consists of the working class and general consumers who tend to prefer inexpensive and good-value-for-money furniture. Cost-effectiveness is their primary consideration. They expect to spend less money while buying good quality furniture that meets the environmental standards. Guided by the concept that "you get what you pay off", they tend to be very careful when buying furniture and often shop around.

### 3.1.5 Green certification in China's furniture industry

At present, the highest level of green product certification in China is the China Environmental Labeling Program Certification (ten-ring label) awarded by China's Ministry of Ecology and Environment benchmarked to the standards of ISO14024 and the Nordic Swan Ecolabel. The certification covers two aspects: environmental system and product environmental protection. The ecolabel, which has clear product technical requirements, with clearly defined product indicators and testing methods, has been upgraded to a national environmental protection standard. The products produced by enterprises that have passed the certification can be said to have reached the highest level of environmental standards. An environmental label is a mark on the product itself or its package, showing that the product has passed the environmental protection certification. It only appears on a product that meets certain quality standards and is environmentally friendly throughout the producing, using and recycling processes. That is to say, furniture products with such labels are more resource-saving, bring little harm to nature, and do not impair consumers' health. Thanks to these labels, consumers can easily understand which products are beneficial to the environment and harmless to their own health, thus they can easily recognize and buy green furniture.

Guided by such preferences, furniture manufacturers facing the fierce competition in the market will produce green products, pay attention to green production technology, adjust the organization structure of green production, and promote the coordinated development of environment and economy. In addition, another authoritative green certification in China's furniture industry is CQC, which is a well-recognized certification in line with international certification standards. The technical requirements of the enterprises that have passed the CQC product certification are synchronized with equivalent products of international certification. Access to CQC product certification means that the product safety is guaranteed by the brand. Under the current situation of uneven production enterprises, the CQC certification is conducive to improving the visibility and competitiveness of the brand of certified products, obtaining a green pass into the market, increasing market share, and ultimately facilitating enterprises to achieve coordinated economic and social benefits.

## 3.2 Sample and questionnaire design

This study collected primary data suing a quantitative mono design study, based on a survey, to test the developed model and hypothesis (Brunt et al. 2017).

This thesis focuses on investigating green furniture purchase intention and Purchase behavior of consumers in Suzhou, China. The target population consisted of participants who were working and living in Suzhou, in 2022. This study used a non-probabilistic convenience sampling procedure (Malhotra, 2019). Furniture is a typical type of durable goods. The purchase frequency is low, and consumers are relatively concentrated on certain age groups. Only a limited number of consumers would be present at furniture stores in a given time period. To ensure an adequate sample size, the questionnaires were distributed online through Sojump, a popular platform for online questionnaire, examinations and voting services. Accordingly, the field work adopted an online survey procedure (Malhotra, 2019). A total of 554 questionnaires were recovered.

Before the questionnaire was designed, the author extensively consulted a large amount of literature on green furniture and organized and compared the existing literature to initially identify the variables of this thesis and their measurement items. Through discussion with his supervisor, the author repeatedly revised the expression of each variable item to make the statements clear and easy for participants to understand. In the meantime, the author also deleted variables with low relevance and overlapping variables and revised ambiguous wording to arrive at the final variables and items.

The questionnaire design process is presented in Figure 3.2.

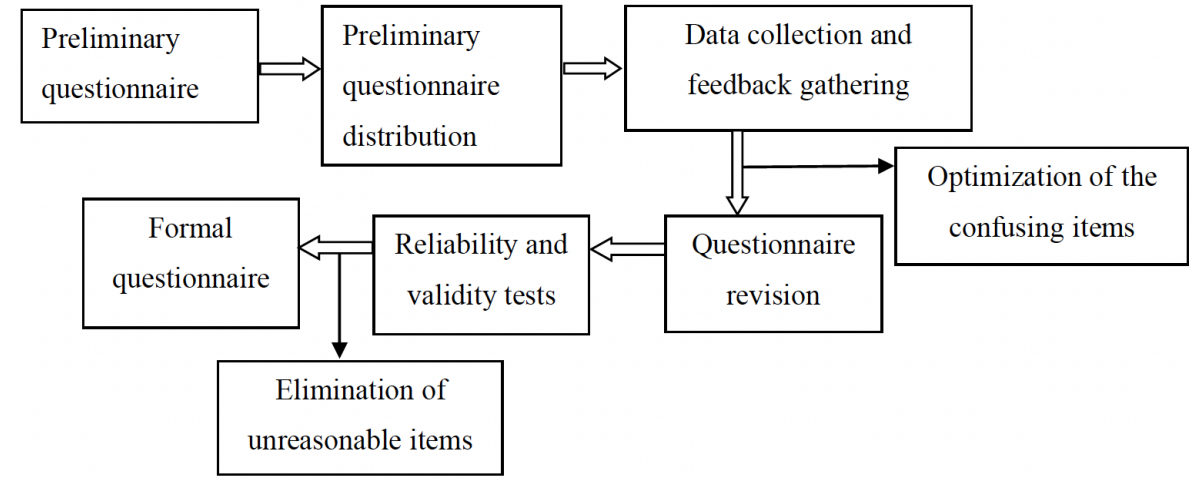



Figure 3.2 Questionnaire design flow chart

The preliminary questionnaire was designed based on the principles of reasonable structure, easy-to-understand description and overall scientific rationality drawing on the questionnaire survey of existing research on the purchase of durable goods and green Purchase behavior and in light of the purchase habits of green furniture of the author's company's clients. Then, under the guidance of the author's supervisor, the content of the questionnaire items was increased or decreased, and the order of the items was adjusted to form the final questionnaire, which was distributed to the participants. The questionnaire consists of four parts. The first part is the introduction, which explains the purpose of the questionnaire and is used to understand the consumer's intention and purchasing behavior towards green furniture, and to explain the definition of green furniture with pictures of common eco-labels to facilitate the participants' understanding; the second part aims to understand consumers' awareness and Purchase behavior of green furniture, mainly investigating consumers' perceptions of green furniture and their past purchasing habits of green furniture; the questions included in this section are related with the awareness of green furniture, characteristics of green furniture, main criteria to buy green furniture, awareness of green furniture labels, willingness to buy green furniture and willingness to pay more for green furniture; the third part aims to find participants' responses to the variables involved in this study. A 5-point Likert scale design was adopted, where 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, and 5 = strongly agree.

As for the first variable of attitude, most scholars describe it by words such as "support", "approve", and "love", but this paper learns from Kim and Han (2010), Yadav and Pathak (2016), Yadav and Pathak (2017), and puts forward 6 items. ATT1: I think buying green furniture is extremely good. ATT2: I think buying green furniture is extremely desirable. ATT3:

I think buying green furniture is extremely enjoyable. ATT4: I think buying green furniture is extremely wise. ATT5: I think buying green furniture is extremely favorable. ATT6: I think buying green furniture is extremely pleasant.

The second variable, subjective norm is an important variable in TPB with a relatively mature design, thus this paper borrows the scale design from X. P. Xu et al. (2020), and it includes 3 items. SN1: Most people who are important to me think I should purchase green furniture. SN2: Most people who are important to me would want me to purchase green furniture. SN3: People whose opinions I value would prefer me to purchase green furniture.

The third variable, perceived behavior control, is also an important variable in TPB model and has a relatively mature scale design, thus this paper learns from Kim and Han (2010), Yadav and Pathak (2016), Yadav and Pathak (2017) and the scale design mainly contains 3 items. PBC1: Whether or not I buy green furniture in place of conventional non-green furniture is completely up to me. PBC2: I have resources, time and opportunities to buy green furniture. PBC3: I am confident that if I want to, I can buy green furniture in place of conventional non-green furniture.

Regarding the fourth variable of willingness to pay, this paper draws on the design from Chaudhary (2018), including a total of 3 items. WTP1: I would pay more for a green furniture that is making efforts to be environmentally sustainable. WTP2: I would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable. WTP3: I feel proud to have green furniture in my house though they are more costly than conventional products.

The selection and scale design of the fifth variable, green perceived value, is borrowed from Yadav and Pathak (2016), Chaudhary (2018), including GPV1: The green furniture environmental functions provide good value to me; GPV2: The green furniture environmental performance meets my expectations; GPV3: I purchase green furniture because it has more environmental concern than non-green products; GPV4: I purchase green furniture because it is environmentally friendly; GPV5: I purchase green product because it has more environmental benefit than non-green products.

Green furniture is necessarily linked to environmental awareness, thus this paper learns from M. F. Chen and Tung (2014), Paul et al. (2016), X. P. Xu et al. (2020a), selects environmental awareness as the sixth variable, and puts forward 5 items. EA1: I am extremely worried about the world's environment. EA2: To achieve sustainable development, I think people should live in harmony with nature. EA3: The balance of nature is very delicate and

easily upset. EA4: I am willing to control my consumption to realize the sustainable development. EA5: I think individuals have the responsibility to protect the environment.

Purchase intention is the focus of this paper, and it has already been well studied in a pretty large amount of past literature. This variable is adapted from Al Mamun (2018) and includes a total of 6 items. PI1: I would purchase green furniture even if their performance is the same as that of conventional furniture. PI2: I would purchase green furniture even if its design is not novel. PI3: I am more likely to purchase green furniture. PI4: When I replace any furniture, I would plan to purchase green furniture. PI5: When I have the need, I would purchase green furniture rather than conventional furniture. PI6: I plan to spend on green furniture.

The last variable of purchasing behavior is adapted from Chan and Lau (2002) Jaiswal (2018), combined with actual purchase behavior of consumers. It puts forward 5 items. PB1: My family purchase green furniture at a much higher frequency than conventional furniture. PB2: My family spends much more on green furniture than on conventional furniture. PB3: My family purchases much more pieces of green furniture a than conventional furniture. PB4: Out of ecological considerations, I have replaced some conventional furniture items into green furniture. PB5: When I buy furniture, I will always look at the composition label to see whether it contains substance harmful to the environment.

And the fourth part focuses on basic information about the respondents, including nine aspects: age, gender, marital status, number of children under 18 years old in the family, highest level of education, type of occupation, permanent residence, annual household income and household structure.

## 3.3 Survey process

Prior to the formal survey, a pre-test of the survey (Malhotra, 2019) was conducted among participants through an online platform. Participants accessed the questionnaire mainly through computer link and WeChat link on mobile phones. The average length the participants spent filling out the questionnaire was about 392 seconds. The participants considered the pre-test questionnaire easy to understand and consisting of neither irrelevant nor semantically repetitive items. A small number of participants were slightly confused about the last question of the Green Furniture Awareness and Purchase behavior Part, which was later changed into a multiple-choice question by the supervisor.

The revised questionnaire was then Tested for reliability and validity to eliminate any unreasonable items in the questionnaire. After the reliability and validity tests, all the questionnaire items turned out reasonable. So, the final questionnaire was confirmed.

The survey process is presented in Figure 3.3.

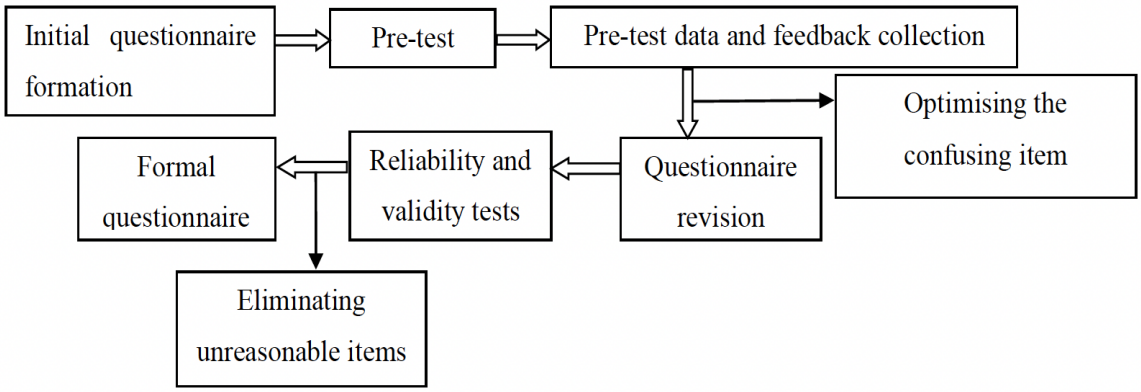



Figure 3.3 Survey process flow chart

## 3.4 Data analyses and methods

### 3.4.1 Descriptive statistics

Descriptive analysis is a necessary step in the statistical analysis of the questionnaire survey data, which shows the basic background characteristics and attitudes of the sample in the form of frequencies and percentages. For example, to study the green furniture purchase intention and behavior of consumers, this paper conducts a descriptive analysis of the sample data: it calculates the concentration characteristics (means) and fluctuation characteristics (standard deviations) of the data, and analyzes the characteristics of age, income, education level etc. to understand the basic situation of the sample.

### 3.4.2 Reliability test

Reliability refers to the consistency or reliability level of the measurement. It uses the same method for repeated measurements to determine whether the respondents have answered seriously and whether the collected data is true and trustworthy. If the results of multiple repetitions are similar, it proves a high reliability. Once completing the questionnaire survey, the reliability test should first be applied. The same object should be measured repeatedly with the same method to confirm the validity and reliability of the sample responses. Only after pass the reliability test, can the analysis proceed to the next step. Among various reliability

measurements in social science research, Cronbach α coefficient is the most commonly used to measure the reliability and authenticity of the sample responses. The scale data are analyzed respectively for reliability in terms of dimensions, and eventually the α coefficient values for all dimensions are summarized in a table as the output. An α value lower than 0.6 indicates low reliability and that the questionnaire should be redesigned until it meets the reliability analysis requirements; an α value between 0.6 and 0.7 indicates an acceptable but unconvincing level of reliability, and thus the scale may need to be adjusted appropriately; an α value between 0.7 and 0.8 indicates that the measurement results are acceptable, stable and reliable; an α value higher than 0.8 stands for excellent consistency, high stability and strong reliability. Reliability test is the first step in any measurement. Besides, the questionnaire should be pre-tested for its reliability to ensure the authenticity and reliability of the questionnaire data.

### 3.4.3 Validity test

Validity refers to the validity and accuracy of the questionnaire design. This step is vital for measuring the data, testing the rationality of the questionnaire design and each variable item, avoiding deviation from the research objectives, and ensuring the research significance. Factor analysis is the most ideal method to study the construct validity of the measurement scale and the whole questionnaire. It combines multiple metrics, including KMO value, significance, and common factor variance, using their test values to verify the validity of the collected data. In validity analysis, KMO value and significance are first analyzed by KMO and Bartlett's test of sphericity. KMO values range from 0 to 1. If the KMO value is closer to 1, the correlation between the variables is stronger, and the data is more suitable for factor analysis. A KMO value lower than 0.6 suggests that the data collected from the study is not suitable for factor analysis, and other statistical methods should be considered, or the questionnaires, model variables and items should be redesigned. If the KMO value falls between 0.6 and 0.7, it indicates that the data collected from the survey has average validity and accuracy, and is acceptable for factor analysis; a KMO value between 0.7 and 0.8 indicates that the data collected from the survey has relatively good accuracy and suitability for factor analysis; a KMO value larger than 0.8 indicates a good partial correlation between the variables of the questionnaire, and thus the data is very suitable for factor analysis. In Bartlett's test of sphericity, Sig. = 0.000 means a strong significance at $\alpha < 0.001$ level, and it indicates that the questionnaire items are consistent with the survey objectives, variable items are strongly correlated rather

than independent, therefore the questionnaire design is reasonable and it is suitable for factor analysis.

### 3.4.4 Factor analysis

The term "factor analysis", coined by Thurstone (1931), refers to a multivariate statistical method. In recent years, factor analysis has been widely used in various industries as a result of the economic development and the leap of electronic information technology. As a data analysis method developed from principal component analysis, factor analysis describes the relationship between original variables. It uses a common factor to replace several highly relevant variables, and then takes the common factor as the research object to reduce the number of analysis variables; with several irrelevant factors replacing many original complex variables, it then conducts exploratory factor analysis (EFA) and partial confirmatory factor analysis (CFA). By doing so, it is more convenient to find out the main factors affecting consumers' purchase intention and purchase behavior. These common factors are mutually independent or irrelevant, but not specific.

### 3.4.5 Structural equation modelling

Structural equation modelling (SEM) is a statistical method based on the covariance matrix of variables. By studying the linear regression equation between latent variables and measurement variables, it analyzes the structural relationship between measurement errors and latent variables. A latent variable is a common influencing variable formed by two or more measurement variables. In research, SEM tests both manifest variables that are observable and latent variables that may not be directly observable. On the basis of factor analysis and path analysis, SEM can clearly analyze contribution of individual variables to the total and the interrelationships between individual variables. Compared with traditional analysis, SEM explains as many changes in variables in the model while understanding the covariation between variables. In recent years, as a very important multivariate statistical analysis technique, SEM has been widely used in various research fields such as psychology, sociology and behavioral science.

In SEM, to understand the degree of correlation between latent variables, each latent variable is measured with multiple indicators or items. Factor analysis can be used for each latent variable to first calculate the relationship between the latent variable (i.e. factor) and the

topic (i.e. factor loading) to obtain a factor score as the observed value of the latent variable, and a factor score as the correlation coefficient between the latent variables.

Traditionally, only a single factor is allowed for each topic (indicator), but SEM allows for more complex models. It is possible to deal with models with more complex dependencies such as the dependence of an indicator on multiple factors or the consideration of higher order factors.

In traditional path analysis, only the strength of each path (relationship between variables) can be estimated. In SEM, in addition to the estimation of the above parameters, it is possible to calculate the overall fit of different models to the same sample data and thus determine which model is closer to the relationship presented by the data.

The SEM analysis started with the design of a diagram – the path model – that displays the latent variables/constructs, the relationships between the variables of interest and the research hypotheses. This diagram is often referred to as a path model. The SME path model is made up of two elements: the measurement model (outrer model), describing the relationships between the latent variables and their indicators; and the structural model (inner model), describing the relationships between latent variables.

The path model also includes the statement of moderating effects, as this study assumes that a third variable – income – affects the strength of the relationship between two groups of constructs (on the relationship between consumers' willingness to pay for green furniture and their green furniture purchase intention, and on the relationship between environmental awareness and consumers' intention to purchase green furniture).

Moreover, the proposed model also assumes the existence of mediating effects, whenever a latent intervenes between two other latent variables. This model formulation allows the calculation of direct (two constructs are linked with a single arrow), indirect/mediating (sequential compound path with more than two variables involved represented by two or more arrows) and total effects (that combines the direct and the indirect effect) (Hair et al., 2017).

The analysis of the measurement model for reflective constructs encompasses the analysis of internal consistency (Cronbach's alpha and composite reliability), convergent validity (indicator reliability, average variance extracted); and discriminant validity. The assessment of the structural model involves the analysis of the Size and significance of path coefficients and Coefficients of determination (Hair et al., 2017).

## 3.5 Summary

In this chapter, the research design, based on a quantitative study was described. The sampling procedure was also described. A preliminary questionnaire was designed after incorporating previous experience in questionnaire design based on the measurement scales for household green furniture purchase decisions. A small-scale online pre-survey was conducted. The pre-survey data were used for reliability and validity analyses and the questionnaire was optimized accordingly. Finally, the distribution of the questionnaire and data collection were completed using an online format. In addition, this chapter also briefly introduces the research methods to be covered in the next chapter of the empirical analysis, mainly including descriptive statistics, reliability test, validity test, factor analysis and SEM.

# Chapter 4: Results and Analyses

## 4.1 Descriptive statistics of the sample

### 4.1.1 Demographic characteristics of the sample

Due to the restrictions caused by the COVID-19 pandemic, it was not easy to conduct the official questionnaire survey offline. So, questionnaires were distributed online. Specifically, electronic questionnaires were distributed by means of WeChat links with the help of the author's friends, relatives and employees. The questionnaires were filled in and submitted online. In addition, considering the large number of items in this survey, the author used such incentives as red packets to motivate the participants to fill in the questionnaire, which greatly improved the cooperation of the participants and made the survey effective and qualitative. A total of 554 questionnaires were recovered. The survey participants were mainly from Suzhou City of Jiangsu Province, China, with a small number of participants from other provinces and abroad. Nevertheless, the small number of participants from other provinces and abroad were also living and working in Suzhou and had a Suzhou residence permit or work permit. So, they could be counted as the sample of this study. Descriptive statistics of the socio-demographic characteristics of the 554 participants are presented in Table 4.1 below.

Table 4.1 Descriptive statistics of the socio-demographic characteristics of the sample

| Socio-demographic variable | Type | Frequency | % |
|---|---|---|---|
| Gender | Male | 344 | 62.1% |
| | Female | 210 | 37.9% |
| Age | 18-24 years old | 20 | 3.6% |
| | 25-34 years old | 119 | 21.5% |
| | 35-44 years old | 207 | 37.4% |
| | 45-54 years old | 160 | 28.9% |
| | 55 years old or above | 48 | 8.7% |
| Marital status | Unmarried | 87 | 15.7% |
| | Married | 467 | 84.3% |
| Number of children under 18 years old in the family | 0 | 99 | 21.2% |
| | 1 | 228 | 48.8% |
| | 2 | 127 | 27.2% |
| | 3 or more | 13 | 2.8% |
| Highest level of education | Less than a high school diploma | 4 | 0.7% |
| | High school diploma or technical secondary school diploma | 25 | 4.5% |

| | | | |
|---|---|---|---|
| | Associate college degree | 87 | 15.7% |
| | Bachelor's degree | 170 | 30.7% |
| | Graduate degree | 268 | 48.4% |
| Type of occupation | Employee of a government agency/public institution/state-owned enterprise | 145 | 26.2% |
| | Employee of a private company | 251 | 45.3% |
| | Freelancer | 119 | 21.5% |
| | Student | 14 | 2.5% |
| | Other: | 25 | 4.5% |
| Permanent residence | City or town | 525 | 94.8% |
| | Countryside | 29 | 5.2% |
| Annual household income (after tax) | Less than 300,000 yuan | 239 | 43.1% |
| | Above 300,000 yuan | 315 | 56.9% |
| Family structure | I live by myself. | 69 | 12.5% |
| | I live with my spouse. | 116 | 20.9% |
| | I live with my parent(s). | 37 | 6.7% |
| | I live with my spouse and parent(s). | 44 | 7.9% |
| | I live with my child/children. | 20 | 3.6% |
| | I live with my spouse and child/children. | 174 | 31.4% |
| | I live with my child/children and parent(s). | 8 | 1.4% |
| | I live with my spouse, child/children and parent(s). | 85 | 15.3% |
| | Other: | 1 | 0.2% |

As can be seen from Table 4.1, 344 of the participants in this survey were male, accounting for 62.1% of the sample, and 210 were female, accounting for 37.9% of the sample.

In terms of the age structure of the sample, 20 participants were aged 18-24 years old, accounting for 2.6% of the sample; 119 participants 25-34 years old, accounting for 21.5% of the sample; 207 participants 35-44 years old, accounting for 37.4% of the sample; 160 participants 45-54 years old, accounting for 28.9% of the sample; and 48 participants 55 years old or above, accounting for 8.7% of the sample. The survey data showed that most of the survey participants were concentrated in the age group of 25-54 years old. This may be because most people in this age group tend to have stable jobs and sources of income, better consumption ability, the consciousness to make independent choices and the demand for furniture. So, this is the main group of furniture consumption.

As to marital status, 87 participants were unmarried, accounting for 16.7% of the sample; 467 participants were married, accounting for 84.3% of the sample. Of the 467 married participants, 99 had no children under 18 years old in their households; 228 had one child under 18 years old in their households; 127 had two children under 18 years old in their households; and 13 had three or more children under 18 years old.

Regarding education level, four participants had less than a high school diploma, accounting for 0.7% of the sample; 25 participants had high school diploma or technical secondary school diploma, accounting for 4.5% of the sample; 87 participants had an associate college degree, accounting for 15.7% of the sample; 170 participants had a bachelor's degree, accounting for 30.7% of the sample; and 268 participants had a graduate degree, accounting for 48.4% of the sample. It can be seen from the data that the participants had a good educational background.

As regards the type of occupation, 145 participants were employee of a government agency/public institution/state-owned enterprise, taking up 26.2% of the sample; 251 participants were employees of a private company, representing 45.3% of the sample; 119 participants were self-employed, accounting for 21.5% of the sample; 14 participants were students, taking up 2.5% of the sample; and 25 participants had other types of occupation, accounting for 4.5% of the sample. The data showed that the survey sample covered all types of occupation with a reasonable distribution. The sample was representative and scientific in terms of the type of occupation.

Concerning the permanent residence, 525 participants lived in urban areas, accounting for 94.8% of the sample; and 29 participants lived in in rural areas, representing 5.2% of the sample.

Seen from the annual household income, 20 participants had an annual household income of less than 50,000 yuan, accounting for 3.6% of the sample; 49 participants had an annual household income of 50,000-100,000 yuan, representing 8.8% of the sample; 83 participants had an annual household income of 100,000-200,000 yuan, taking up 15.0% of the sample; 87 participants had an annual household income of 200,000-300,000 yuan, representing 15.7% of the sample; and 315 participants had an annual household income of 300,000 yuan or more, accounting for 56.9%.

In terms of annual household income (after tax), 239 respondents earned less than 300,000 yuan, accounting for 43.1% of the sample; 315 respondents earned more than 300,000 yuan, taking up 56.9% of the sample.

In terms of family structure, 69 participants lived alone, accounting for 12.5% of the sample; 116 participants lived with their spouses, representing 20.9% of the sample; 37 participants lived with their parents, taking up 6.7% of the sample; 44 participants lived with their spouses and parents, accounting for 7.9% of the sample; 20 participants lived with their children, representing 3.6% of the sample; 174 participants lived with their spouses and children, taking up 31.4% of the sample; eight lived with their children and parents, accounting for 1.4% of the

sample; 85 lived with their spouses, children and parents, representing 15.3% of the sample; and one belonged to other type, accounting for 0.2% of the sample.

### 4.1.2 Descriptive statistics of the green furniture awareness and purchase behavior of the sample

Results of the descriptive statistics of the green furniture awareness and purchase behavior of the sample are presented in Table 4.2 below.

Table 4.2 Descriptive statistics of the awareness of and willingness to pay for green furniture

| Content | | | Frequency | % |
|---|---|---|---|---|
| Consumers' degree and source of awareness of green furniture | | | | |
| 1. Are you aware of the concept of green furniture? | | Yes | 495 | 89.4% |
| | | No | 59 | 10.6% |
| 2. From which channels do you get to know about green furniture? | Print media such as newspapers, magazines, and books | No | 282 | 50.9% |
| | | Yes | 272 | 49.1% |
| | Social media such as Weibo and WeChat | No | 234 | 42.2% |
| | | Yes | 320 | 57.8% |
| | Websites | No | 315 | 56.9% |
| | | Yes | 239 | 43.1% |
| | Television or radio | No | 403 | 72.7% |
| | | Yes | 151 | 27.3% |
| | Friends and relatives | No | 390 | 70.4% |
| | | Yes | 164 | 29.6% |
| | Flyers, emails or SMS | No | 506 | 91.3% |
| | | Yes | 48 | 8.7% |
| | Outdoor advertising | No | 447 | 80.7% |
| | | Yes | 107 | 19.3% |
| | Furniture stores or furniture exhibitions | No | 336 | 60.6% |
| | | Yes | 218 | 39.4% |
| | Not sure | No | 515 | 93.0% |
| | | Yes | 39 | 7.0% |
| | Other | No | 546 | 98.6% |
| | | Yes | 8 | 1.4% |
| 3. What are the characteristics of green furniture in your mind? | Made of eco-friendly materials; free from odor; harmless to human body | No | 36 | 6.5% |
| | | Yes | 518 | 93.5% |
| | Consideration of natural resource conservation and resource regeneration in materials selection | No | 198 | 35.7% |
| | | Yes | 356 | 64.3% |
| | Eco-friendly process from production to usage to disposal; little or no pollution to the environment | No | 227 | 41.0% |
| | | Yes | 327 | 59.0% |
| | A good shopping environment and aftersales service | No | 374 | 67.5% |
| | | Yes | 180 | 32.5% |
| | Close to nature; simple and stylish | No | 295 | 53.2% |
| | | Yes | 259 | 46.8% |
| | Other | No | 550 | 99.3% |
| | | Yes | 4 | 0.7% |
| 4. What are your main considerations | Made of solid wood and durable | No | 194 | 35.0% |
| | | Yes | 360 | 65.0% |
| | Solid plates and low formaldehyde content | No | 225 | 40.6% |

| | | | | |
|---|---|---|---|---|
| when purchasing green furniture? | | Yes | 329 | 59.4% |
| | Good veneer; wear-resistant and colorfast | No | 383 | 69.1% |
| | | Yes | 171 | 30.9% |
| | No formaldehyde content in coatings | No | 233 | 42.1% |
| | | Yes | 321 | 57.9% |
| | With an ecolabel (eco-mark) | No | 248 | 44.8% |
| | | Yes | 306 | 55.2% |
| | Good design taste and good style | No | 300 | 54.2% |
| | | Yes | 254 | 45.8% |
| | High brand awareness | No | 393 | 70.9% |
| | | Yes | 161 | 29.1% |
| | Other | No | 553 | 99.8% |
| | | Yes | 1 | 0.2% |
| Consumers' degree of awareness of green furniture ecolabels | | | | |
| 5. Are you aware of green furniture ecolabels? | | Yes | 340 | 61.4% |
| | | No | 214 | 38.6% |
| 6. Have you bought any furniture with ecolabels before? | | Yes | 315 | 56.9% |
| | | No | 239 | 43.1% |
| Consumers' willingness to pay for green furniture | | | | |
| 7. Are you willing to buy or continue buying furniture with ecolabels (i.e., green furniture)? | | Yes | 538 | 97.1% |
| | | No | 16 | 2.9% |
| | High quality | No | 305 | 56.7% |
| | | Yes | 233 | 43.3% |
| | Good value for money | No | 421 | 78.3% |
| | | Yes | 117 | 21.7% |
| | The element of creativity and personality | No | 456 | 84.8% |
| | | Yes | 82 | 15.2% |
| 8. What the reasons for your willingness to purchase and use green furniture? | Comfort of use and alignment with ergonomics | No | 409 | 76.0% |
| | | Yes | 129 | 24.0% |
| | Green and environmentally friendly; producing little environmental pollution | No | 113 | 21.0% |
| | | Yes | 425 | 79.0% |
| | Conducive to human health | No | 94 | 17.5% |
| | | Yes | 444 | 82.5% |
| | In line with development trend | No | 337 | 62.6% |
| | | Yes | 201 | 37.4% |
| | Other | No | 538 | 100.0% |
| | | Yes | 0 | 0.0% |
| 9. What are the reasons for your unwillingness to purchase and use green furniture? | Unwilling to try new things because conventional furniture is more acceptable | No | 11 | 68.8% |
| | | Yes | 5 | 31.3% |
| | Green furniture is more expensive and not cost-effective. | No | 10 | 62.5% |
| | | Yes | 6 | 37.5% |
| | Green furniture is essentially no different from conventional furniture. | No | 14 | 87.5% |
| | | Yes | 2 | 12.5% |
| | Different from the marketing slogans, green furniture has no environmental utility. | No | 12 | 75.0% |
| | | Yes | 4 | 25.0% |
| | Other | No | 14 | 87.5% |
| | | Yes | 2 | 12.5% |
| Consumers' willingness to pay for green furniture | | | | |

| | | | |
|---|---|---|---|
| Are you willing to pay more for green furniture? | No | 35 | 6.3% |
| | Yes, if the price is less than 10% higher than conventional furniture. | 196 | 35.4% |
| | Yes, if the price is 10%-15% higher than conventional furniture. | 143 | 25.8% |
| | Yes, if the price is 15%-20% higher than conventional furniture. | 79 | 14.3% |
| | Yes, if the price is 20%-25% higher than conventional furniture. | 28 | 5.1% |
| | Yes, even if the price is over 25% higher than conventional furniture. | 15 | 2.7% |
| | Yes, no matter how expensive it is as long as it is eco-friendly and safe. | 58 | 10.5% |

A. Consumers' degree and source of awareness of green furniture

Such questions as "Are you aware of the concept of green furniture?", "From which channels do you get to know about green furniture?", "What are the characteristics of green furniture in your mind?", and "What are your main considerations when purchasing green furniture?" were included in the questionnaire. These questions were used to investigate the degree and source of consumers' awareness of green furniture. The survey found that 89.4% of participants were aware of the concept of green furniture; and they mainly got to know green furniture through television or radio, friends and relatives, flyers, emails or SMS, outdoor advertising and other channels. As to the characteristics of green furniture in their minds, 93.5% of the participants chose the option of "made of eco-friendly materials; free from odor; harmless to human body". The data showed that the consumers' perception of green furniture lied in that the raw materials are environmentally-friendly and safe and the finished product is healthy and odorless and produces no harm to human body. When buying green furniture, consumers tended to choose furniture made of solid wood, free of formaldehyde and other harmful substances, and they were not obsessed with brand awareness.

B. Consumers' degree of awareness of green furniture ecolabels

More than half of the participants looked for green furniture ecolabels when buying green furniture. The survey also showed that almost 3/5 of the participants were aware of green furniture ecolabels and had bought green furniture with ecolabels before.

C. Consumers' willingness to purchase green furniture

The survey found that 97.1% of participants were willing to buy or continue to buy green furniture. The main reasons for being willing to buy and use green furniture were that it is green, environmentally friendly, less polluting and conducive to human health.

D. Consumers' willingness to pay for green furniture

Of the 554 participants, only 35 were not willing to pay more for green furniture; 35.4% were willing to pay less than 10% more than conventional furniture; 25.8% were willing to pay

10%-15% more than conventional furniture; 14.3% were willing to pay 15%-20% more than conventional furniture; 5.1% were willing to pay 20%-25% more than conventional furniture; 2.7% were willing to pay over 25% more than conventional furniture; and 10.5% were willing to pay for green furniture no matter how expensive it is as long as it is eco-friendly and safe.

### 4.1.3 Descriptive statistics of the model variables

Descriptive statistics describe the overall picture of the data through means or medians. To understand the overall distribution of the data, this study conducted descriptive statistics of each variable using SPSS software. The specific descriptive statistics are presented in Table 4.3 below. There were no outliers in the obtained data; fluctuations were not significant; and the data were evenly distributed.

Table 4.3 Descriptive analysis results of variables

| Variable | Mean | | Item | Mean | Median | S.D. |
|---|---|---|---|---|---|---|
| Attitude (ATT) | 4.4 | ATT1 | I think buying green furniture is extremely good. | 4.6 | 5 | 0.7 |
| | | ATT2 | I think buying green furniture is extremely desirable. | 4.5 | 5 | 0.8 |
| | | ATT3 | I think buying green furniture is extremely enjoyable. | 4.4 | 5 | 0.8 |
| | | ATT4 | I think buying green furniture is extremely wise. | 4.4 | 5 | 0.8 |
| | | ATT5 | I think buying green furniture is extremely favorable. | 4.5 | 5 | 0.7 |
| | | ATT6 | I think buying green furniture is extremely pleasant. | 4.4 | 5 | 0.8 |
| Subjective norm (SN) | 4.3 | SN1 | Most people who are important to me think I should purchase green furniture. | 4.3 | 5 | 0.8 |
| | | SN2 | Most people who are important to me would want me to purchase green furniture. | 4.3 | 4 | 0.8 |
| | | SN3 | People whose opinions I value would prefer me to purchase green furniture. | 4.3 | 5 | 0.8 |
| Perceived behavioral control (PBC) | 4.4 | PBC1 | Whether or not I buy green furniture in place of conventional non-green furniture is completely up to me. | 4.4 | 5 | 0.8 |
| | | PBC2 | I have resources, time and opportunities to buy green furniture. | 4.3 | 4 | 0.8 |
| | | PBC3 | I am confident that if I want to, I can buy green furniture in place of conventional non-green furniture. | 4.4 | 5 | 0.8 |
| Willingness to pay (WTP) | 4.3 | WTP1 | I would pay more for a green furniture that is making efforts to be environmentally sustainable. | 4.3 | 4 | 0.8 |
| | | WTP2 | I would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable. | 4.3 | 4 | 0.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | WTP3 | I feel proud to have green furniture in my house though they are more costly than conventional products. | 4.2 | 4 | 0.9 |
| Green perceived value (GPV) | 4.4 | GPV1 | The green furniture environmental functions provide good value to me. | 4.4 | 4 | 0.7 |
| | | GPV2 | The green furniture environmental performance meets my expectations. | 4.4 | 4 | 0.8 |
| | | GPV3 | I purchase green furniture because it has more environmental concern than non-green products. | 4.3 | 5 | 0.8 |
| | | GPV4 | I purchase green furniture because it is environmentally friendly. | 4.4 | 5 | 0.7 |
| | | GPV5 | I purchase green product because it has more environmental benefit than non-green products. | 4.4 | 5 | 0.7 |
| Environmental awareness (EA) | 4.4 | EA1 | I am extremely worried about the world's environment. | 4.3 | 4 | 0.8 |
| | | EA2 | To achieve sustainable development, I think people should live in harmony with nature. | 4.5 | 5 | 0.7 |
| | | EA3 | The balance of nature is very delicate and easily upset. | 4.3 | 5 | 0.8 |
| | | EA4 | I am willing to control my consumption to realize the sustainable development. | 4.4 | 4 | 0.7 |
| | | EA5 | I think individuals have the responsibility to protect the environment. | 4.6 | 5 | 0.6 |
| Purchase intention (PI) | 4.3 | PI1 | I would purchase green furniture even if their performance is the same as that of conventional furniture. | 4.4 | 5 | 0.7 |
| | | PI2 | I would purchase green furniture even if its design is not novel. | 3.9 | 4 | 1.0 |
| | | PI3 | I am more likely to purchase green furniture. | 4.3 | 4 | 0.7 |
| | | PI4 | When I replace any furniture, I would plan to purchase green furniture. | 4.3 | 4 | 0.7 |
| | | PI5 | When I have the need, I would purchase green furniture rather than conventional furniture. | 4.3 | 4 | 0.7 |
| | | PI6 | I plan to spend on green furniture. | 4.3 | 4 | 0.8 |
| Purchase behavior (PB) | 4.1 | PB1 | My family purchase green furniture at a much higher frequency than conventional furniture. | 4.1 | 4 | 0.9 |
| | | PB2 | My family spends much more on green furniture than on conventional furniture. | 4.1 | 4 | 0.9 |
| | | PB3 | My family purchases much more pieces of green furniture a than conventional furniture. | 4.1 | 4 | 0.9 |
| | | PB4 | Out of ecological considerations, I have replaced some conventional furniture items into green furniture. | 4.1 | 4 | 0.9 |
| | | PB5 | When I buy furniture, I will always look at the composition label to see whether it contains substance harmful to the environment. | 4.4 | 5 | 0.8 |

The scales constructed in this thesis covered eight dimensions: attitude, subjective norm, perceived behavioral control, willingness to pay, green perceived value, environmental awareness, purchase intention and purchase behavior. The descriptive statistics of the items of each variable are shown in Table 4.6, where 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, and 5 = strongly agree. The analysis shows that the mean of attitude was 4.4; that of subjective norm was 4.3; that of perceived behavioral control was 4.4; that of willingness to pay was 4.3; that of green perceived value was 4.4; that of environmental awareness was 4.4; that of purchase intention was 4.3; and that of purchase behavior was 4.1. The means of all variables were above 4 points, indicating that consumers generally agreed or strongly agreed with the items.

A. Frequency analysis of the scores of attitude items

In terms of the research variable attitude, Table 4.3 shows that the scores for the six items of attitude lied between 4.4 points and 4.6 points. In combination with the distribution of the scores for each item in Table 4.4, most participants agreed or strongly agreed that buying green furniture is extremely good, extremely desirable, extremely enjoyable, extremely wise, extremely favorable and extremely pleasant.

B. Frequency analysis of the scores of subjective norm items

Table 4.3 shows that the means of the three items of subjective norm were all 4.3 points, which was a high score. The distribution of scores in Table 4.4 also shows that most participants thought that most people who were important to them thought they should purchase green furniture and wanted them to purchase green furniture and most people whose opinions they valued would prefer them to purchase green furniture. Only for 0.2% of the participants, people whose opinions they valued would not prefer them to purchase green furniture.

C. Frequency analysis of the scores of perceived behavioral control items

Table 4.3 shows that the means of the three items of perceived behavioral control were 4.4 points, 4.3 points and 4.4 points respectively, which were high scores, indicating that the survey participants had strong perceived behavioral control over the purchase of green furniture. As can be seen from the distribution of scores in Table 4.4, about half of the participants strongly agreed that it was entirely up to them whether to buy green furniture in place of conventional non-green furniture, that they had the resources, time and opportunities to buy green furniture, and that they could buy green furniture in place of conventional non-green furniture if they wanted to. A total of 14.1% said they did not necessarily have the resources, time and opportunities to buy green furniture, which was more likely because they did not have a need to purchase furniture at home. Furniture, as a type of durable goods, is characterized by a long

replacement cycle. So, consumers need to consider the actual situation of the household to decide whether to buy green furniture or not.

D. Frequency analysis of the scores of willingness to pay items

The scores of the three items of willingness to pay were evenly distributed. As shown in Table 4.4, most participants would pay more for a green furniture that is making efforts to be environmentally sustainable, would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable, and felt proud to have green furniture in their houses though they are more costly than conventional products.

E. Frequency analysis of the scores of green perceived value items

As shown in Table 4.3, the five items of green perceived value scored an average of 4.4 points. Of the five items, the score of GPV3 (I purchase green furniture because it has more environmental concern than non-green products.) was slightly lower than the scores of other items, with a mean of 4.3 points. According to Table 4.4, 10.5% of the participants did not neither disagreed nor agreed with this item. However, overall, about 50% of the participants strongly agreed with the environmental function value and environmental performance of green furniture, and about 36% agreed with these features. Overall, most consumers still agreed with the environmental value brought by green furniture and were more willing to buy green furniture than non-green furniture.

F. Frequency analysis of the scores of environmental awareness items

As shown in Table 4.3, the scores of EA2 (To achieve sustainable development, I think people should live in harmony with nature) and EA5 (I think individuals have the responsibility to protect the environment) were slightly higher than the scores of the other three items. The distribution of scores for each of the environmental awareness items in Table 4.4 also shows that over 60% of the participants strongly agreed that it is everyone's responsibility to live in harmony with nature, support the cause of sustainable development and protect the environment.

G. Frequency analysis of the scores of purchase intention items

In terms of purchase intention, the score of Item PI2 (I would purchase green furniture even if its design is not novel.) was only 3.9 points, which was relatively low. Table 4.4 shows the distribution of the scores of all items of purchase intention. A total of 24.9% of the participants did not necessarily agree with this item, indicating that they were not sure whether they would choose to buy green furniture over conventional furniture with a better design when they had to choose between environmental friendliness and design.

H. Frequency analysis of the scores of purchase behavior items

As shown in Table 4.3, the mean of the variable of purchase behavior was 4.1 points, which was slightly lower compared to the means of the other variables, indicating that consumers supported green furniture and were willing to purchase it, but did not implement it in their actual purchase behavior. This is perhaps due to the long life cycle of furniture. Table 4.4 shows that 51.6% of the participants' households purchased green furniture much more frequently than conventional furniture, and the scores for the items were mainly concentrated in the range of 4-5 points, indicating that green furniture was gradually replacing conventional furniture and was well liked by most consumers.

Table 4.4 Variable frequency analysis statistics

| | | | Strongly disagree | | Disagree | | Neither disagree nor agree | | Agree | | Strongly agree | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| Attitude | ATT1 | I think buying green furniture is extremely good. | 6 | 1.1% | 2 | 0.4% | 22 | 4.0% | 173 | 31.2% | 351 | 63.4% |
| | ATT2 | I think buying green furniture is extremely desirable. | 6 | 1.1% | 2 | 0.4% | 51 | 9.2% | 163 | 29.4% | 332 | 59.9% |
| | ATT3 | I think buying green furniture is extremely enjoyable. | 4 | 0.7% | 4 | 0.7% | 76 | 13.7% | 178 | 32.1% | 292 | 52.7% |
| | ATT4 | I think buying green furniture is extremely wise. | 5 | 0.9% | 4 | 0.7% | 50 | 9.0% | 175 | 31.6% | 320 | 57.8% |
| | ATT5 | I think buying green furniture is extremely favorable. | 4 | 0.7% | 3 | 0.5% | 41 | 7.4% | 176 | 31.8% | 330 | 59.6% |
| | ATT6 | I think buying green furniture is extremely pleasant. | 4 | 0.7% | 6 | 1.1% | 76 | 13.7% | 174 | 31.4% | 294 | 53.1% |
| Subjective norm | SN1 | Most people who are important to me think I should purchase green furniture. | 3 | 0.5% | 15 | 2.7% | 64 | 11.6% | 183 | 33.0% | 289 | 52.2% |
| | SN2 | Most people who are important to me would want me to purchase green furniture. | 2 | 0.4% | 11 | 2.0% | 68 | 12.3% | 199 | 35.9% | 274 | 49.5% |
| | SN3 | People whose opinions I value would prefer me to purchase green furniture. | 1 | 0.2% | 9 | 1.6% | 72 | 13.0% | 195 | 35.2% | 277 | 50.0% |
| Perceived behavioral control | PBC1 | Whether or not I buy green furniture in place of conventional non-green furniture is completely up to me. | 2 | 0.4% | 9 | 1.6% | 51 | 9.2% | 192 | 34.7% | 300 | 54.2% |
| | PBC2 | I have resources, time and opportunities to buy green furniture. | 5 | 0.9% | 8 | 1.4% | 78 | 14.1% | 201 | 36.3% | 262 | 47.3% |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PBC3 | I am confident that if I want to, I can buy green furniture in place of conventional non-green furniture. | 2 | 0.4% | 12 | 2.2% | 49 | 8.8% | 198 | 35.7% | 293 | 52.9% |
| Willingness to pay | WTP1 | I would pay more for a green furniture that is making efforts to be environmentally sustainable. | 3 | 0.5% | 5 | 0.9% | 62 | 11.2% | 216 | 39.0% | 268 | 48.4% |
| | WTP2 | I would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable. | 4 | 0.7% | 10 | 1.8% | 74 | 13.4% | 201 | 36.3% | 265 | 47.8% |
| | WTP3 | I feel proud to have green furniture in my house though they are more costly than conventional products. | 4 | 0.7% | 18 | 3.2% | 77 | 13.9% | 203 | 36.6% | 252 | 45.5% |
| Green perceived value | GPV1 | The green furniture environmental functions provide good value to me. | 3 | 0.5% | 8 | 1.4% | 49 | 8.8% | 221 | 39.9% | 273 | 49.3% |
| | GPV2 | The green furniture environmental performance meets my expectations. | 4 | 0.7% | 5 | 0.9% | 55 | 9.9% | 218 | 39.4% | 272 | 49.1% |
| | GPV3 | I purchase green furniture because it has more environmental concern than non-green products. | 5 | 0.9% | 11 | 2.0% | 58 | 10.5% | 197 | 35.6% | 283 | 51.1% |
| | GPV4 | I purchase green furniture because it is environmentally friendly. | 3 | 0.5% | 8 | 1.4% | 44 | 7.9% | 208 | 37.5% | 291 | 52.5% |
| | GPV5 | I purchase green product because it has more environmental benefit than non-green products. | 3 | 0.5% | 9 | 1.6% | 44 | 7.9% | 210 | 37.9% | 288 | 52.0% |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Environmental awareness | EA1 | I am extremely worried about the world's environment. | 2 | 0.4% | 10 | 1.8% | 69 | 12.5% | 229 | 41.3% | 244 | 44.0% |
| | EA2 | To achieve sustainable development, I think people should live in harmony with nature. | 2 | 0.4% | 3 | 0.5% | 29 | 5.2% | 183 | 33.0% | 337 | 60.8% |
| | EA3 | The balance of nature is very delicate and easily upset. | 6 | 1.1% | 8 | 1.4% | 58 | 10.5% | 200 | 36.1% | 282 | 50.9% |
| | EA4 | I am willing to control my consumption to realize the sustainable development. | 3 | 0.5% | 4 | 0.7% | 52 | 9.4% | 222 | 40.1% | 273 | 49.3% |
| | EA5 | I think individuals have the responsibility to protect the environment. | 2 | 0.4% | 2 | 0.4% | 24 | 4.3% | 184 | 33.2% | 342 | 61.7% |
| Purchase intention | PI1 | I would purchase green furniture even if their performance is the same as that of conventional furniture. | 4 | 0.7% | 1 | 0.2% | 51 | 9.2% | 207 | 37.4% | 291 | 52.5% |
| | PI2 | I would purchase green furniture even if its design is not novel. | 14 | 2.5% | 32 | 5.8% | 138 | 24.9% | 174 | 31.4% | 196 | 35.4% |
| | PI3 | I am more likely to purchase green furniture. | 3 | 0.5% | 3 | 0.5% | 58 | 10.5% | 237 | 42.8% | 253 | 45.7% |
| | PI4 | When I replace any furniture, I would plan to purchase green furniture. | 2 | 0.4% | 5 | 0.9% | 61 | 11.0% | 218 | 39.4% | 268 | 48.4% |
| | PI5 | When I have the need, I would purchase green furniture rather than conventional furniture. | 2 | 0.4% | 5 | 0.9% | 67 | 12.1% | 222 | 40.1% | 258 | 46.6% |
| | PI6 | I plan to spend on green furniture. | 2 | 0.4% | 9 | 1.6% | 71 | 12.8% | 224 | 40.4% | 248 | 44.8% |
| Purchase behavior | PB1 | My family purchase green furniture at a much higher | 5 | 0.9% | 21 | 3.8% | 105 | 19.0% | 192 | 34.7% | 231 | 41.7% |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | frequency than conventional furniture. | | | | | | | | | | |
| PB2 | My family spends much more on green furniture than on conventional furniture. | 5 | 0.9% | 17 | 3.1% | 116 | 20.9% | 200 | 36.1% | 216 | 39.0% |
| PB3 | My family purchases much more pieces of green furniture a than conventional furniture. | 5 | 0.9% | 21 | 3.8% | 124 | 22.4% | 195 | 35.2% | 209 | 37.7% |
| PB4 | Out of ecological considerations, I have replaced some conventional furniture items into green furniture. | 4 | 0.7% | 32 | 5.8% | 107 | 19.3% | 200 | 36.1% | 211 | 38.1% |
| PB5 | When I buy furniture, I will always look at the composition label to see whether it contains substance harmful to the environment. | 3 | 0.5% | 8 | 1.4% | 59 | 10.6% | 198 | 35.7% | 286 | 51.6% |

## 4.2 Reliability and validity tests of the measurement scales

### 4.2.1 Reliability test

The preliminary questionnaire was revised based on feedback from the pre-survey before the formal survey was conducted. As the sample size increased, the reliability of the questionnaire data and the measurement of whether the participants' responses in the questionnaire were true responses required further reliability test. Among various reliability measurements in social science research, Cronbach α coefficient is the most commonly used to measure the reliability and authenticity of the sample responses. The scale data are analyzed respectively for reliability in terms of dimensions, and eventually the α coefficient values for all dimensions are summarized in a table as the output.

Cronbach's alpha or Cronbach's α is a statistic that is the mean of all (Flanagan-Rulon) split-half reliabilities (Warrens, 2015). An α value lower than 0.6 indicates low reliability and that the questionnaire should be redesigned until it meets the reliability analysis requirements; an α value between 0.6 and 0.7 indicates an acceptable but unconvincing level of reliability, and thus the scale may need to be adjusted appropriately; an α value between 0.7 and 0.8 indicates that the measurement results are acceptable, stable and reliable; an α value higher than 0.8 stands for excellent consistency, high stability and strong reliability. In this thesis, SPSS data analysis software was used to analyse the reliability of the results of questionnaire data on the factors influencing consumers' green furniture purchase intention and purchase decision, and the results of the analysis are shown in Table 4.5 below.

Table 4.5 Reliability test results of all scales in the formal survey

| Variable | Number of items | Sample size | Cronbach's α |
|---|---|---|---|
| ATT | 6 | 554 | 0.949 |
| SN | 3 | 554 | 0.934 |
| PBC | 3 | 554 | 0.868 |
| WTP | 3 | 554 | 0.926 |
| GPV | 5 | 554 | 0.945 |
| EA | 5 | 554 | 0.908 |
| PI | 6 | 554 | 0.930 |
| PB | 5 | 554 | 0.917 |

The analysis results showed that the Cronbach α values of all eight variables involved in this study were above 0.8, indicating that the research data had reliability high enough to be used for further analysis and that the scales did not require further optimization.

### 4.2.2 Validity test

Validity can be divided into three categories: content validity, criterion validity, and construct validity (Almanasreh et al., 2019). Content validity narrates and proves that the content of the questionnaire meets the purpose and requirements of the study. To prove the validity of the questionnaire design, previous literature and related validation data can be used; the questionnaire can have a pre-test to revise the items and form a complete version until it is approved by the tutor. Criterion validity uses the data and results of previous classical scales as the criterion. It studies the scale, collects the data, and then analyzes the data with the previous data to test the correlation degree between the results of this questionnaire and that of the classical scales. The higher the correlation degree, the better the criterion validity is. Criterion validity measures the consistency between the results of the items and the assumptions presented by the design scale. This paper mainly tests the validity of the questionnaire through content validity and construct validity.

The above questionnaire design process shows that the questionnaire was designed on the basis of an extensive review of existing domestic and international literature related to green furniture. The questionnaire scales and items had detailed sources, all drawn on the existing research results of domestic and international scholars. The selected scales had been repeatedly drawn on and quoted and were mature. Before the formal survey was conducted, a pre-survey was carried out, and the items were confirmed to have good content validity.

To examine the construct validity of the scales, an exploratory factor analysis (EFA) was conducted on the research data using SPSS data analysis software. KMO and Bartlett's test of sphericity were conducted to test the validity to ensure that the data were suitable for factor analysis. KMO test is meant to examine the strength of the correlation and partial correlation (how the factors explain each other) between the variables and takes values between 0 and 1. The closer the KMO value is to 1, the stronger the correlation between the variables and the weaker the partial correlation, the better the factor analysis. In actual analysis, a KMO value greater than 0.9 is very suitable for factor analysis; a KMO value of 0.8-0.9 is suitable; a KMO value above 0.7 is acceptable; a KMO value of 0.6 is very poor; and a KMO value below 0.5 is not suitable for factor analysis. When the KMO statistic is below 0.5, factor analysis is not suitable, and a redesign of the variable structure or another statistical analysis method should be considered. If the variables are independent of each other, no common factor can be extracted from them, and factor analysis cannot be applied. The Bartlett's test of sphericity is used to test whether the correlation matrix is an identity matrix and whether the variables are independent.

If the correlation matrix is an identity matrix, there would be no correlations between the variables, indicating the unsuitability of factor analysis for each variable. The SPSS test results showed that Sig. < 0.05 (i.e., p <0.05), meaning that there were correlations between the variables and that factor analysis was valid. In validity analysis, KMO value and significance are first analyzed by KMO and Bartlett's test of sphericity. KMO values range from 0 to 1. If the KMO value is closer to 1, the correlation between the variables Is stronger, and the data is more suitable for factor analysis. A KMO value lower than 0.6 suggests that the data collected from the study is not suitable for factor analysis, and other statistical methods should be considered, or the questionnaires, model variables and items should be redesigned. If the KMO value falls between 0.6 and 0.7, it indicates that the data collected from the survey has average validity and accuracy, and is acceptable for factor analysis; a KMO value between 0.7 and 0.8 indicates that the data collected from the survey has relatively good accuracy and suitability for factor analysis; a KMO value larger than 0.8 indicates a good partial correlation between the variables of the questionnaire, and thus the data is very suitable for factor analysis. In Bartlett's test of sphericity, Sig. = 0.000 means a strong significance at $\alpha$ <0.001 level, and it indicates that the questionnaire items are consistent with the survey objectives, variable items are strongly correlated rather than independent, therefore the questionnaire design is reasonable and it is suitable for factor analysis.

Besides, this thesis used principal component analysis (PCA) to analyse the questionnaire data to obtain the communalities, the total variance explained and the factor loading component matrix. The commonalities, which are used to exclude unreasonable research items, refer to the amount of information that can be extracted from a particular item. They usually use 0.4 as the criterion, which means that 40% of the information is extracted. Total variance explained is used to indicate the level of information extracted. The higher the cumulative % of variance, the more representative or explanatory these extracted common factors are of the original variables, and the better the overall effect. The lower the cumulative of variance, the less representative or explanatory the extracted common factors are, and the less effective they are. Factor loadings are used to measure the correlation between the factor (dimension) and the item, indicating the correlation between the factor and the measured item. If the absolute values of multiple factor loadings corresponding to the measured item is below 0.4, the item may be considered for deletion.

(1) Validity analysis of the Attitude Scale

The validity of the six items of the Attitude Scale was first tested using KMO and Bartlett's test of sphericity to ensure that the data were suitable for factor analysis. The results are

presented in Table 4.6 below. The KMO value for the Attitude Scale was 0.908, which was greater than 0.9, indicating that the data were very suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's test of sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis.

Table 4.6 Validity analysis of the Attitude Scale

**KMO and Bartlett's test of sphericity for the Attitude Scale**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | 0.908 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 3288.636 |
| | df | 15 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| ATT1 I think buying green furniture is extremely good. | 1.000 | 0.704 |
| ATT2 I think buying green furniture is extremely desirable. | 1.000 | 0.806 |
| ATT3 I think buying green furniture is extremely enjoyable. | 1.000 | 0.829 |
| ATT4 I think buying green furniture is extremely wise. | 1.000 | 0.814 |
| ATT5 I think buying green furniture is extremely favorable. | 1.000 | 0.834 |
| ATT6 I think buying green furniture is extremely pleasant. | 1.000 | 0.807 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Attitude | ATT1 I think buying green furniture is extremely good. | 0.839 |
| | ATT2 I think buying green furniture is extremely desirable. | 0.898 |
| | ATT3 I think buying green furniture is extremely enjoyable. | 0.911 |
| | ATT4 I think buying green furniture is extremely wise. | 0.902 |
| | ATT5 I think buying green furniture is extremely favorable. | 0.913 |
| | ATT6 I think buying green furniture is extremely pleasant. | 0.898 |

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.794 | 79.908 | 79.908 | 4.794 | 79.908 | 79.908 |
| 2 | 0.433 | 7.210 | 87.117 | | | |
| 3 | 0.249 | 4.142 | 91.259 | | | |
| 4 | 0.215 | 3.581 | 94.840 | | | |
| 5 | 0.188 | 3.126 | 97.965 | | | |
| 6 | 0.122 | 2.035 | 100.000 | | | |

Extraction method: Principal component analysis

Then factor analysis was conducted on the Attitude Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. The results of communalities, total variance explained and factor loading component matrix are shown in Table 4.6. It can be seen that the communalities corresponding to the six items of the Attitude Scale were all higher than 0.7, which was higher than the threshold value of 0.4, indicating that the information of the research items could be extracted effectively; the cumulative % of variance of the one factor extracted was 79.908%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the six

item were all greater than 0.8, indicating that the correlation between the items and the factor was good and in line with expectations and that the scale had good validity.

(2) Validity analysis of the Subjective Norm Scale

The validity of the three items of the Subjective Norm Scale was first tested using KMO and Bartlett's Test of Sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.7 below. The KMO value for the Subjective Norm Scale was 0.753, which was between 0.7 and 0.8, indicating that the data were very suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's Test of Sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the Subjective Norm Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method.

Table 4.7 Validity analysis of the Subjective Norm Scale

**KMO and Bartlett's Test of Sphericity for the Subjective Norm Scale**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.753 |
| Bartlett's test of sphericity | Approx. chi-square | 1434.617 |
| | df | 3 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| SN1 Most people who are important to me think I should purchase green furniture. | 1.000 | 0.864 |
| SN2 Most people who are important to me would want me to purchase green furniture. | 1.000 | 0.915 |
| SN3 People whose opinions I value would prefer me to purchase green furniture. | 1.000 | 0.876 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Subjective norm | SN1 Most people who are important to me think I should purchase green furniture. | 0.930 |
| | SN2 Most people who are important to me would want me to purchase green furniture. | 0.956 |
| | SN3 People whose opinions I value would prefer me to purchase green furniture. | 0.936 |

Extraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.655 | 88.494 | 88.494 | 2.655 | 88.494 | 88.494 |
| 2 | 0.216 | 7.203 | 95.697 | | | |

| | | | |
|---|---|---|---|
| 3 | 0.129 | 4.303 | 100.000 |

Extraction method: Principal component analysis

It can be seen from Table 4.7 that the communalities corresponding to the three items of the Subjective Norm Scale were all higher than 0.8, which was higher than the threshold value of 0.4, indicating that the information of the items could be extracted effectively; the cumulative % of variance of the one factor extracted was 88.494%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the three items were all greater than 0.9, indicating that the correlation between the items and the factor was very good and in line with expectations and that the scale had very good validity.

(3) Validity analysis of the Perceived Behavioral Control Scale

The validity of the three items of the Perceived Behavioral Control Scale was first tested using KMO and Bartlett's Test of Sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.8 below.

Table 4.8 Validity analysis of the Perceived Behavioral Control Scale

**KMO and Bartlett's test of sphericity for the Perceived Behavioral Control Scale**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.716 |
| Bartlett's test of sphericity | Approx. chi-square | 855.314 |
| | df | 3 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| PBC1 Whether or not I buy green furniture at place of conventional non-green furniture is completely up to me. | 1.000 | 0.719 |
| PBC2 I have resources, time and opportunities to buy green furniture. | 1.000 | 0.823 |
| PBC3 I am confident that if I want to, I can buy green furniture at place of conventional non-green furniture. | 1.000 | 0.834 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Perceived behavioral control | PBC1 Whether or not I buy green furniture at place of conventional non-green furniture is completely up to me. | 0.848 |
| | PBC2 I have resources, time and opportunities to buy green furniture. | 0.907 |
| | PBC3 I am confident that if I want to, I can buy green furniture at place of conventional non-green furniture. | 0.913 |

Extraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.375 | 79.175 | 79.175 | 2.375 | 79.175 | 79.175 |
| 2 | 0.404 | 13.465 | 92.640 | | | |
| 3 | 0.221 | 7.360 | 100.000 | | | |

Extraction method: Principal component analysis

The KMO value for the Perceived Behavioral Control Scale was 0.716, which was between 0.7 and 0.8, indicating that the data were suitable for extracting information and that the scale

had good validity; the significance value of the Bartlett's Test of Sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the Perceived Behavioral Control Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. It can be seen from Table 4.8 that the communalities corresponding to the three items of the Perceived Behavioral Control Scale were all higher than 0.7, which was higher than the threshold value of 0.4, indicating that the information of the research items could be extracted effectively; the cumulative % of variance of the one factor extracted was 79.175%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the three item were all greater than 0.8, indicating that the correlation between the items and the factor was good and in line with expectations and that the scale had good validity.

(4) Validity analysis of the Willingness to Pay Scale

The validity of the three items of the Willingness to Pay Scale was first tested using KMO and Bartlett's test of sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.9 below.

Table 4.9 Validity analysis of the Willingness to Pay Scale

| **KMO and Bartlett's Test of Sphericity for the Willingness to Pay Scale** | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.745 |
| Bartlett's test of sphericity | Approx. chi-square | 1391.175 |
| | df | 3 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| WTP1 I would pay more for a green furniture that is making efforts to be environmentally sustainable. | 1.000 | 0.896 |
| WTP2 I would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable. | 1.000 | 0.903 |
| WTP3 I feel proud to have green furniture in my house though they are more costly than conventional products. | 1.000 | 0.827 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Willingness to pay | WTP1 I would pay more for a green furniture that is making efforts to be environmentally sustainable. | 0.947 |
| | WTP2 I would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable. | 0.950 |
| | WTP3 I feel proud to have green furniture in my house though they are more costly than conventional products. | 0.909 |

Extraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.626 | 87.548 | 87.548 | 2.626 | 87.548 | 87.548 |
| 2 | 0.253 | 8.431 | 95.979 | | | |
| 3 | 0.121 | 4.021 | 100.000 | | | |

Extraction method: Principal component analysis

The KMO value for the Willingness to Pay Scale was 0.745, which was between 0.7 and 0.8, indicating that the data were suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's test of sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the Willingness to Pay Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. It can be seen from Table 4.9 that the communalities corresponding to the three items of the Willingness to Pay Scale were all higher than 0.8, which was higher than the threshold value of 0.4, indicating that the information of the research items could be extracted effectively; the cumulative % of variance of the one factor extracted was 87.548%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the three item were all greater than 0.9, indicating that the correlation between the items and the factor was very good and in line with expectations and that the scale had very good validity.

(5) Validity analysis of the Green Perceived Value Scale

The validity of the five items of the Green Perceived Value Scale was first tested using KMO and Bartlett's test of sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.10 below.

Table 4.10 Validity analysis of the Green Perceived Value Scale

| **KMO and Bartlett's test of sphericity for the Green Perceived Value Scale** | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.883 |
| Bartlett's test of sphericity | Approx. chi-square | 2685.793 |
| | df | 10 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| GPV1 The green furniture environmental functions provide good value to me. | 1.000 | 0.746 |
| GPV2 The green furniture environmental performance meets my expectations. | 1.000 | 0.839 |
| GPV3 I purchase green furniture because it has more environmental concern than non-green products. | 1.000 | 0.834 |
| GPV4 I purchase green furniture because it is environmentally friendly. | 1.000 | 0.842 |
| GPV5 I purchase green product because it has more environmental benefit than non-green products. | 1.000 | 0.845 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Green perceived value | GPV1 The green furniture environmental functions provide good value to me. | 0.864 |
| | GPV2 The green furniture environmental performance meets my expectations. | 0.916 |
| | GPV3 I purchase green furniture because it has more environmental concern than non-green products. | 0.913 |
| | GPV4 I purchase green furniture because it is environmentally friendly. | 0.917 |
| | GPV5 I purchase green product because it has more environmental benefit than non-green products. | 0.919 |

Extraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.106 | 82.118 | 82.118 | 4.106 | 82.118 | 82.118 |
| 2 | 0.381 | 7.619 | 89.737 | | | |
| 3 | 0.195 | 3.891 | 93.629 | | | |
| 4 | 0.179 | 3.575 | 97.204 | | | |
| 5 | 0.140 | 2.796 | 100.000 | | | |

Extraction method: Principal component analysis

The KMO value for the Green Perceived Value Scale was 0.883, which was greater than 0.8, indicating that the data were suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's test of sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the Green Perceived Value Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. It can be seen from Table 4.10 that the communalities corresponding to the five items of the Green Perceived Value Scale were all higher than 0.7, which was higher than the threshold value of 0.4, indicating that the information of the research items could be extracted effectively; the cumulative % of variance of the one factor extracted was 82.118%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the five item were all greater than 0.8, indicating that the correlation between the items and the factor was very good and in line with expectations and that the scale had very good validity.

(6) Validity analysis of the Environmental Awareness Scale

The validity of the five items of the Environmental Awareness Scale was first tested using KMO and Bartlett's test of sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.11 below.

Table 4.11 Validity analysis of the Environmental Awareness Scale

**KMO and Bartlett's test of sphericity for the Environmental Awareness Scale**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.872 |
| Bartlett's test of sphericity | Approx. chi-square | 1845.303 |
| | df | 10 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| EA1 I am extremely worried about the world's environment. | 1.000 | 0.694 |
| EA2 To achieve sustainable development, I think people should live in harmony with nature. | 1.000 | 0.778 |
| EA3 The balance of nature is very delicate and easily upset. | 1.000 | 0.699 |
| EA4 I am willing to control my consumption to realize the sustainable development. | 1.000 | 0.762 |
| EA5 I think individuals have the responsibility to protect the environment. | 1.000 | 0.768 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Environmental awareness | EA1 I am extremely worried about the world's environment. | 0.833 |
| | EA2 To achieve sustainable development, I think people should live in harmony with nature. | 0.882 |
| | EA3 The balance of nature is very delicate and easily upset. | 0.836 |
| | EA4 I am willing to control my consumption to realize the sustainable development. | 0.873 |
| | EA5 I think individuals have the responsibility to protect the environment. | 0.876 |

Extraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.701 | 74.014 | 74.014 | 3.701 | 74.014 | 74.014 |
| 2 | 0.437 | 8.743 | 82.757 | | | |
| 3 | 0.372 | 7.445 | 90.202 | | | |
| 4 | 0.288 | 5.761 | 95.963 | | | |
| 5 | 0.202 | 4.037 | 100.000 | | | |

Extraction method: Principal component analysis

The KMO value for the Environmental Awareness Scale was 0.872, which was greater than 0.8, indicating that the data were very suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's test of sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the Environmental Awareness Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. It can be seen from Table 4.11 that the lowest communalities corresponding to the five items of the Environmental Awareness Scale were 0.694, which was higher than the threshold value of 0.4, indicating that the information of the items could be extracted effectively; the cumulative % of variance of the one factor extracted was 74.014%, which was a satisfactory degree of

explanation of the original data; the absolute values of the factor loadings of the five item were all greater than 0.8, indicating that the correlation between the items and the factor was good and in line with expectations and that the scale had good validity.

(7) Validity analysis of the Purchase Intention Scale

The validity of the six items of the Purchase Intention Scale was first tested using KMO and Bartlett's test of sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.12 below.

Table 4.12 Validity analysis of the Purchase Intention Scale

**KMO and Bartlett's test of sphericity for the Purchase Intention Scale**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.913 |
| Bartlett's test of sphericity | Approx. chi-square | 2962.106 |
| | df | 15 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| PI1 I would purchase green furniture even if their performance is the same as that of conventional furniture. | 1.000 | 0.751 |
| PI2 I would purchase green furniture even if its design is not novel. | 1.000 | 0.566 |
| PI3 I am more likely to purchase green furniture. | 1.000 | 0.839 |
| PI4 When I replace any furniture, I would plan to purchase green furniture. | 1.000 | 0.856 |
| PI5 When I have the need, I would purchase green furniture rather than conventional furniture. | 1.000 | 0.827 |
| PI6 I plan to spend on green furniture. | 1.000 | 0.764 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Purchase intention | PI1 I would purchase green furniture even if their performance is the same as that of conventional furniture. | 0.867 |
| | PI2 I would purchase green furniture even if its design is not novel. | 0.753 |
| | PI3 I am more likely to purchase green furniture. | 0.916 |
| | PI4 When I replace any furniture, I would plan to purchase green furniture. | 0.925 |
| | PI5 When I have the need, I would purchase green furniture rather than conventional furniture. | 0.909 |
| | PI6 I plan to spend on green furniture. | 0.874 |

Etraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.603 | 76.715 | 76.715 | 4.603 | 76.715 | 76.715 |
| 2 | 0.510 | 8.507 | 85.221 | | | |
| 3 | 0.307 | 5.111 | 90.332 | | | |
| 4 | 0.269 | 4.485 | 94.817 | | | |
| 5 | 0.178 | 2.965 | 97.782 | | | |
| 6 | 0.133 | 2.218 | 100.000 | | | |

Extraction method: Principal component analysis

The KMO value for the Purchase Intention Scale was 0.913, which was greater than 0.9, indicating that the data were suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's test of sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the questionnaire using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. It can be seen from Table 4.12 that the communalities corresponding to the six items of the Purchase Intention Scale were all greater than 0.7, which was higher than the threshold value of 0.4, indicating that the information of the items could be extracted effectively; the cumulative % of variance of the one factor extracted was 76.715%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the six item were all greater than 0.7, indicating that the correlation between the items and the factor was good and in line with expectations and that the scale had good validity.

(8) Validity analysis of the Purchase behavior Scale

The validity of the five items of the Purchase behavior Scale was first tested using KMO and Bartlett's test of sphericity to ensure that the data were suitable for factor analysis. The results are shown in Table 4.13 below.

Table 4.13 Validity analysis of the Purchase behavior Scale

| **KMO and Bartlett's test of sphericity for the Purchase behavior Scale** | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.884 |
| Bartlett's test of sphericity | Approx. chi-square | 1997.140 |
| | df | 10 |
| | Sig. | 0.000 |

**Communalities**

| Item | Initial | Extraction |
|---|---|---|
| PB1 My family purchase green furniture at a much higher frequency than conventional furniture. | 1.000 | 0.829 |
| PB2 My family spends much more on green furniture than on conventional furniture. | 1.000 | 0.725 |
| PB3 My family purchases much more pieces of green furniture a than conventional furniture. | 1.000 | 0.832 |
| PB4 Out of ecological considerations, I have replaced some conventional furniture items into green furniture. | 1.000 | 0.758 |
| PB5 When I buy furniture, I will always look at the composition label to see whether it contains substance harmful to the environment. | 1.000 | 0.610 |

Extraction method: Principal component analysis

**Factor loading component matrix**

| Variable | Item | Component 1 |
|---|---|---|
| Purchase behavior | PB1 My family purchase green furniture at a much higher frequency than conventional furniture. | 0.911 |
| | PB2 My family spends much more on green furniture than on conventional furniture. | 0.852 |

| | |
|---|---|
| PB3 My family purchases much more pieces of green furniture a than conventional furniture. | 0.912 |
| PB4 Out of ecological considerations, I have replaced some conventional furniture items into green furniture. | 0.871 |
| PB5 When I buy furniture, I will always look at the composition label to see whether it contains substance harmful to the environment. | 0.781 |

Extraction method: Principal component analysis

**Total variance explained**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.754 | 75.079 | 75.079 | 3.754 | 75.079 | 75.079 |
| 2 | 0.474 | 9.480 | 84.559 | | | |
| 3 | 0.360 | 7.195 | 91.754 | | | |
| 4 | 0.238 | 4.752 | 96.506 | | | |
| 5 | 0.175 | 3.494 | 100.000 | | | |
| 1 | 3.754 | 75.079 | 75.079 | 3.754 | 75.079 | 75.079 |

Extraction method: Principal component analysis

The KMO value for the Purchase behavior Scale was 0.884, which was greater than 0.8, indicating that the data were suitable for extracting information and that the scale had good validity; the significance value of the Bartlett's test of sphericity was 0.000, which was smaller than 0.05, indicating that the data were suitable for factor analysis. Then factor analysis was conducted on the Purchase behavior Scale using SPSS data analysis software, and factors were extracted using PCA and rotated using the maximum variance method. It can be seen from Table 4.13 that the communalities corresponding to the six items of the Purchase behavior Scale were between 0.610 and 0.832, which were higher than the threshold value of 0.4, indicating that the information of the items could be extracted effectively; the cumulative % of variance of the one factor extracted was 75.079%, which was a satisfactory degree of explanation of the original data; the absolute values of the factor loadings of the five item were all greater than 0.7, indicating that the correlation between the items and the factor was good and in line with expectations and that the scale had good validity.

In summary, the communalities, total variance explained and factor loadings of the eight scales consisting of 36 items all passed the test criteria, which means the questionnaire had good construct validity.

## 4.3 Structural equation modelling and hypothesis testing

The analyses proceeded in two steps (Hair et al., 2017), estimating and evaluating first the reflective aspects of the measurement model and then the structural model (i.e., structural relationships among the constructs). Thus, empirical measures of the relationships both between

items and constructs (i.e., measurement models) and between constructs (i.e., structural model) were analyzed.

### 4.3.1 Measurement model

The results of the measurement model evaluation for the reflective constructs include assessments of internal consistency (i.e., composite reliability), indicator reliability, convergent validity (i.e., average variance extracted [AVE]) and discriminant validity.

As item loadings are higher than or equal to 0.70, more shared variance exists between the constructs and their measures than error variance. Moreover, factor loadings on unrelated constructs are less than 0.40. Therefore, the item reliability of the latent constructs is adequate. Bootstrapping methods allowed us to estimate the t-statistic for the measurement model. All items are statistically significant at levels of 1%, so they were retained for further analysis.

In terms of internal consistency reliability, all constructs have satisfactory values for the indicators Cronbach's alpha, rho-A and composite reliability, meeting the threshold criterion of 0.70. These constructs thus have consistent reliability. The outer loadings for the reflective constructs are higher than 0.70, and their AVE is higher than 0.50, providing evidence of convergent validity. An AVE value higher than 0.5 means that the construct in question explains more than half of its indicators on average (Fornell & Larcker, 1981).

The Fornell-Larcker criterion was next applied to test for discriminant validity (Fornell & Larcker, 1981). The results reveal that the square root of the AVE for each construct (i.e., on the diagonal) is higher than the highest correlation with any other construct.

The analysis of the measurement model for first-order reflective constructs revealed that all constructs exhibit internal consistency, convergent validity, discriminant validity and item reliability. See Table 4.14 and Table 4.15 below.

Table 4.14 Loadings, validity and reliability

| Construct | Item | Loading | SD | t | p values | Reliability |
|---|---|---|---|---|---|---|
| Attitude | ATT1 | 0.833 | 0.033 | 25.505 | 0.000 | α=0.95, rhoA=0.953 CR=0.96, AVE=0.799 |
| | ATT2 | 0.895 | 0.022 | 40.187 | 0.000 | |
| | ATT3 | 0.913 | 0.010 | 87.822 | 0.000 | |
| | ATT4 | 0.904 | 0.020 | 45.363 | 0.000 | |
| | ATT5 | 0.914 | 0.011 | 79.718 | 0.000 | |
| | ATT6 | 0.901 | 0.012 | 73.179 | 0.000 | |
| Environmental awareness | EA1 | 0.838 | 0.018 | 45.539 | 0.000 | α=0.912, rhoA=0.915 CR=0.934, AVE=0.74 |
| | EA2 | 0.878 | 0.016 | 53.447 | 0.000 | |
| | EA3 | 0.829 | 0.028 | 29.965 | 0.000 | |
| | EA4 | 0.878 | 0.016 | 54.667 | 0.000 | |
| | EA5 | 0.876 | 0.016 | 56.168 | 0.000 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Green perceived value | GPV1 | 0.871 | 0.018 | 49.541 | 0.000 | α=0.945, rhoA=0.946 CR=0.958, AVE=0.821 |
| | GPV2 | 0.919 | 0.010 | 92.372 | 0.000 | |
| | GPV3 | 0.911 | 0.017 | 53.625 | 0.000 | |
| | GPV4 | 0.913 | 0.013 | 72.280 | 0.000 | |
| | GPV5 | 0.916 | 0.013 | 69.752 | 0.000 | |
| Purchase behavior | PB1 | 0.912 | 0.008 | 111.472 | 0.000 | α=0.868, rhoA=0.88 CR=0.919, AVE=0.791 |
| | PB2 | 0.846 | 0.025 | 33.660 | 0.000 | |
| | PB3 | 0.908 | 0.011 | 85.241 | 0.000 | |
| | PB4 | 0.870 | 0.013 | 67.440 | 0.000 | |
| | PB5 | 0.790 | 0.022 | 35.820 | 0.000 | |
| Perceived behavioral control | PBC1 | 0.835 | 0.024 | 34.598 | 0.000 | α=0.916, rhoA=0.919 CR=0.938, AVE=0.751 |
| | PBC2 | 0.913 | 0.010 | 88.365 | 0.000 | |
| | PBC3 | 0.919 | 0.010 | 92.744 | 0.000 | |
| Purchase intention | PI1 | 0.866 | 0.017 | 52.245 | 0.000 | α=0.938, rhoA=0.944 CR=0.952, AVE=0.767 |
| | PI2 | 0.749 | 0.026 | 29.324 | 0.000 | |
| | PI3 | 0.915 | 0.011 | 80.499 | 0.000 | |
| | PI4 | 0.925 | 0.009 | 99.817 | 0.000 | |
| | PI5 | 0.910 | 0.012 | 78.135 | 0.000 | |
| | PI6 | 0.877 | 0,014 | 61.429 | 0.000 | |
| Subjective norms | SN1 | 0.927 | 0,011 | 82.612 | 0.000 | α=0.935, rhoA=0.936 CR=0.958, AVE=0.885 |
| | SN2 | 0.957 | 0,006 | 173.853 | 0.000 | |
| | SN3 | 0.938 | 0,008 | 113.079 | 0.000 | |
| Willingness to pay | WTP1 | 0.947 | 0,007 | 134.361 | 0.000 | α=0.929, rhoA=0.93 CR=0.955, AVE=0.875 |
| | WTP2 | 0.951 | 0,006 | 150.620 | 0.000 | |
| | WTP3 | 0.909 | 0.012 | 73.620 | 0.000 | |

Note: SD=Standard deviation; α=Cronbach's alpha; CR=Composite reliability; AVE=Average variance extracted

Table 4.15 Discriminant validity

**Fornell-Larcker Criterion**

| | Attitude | Environmental awareness | Green perceived value | Perceived behavioral control | Purchase behavior | Purchase intention | Subjective norms | Willingness to pay |
|---|---|---|---|---|---|---|---|---|
| Attitude | 0.894 | | | | | | | |
| Environmental awareness | 0.733 | 0.860 | | | | | | |
| Green perceived value | 0.795 | 0.812 | 0.906 | | | | | |
| Perceived behavioral control | 0.736 | 0.717 | 0.797 | 0.890 | | | | |
| Purchase behavior | 0.639 | 0.698 | 0.756 | 0.695 | 0.866 | | | |
| Purchase intention | 0.727 | 0.812 | 0.846 | 0.772 | 0.847 | 0.876 | | |
| Subjective norms | 0.772 | 0.665 | 0.731 | 0.725 | 0.692 | 0.745 | 0.941 | |
| Willingness to pay | 0.712 | 0.683 | 0.836 | 0.773 | 0.730 | 0.803 | 0.705 | 0.936 |

**Heterotrait-Monotrait (HTMT) Ratio**

| | Attitude | Environmental awareness | Green perceived value | Perceived behavioral control | Purchase behavior | Purchase intention | Subjective norms | Willingness to pay |
|---|---|---|---|---|---|---|---|---|
| Attitude | | | | | | | | |
| Environmental awareness | 0.786 | | | | | | | |
| Green perceived value | 0.837 | 0.872 | | | | | | |
| Perceived behavioral control | 0.812 | 0.806 | 0.877 | | | | | |
| Purchase behavior | 0.682 | 0.763 | 0.811 | 0.774 | | | | |
| Purchase intention | 0.763 | 0.874 | 0.895 | 0.850 | 0.911 | | | |
| Subjective norms | 0.818 | 0.719 | 0.776 | 0.803 | 0.746 | 0.792 | | |
| Willingness to pay | 0.756 | 0.740 | 0.891 | 0.854 | 0.790 | 0.860 | 0.756 | |

### 4.3.2 Measurement model

In a second step, PLS-PM was used to test the hypotheses regarding the relationships between the proposed model's constructs. The assessment of the structural model included evaluating the structural model for collinearity issues, the significance and relevance of the structural model's relationships and the level of the coefficient of determination (R2) (Hair et al., 2017). As the VIF values are below the threshold of 5.0, collinearity is not an issue.

Next, the structural model's path coefficients were considered. Whether a coefficient is significant depends on the standard error obtained by means of bootstrapping (i.e., 5,000 runs), which allowed us to calculate the t-value and p-value. Seven out of the nine path coefficients were found to be statistically significant. These results provide support for hypotheses two (H2: Subjective norms are positively associated with consumers' intention to purchase green furniture – beta $[\hat{\beta}] = 0.326$), four (H4 : Perceived behavioral control is positively associated with consumers' green furniture Purchase behavior – $[\hat{\beta}] = 0.101$), five (H5: Consumers' green furniture purchase intention is positively associated with their actual Purchase behavior – $[\hat{\beta}] = 0.770$), six (H6: Green perceived value is positively associated with consumers' green furniture purchase intention – $[\hat{\beta}] = 0.244$), seven (H7: Environmental awareness is positively associated with consumers' willingness to pay for green furniture – $[\hat{\beta}] = 0.684$), eight (H8: Environmental awareness is positively associated with consumers' green furniture purchase intention – $[\hat{\beta}] = 0.326$) and nine (H9: Willingness to pay is positively associated with consumers' green furniture purchase intention – $[\hat{\beta}] = 0.237$).

Two hypotheses were not verified (at the 5% significance level), namely hypotheses one (H1: Consumers' attitude toward green furniture is positively associated with their intention to purchase green furniture), and three (H3: Perceived behavioral control is positively associated with consumers' intention to purchase green furniture).

Table 4.16 demonstrates the path coefficient and Figure 4.1 summaries the results of the structure model.

Table 4.16 Path coefficients, total and indirect effects

| **Path Coefficients** | **Coef.** | **SD** | **t** | **p** |
|---|---|---|---|---|
| Attitude -> Purchase intention | -0.077 | 0.050 | 1.535 | .125 |
| Environmental awareness -> Purchase intention | 0.326 | 0.057 | 5.755 | .000 |
| Environmental awareness -> Willingness to pay | 0.684 | 0.038 | 18.150 | .000 |
| Green perceived value -> Purchase intention | 0.244 | 0.060 | 4.021 | .000 |
| Perceived behavioral control -> Purchase behavior | 0.101 | 0.047 | 2.192 | .028 |
| Perceived behavioral control -> Purchase intention | 0.089 | 0.051 | 1.699 | .089 |

| | | | | |
|---|---|---|---|---|
| Purchase intention -> Purchase behavior | 0.770 | 0.041 | 18.704 | .000 |
| Subjective norms -> Purchase intention | 0.177 | 0.039 | 4.517 | .000 |
| Willingness to pay -> Purchase intention | 0.237 | 0.050 | 4.794 | .000 |
| **Total and Indirect Effects** | **Coef.** | **SD** | **t** | **p** |
| Attitude-> Purchase behavior | -0.059 | 0.038 | 1.543 | .123 |
| Attitude -> Purchase intention | -0.077 | 0.050 | 1.535 | .125 |
| Environmental awareness -> Purchase behavior | 0.376 | 0.052 | 7.219 | .000 |
| Environmental awareness -> Purchase intention | 0.488 | 0.064 | 7.666 | .000 |
| Environmental awareness -> Willingness to pay | 0.684 | 0.038 | 18.150 | .000 |
| Green perceived value -> Purchase behavior | 0.188 | 0.046 | 4.007 | .000 |
| Green perceived value -> Purchase intention | 0.244 | 0.060 | 4.021 | .000 |
| Perceived behavioral control -> Purchase behavior | 0.170 | 0.053 | 3.210 | .001 |
| Perceived behavioral control -> Purchase intention | 0.089 | 0.051 | 1.699 | .089 |
| Purchase intention -> Purchase behavior | 0.770 | 0.041 | 18.704 | .000 |
| Subjective norms -> Purchase behavior | 0.136 | 0.031 | 4.397 | .000 |
| Subjective norms -> Purchase intention | 0.177 | 0.039 | 4.517 | .000 |
| Willingness to pay -> Purchase behavior | 0.183 | 0.040 | 4.659 | .000 |
| Willingness to pay -> Purchase intention | 0.237 | 0.050 | 4.794 | .000 |

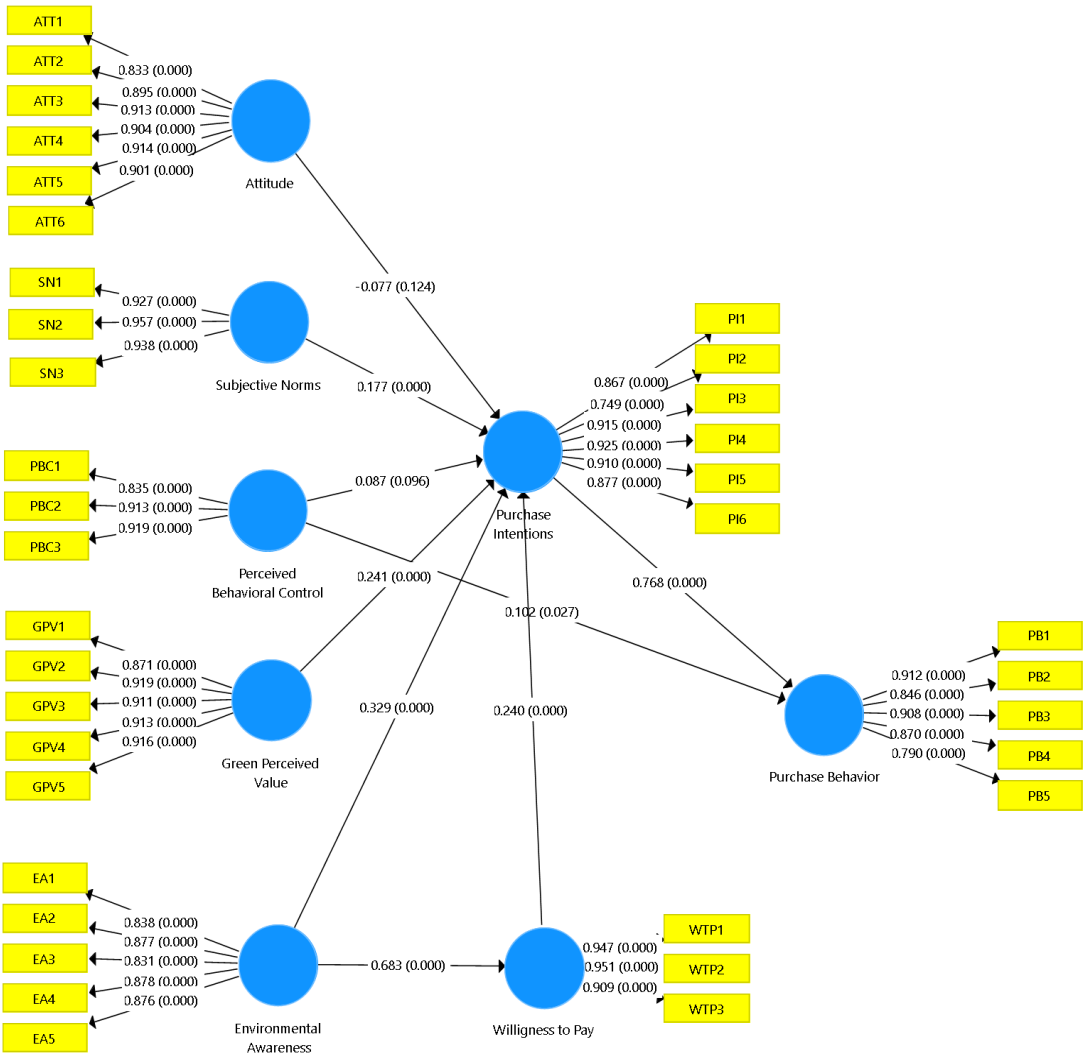



Figure 4.1 Structural model results

### 4.3.3 Measurement model with moderator effects (income)

A multi-group analysis was performed to test the moderating effect of income on the relationship between consumers' willingness to pay for green furniture and their green furniture purchase intention (H10) and on the relationship between environmental awareness and consumers' intention to purchase green furniture (H11).

The results of the Welch-Satterthwait test allowed to confirm only H11 ($t = 1.976$; $p = .048$). The estimated path coefficient is higher for the higher income group - >300,000 yuan ($[\hat{\beta}] = 0.403$) than for lower income group - < 300,000 yuan ($[\hat{\beta}] = 0.207$).

The differences between the path coefficients Willingness to Pay -> Purchase Intentions for the two groups were not statistically significant ($t = 0.830$; $p = .407$).

Table 4.17 The moderating effects of income

| Path coefficients | Coef. | SD | t |
|---|---|---|---|
| **Total sample** | | | |
| Environmental awareness -> Purchase intention | 0.326 | 0.057 | 5.755 |
| Willingness to pay -> Purchase intention | 0.237 | 0.050 | 4.794 |
| **Income < 300,000 yuan** | | | |
| Environmental awareness -> Purchase intention | 0.207 | 0.075 | 2.726 |
| Willingness to pay -> Purchase intention | 0.228 | 0.076 | 3.032 |
| **Income > 300,000 yuan** | | | |
| Environmental awareness -> Purchase intention | 0.403 | 0.072 | 5.641 |
| Willingness to pay -> Purchase intention | 0.247 | 0.064 | 3.929 |

### 4.3.4 Discussion

This study addressed five research questions. As regards the first research question – Are the three variables of TPB (attitude, subjective norm and perceived behavioral control) related to consumers' green furniture purchase intention and behavior? – three hypotheses were formulated (H1, H2 and H3).

The model estimates revealed that only one of the three variables of the traditional TPB model was statistically significant. Accordingly, H2 is verified. The results of this study are in accordance with the research by M. F. Chen (2020), Nguyen et al. (2019) and Nguyen et al. (2019) that revealed the existence of a positive and significant relationship between subjective norms and GPI.

Two hypotheses were not supported (at 5% level of significance), namely H1 (Consumers' attitude toward green furniture is positively associated with their intention to purchase green furniture.) and H3 (Perceived behavioral control is positively associated with consumers' intention to purchase green furniture.). The reason why attitude is not significantly associated

with green purchase intention is possibly because consumers are not fully aware of the benefits of buying green furniture and hold ambiguous attitudes towards green furniture purchase, or possibly because perceived behavioral control factors hinder consumers' attitudes towards green furniture purchase. It was also mentioned above that although a growing body of literature shows that consumers are more likely to learn about and purchase eco-friendly/green products when they have positive attitudes towards such products, some scholars deny the influence of attitudes on green purchase intention (Müller et al., 2021). The failure of attitudes to predict purchase intention implies the existence of the "attitude-behavior gap". As mentioned in the literature review, it is generally accepted that there is an "attitude-behavior" gap in real life and that because of the "attitude-behavior" gap, consumers' positive attitudes toward certain products or concepts do not directly translate into positive attitudes (Boulstridge & Carrigan, 2000).

H3 was not supported probably, which is contrary to the findings of Karatu and Nik Mat (2015, Aug 17-20), Maichum et al. (2016), Paul et al. (2016), Yadav & Pathak, (2017), et al. because consumers' perceived behavioral control is influenced by several factors. They cannot choose products based on their preferences alone. They also need to consider price, availability and other factors, and the price of green furniture on the market is often higher than the price of conventional furniture, which is to some extent linked to willingness to pay. Therefore, it is necessary for consumers to consider their spending power and perceive whether they can afford to buy the product (X. Y. Zhang & Dong, 2020).

Regarding the second research question – Is green perceived value associated with consumers' green furniture purchase intention? – Hypothesis 6, H6, was formulated: Green perceived value is positively associated with consumers' green furniture purchase intention.

The analysis results support H6, as the path coefficient between green perceived value and consumers' green furniture purchase intention is 0.244, which means green perceived value has a significant positive impact on consumers' green furniture purchase intention, in other words, green perceived value is the direct antecedent variable of consumers' green furniture purchase intention (Chaudhary & Bisai, 2018; L. Chen et al., 2021; Y. S. Chen, 2013; Y. S. Chen & Chang, 2012). From the descriptive analysis, it can also be known that compared with non-green furniture, most consumers still agree with the environmental protection value brought by green furniture and are more willing to buy green furniture.

As regards the third research question- Does willingness to pay mediate the relationship between environmental awareness and consumers' green furniture purchase intention? – from Table 4.9, it can be clearly seen that environmental awareness has a direct impact on purchase

intention, and it also has an indirect impact on purchase intention through the intermediate variable of willingness to pay. Table 4.16 summarizes the calculation results of direct, indirect and total effects. As shown in Table 4.16, the direct effect of environmental awareness on purchase intention is 0.326; the indirect effect path through the mediating variable (willingness to pay) is EA-WTP-PI; the path coefficient of EA-WTP is 0.684, the path coefficient of WTP-PI is 0.237, and the indirect effect of EA-PI is 0.684*0.237=0.162, thus the total effect of environmental awareness on purchase intention is 0.326+0.162=0.488.

It also shows that the willingness to pay, to a certain extent, regulates the relationship between environmental awareness and consumers' green furniture purchase intention. The literature review also mentioned that environmental awareness can indirectly affect green purchase intention and/or green purchase behavior through other factors (Y. S. Chen & Tung, 2014; S. Y. Wang et al., 2016; X. P. Xu et al., 2020b); environmental awareness can positively influence the willingness to pay (X. P. Xu et al., 2020b), and people with higher levels of ecological and environmental knowledge are more willing to pay more for green products (H. L. Wei et al., 2020); Biswas and Roy (2016) also conclude that increased environmental awareness leads to increased willingness to pay, which in turn leads to increased green purchase intentions; people who care about the environment are more inclined to buy green products, and environmentally conscious consumers tend to prefer an eco-friendly lifestyle (Chauhan et al., 2021).

Regarding the fourth research question- Does income moderate the relationship between consumers' willingness to pay and green furniture purchase intention?- it can be seen from Table 4.17 that in the total sample, the path coefficient between the willingness to pay and the purchase intention is 0.237; in the lower income group - < 300,000 yuan, the path coefficient between the willingness to pay and the purchase intention is 0.228; and in the higher income group - > 300,000 yuan, the path coefficient between the willingness to pay and the purchase intention is 0.247. There is no much difference between these numbers and therefore it is not statistically significant. Some studies have also shown that there is no significant relationship between socio-demographic variables and green purchase intention (Akehurst et al., 2012; Ansar, 2013; Cavite et al., 2022; Rosner et al., 2021), but most studies point to a significant relationship between income and green purchasing intention.

For example, a study on the willingness to pay of urban residents in Jiangsu Province for green electricity showed a positive relationship between income, education level and the willingness to pay for green electricity (L. Zhang & Wu, 2012). Empirical research in the field of green food shows that age and income are related to consumers' willingness to pay for green

food (Yu et al., 2014). A study of renewable energy, also a green product, in Lithuania, found that among the socio-demographic variables, only age and income have a significant impact on the willingness to pay (Liobikienė & Dagiliūtė, 2021). A study of green electricity products in Slovenia found that the willingness to pay depends on household income (Zorić & Hrovatin, 2012). As for the reasons why the results of this study are not consistent with the conclusions of most scholars, first, because of the attributes of green furniture, it may be difficult for consumers to identify whether a product is green furniture and decide its value; second, consumers do not trust sellers and their ecolabels of green products, because they think "green" is just a gimmick and furniture sellers all label their products "green" while most of their products are not really green. Therefore, even if consumers do have high incomes and the purchasing power of green furniture, they are not necessarily willing to pay for green furniture.

As regards the fifth research question – does income moderate the relationship between consumers' environmental awareness and green furniture purchase intention? – it can be seen from Table 4.17 that, in the total sample, the path coefficient between environmental awareness and purchase intention is 0.326; in the lower income group - < 300,000 yuan, the path coefficient between environmental awareness and purchase intention is 0.207; and in the higher income group - > 300,000 yuan, the path coefficient between environmental awareness and purchase intention is 0.403, which is significantly higher than that of the lower income group - < 300,000 yuan.

Therefore, it can be concluded that income has a positive moderating effect on environmental awareness and purchase intention. Meanwhile, a Malaysian study specializing in the impact of demographic variables on green purchase intention also found that female respondents showed stronger green purchase intention than male respondents, thus gender was significantly associated with green purchase intentions. The researchers attributed this to the fact that women were more concerned about the environment than men (Rahim et al., 2017), while income, age, education level, and occupation did not have a significant effect on green purchase intentions. Such a finding is inconsistent with the results of our study, and previous studies have not specifically studied the positive moderating effect of income on the environmental awareness and purchase intention.

## 4.4 Summary

First, this chapter first makes descriptive analysis on the sample. It starts by describing the demographic characteristics of the survey sample, followed by a descriptive analysis of the

sample's awareness and Purchase behavior of green furniture, and finally descriptive analysis of the data on the items related to the model's eight dimensions: attitude, subjective norm, PBC, willingness to pay, green perceived value, environmental awareness, purchase intention and Purchase behavior.

Second, reliability and validity analyses were conducted on the scales. Firstly, Cronbach's alpha was used to analyse the reliability of the eight variables involved in this study, followed by construct validity test using KMO and Bartlett's Test of Sphericity to ensure that the data were suitable for factor analysis. Finally, principal component analysis was used to analyse the questionnaire data to obtain the communality, total variance explained and factor loading component matrix.

Third, SEM analysis was performed on the sample data. First, the results of the measurement model estimation of the reflective constructs were analyzed. Then, the hypotheses of the relationship between the constructed model constructs were tested using PLS-PM. Next, the path coefficients of the structural model were analyzed. Finally, the moderating effect of income was tested through a multigroup analysis.

# Chapter 5: Conclusions and Prospects

## 5.1 Research conclusions

This thesis defines green furniture and distinguishes it from non-green furniture, analyses the development process and status of the furniture industry, and constructs an extended TPB model to study the factors influencing the purchase of green furniture by the residents of Suzhou City, one of the representative economically developed cities in China. Through literature review, scale development, questionnaire design and distribution, and data analysis, some valuable research results for the furniture industry are derived and summarized as follows:

(1) Green furniture consumption in China has become the mainstream of the market.

Questionnaire survey results show that 89.35% of the 554 respondents were aware of the concept of green furniture, mainly through Weibo (Microblog), WeChat and other social media platforms; print media such as newspapers, magazines, and books; websites; television or radio; friends and relatives; furniture stores or furniture exhibitions, and other channels. As many as 97.11% of the respondents were willing to buy or continue to buy green furniture. They generally believed that green furniture is greener compared to traditional furniture, has less environmental pollution, and is conducive to human health. This also directly reflects the upgrading of consumer consumption and health awareness and the fact that consumers tend to consider the impact of green health factors on the body while purchasing furniture. At present, the main consumers of furniture are the post-80s and the post-90s. In the next five to ten years, this group will remain the main consumers of furniture. "The post-80s and post-90s have relatively superior living conditions and enjoy richer material resources during their growth. Because of this, they have more "demanding" requirements for the products they want to consume, and they are trustworthy consumers of quality. Being green and environmentally friendly is one of the main dimensions to measure quality.

(2) Ecolabel awareness needs to be improved.

The survey data reveal that 214 out of 554 respondents were not aware of the concept of ecolabel. In can be seen through the survey that when purchasing green furniture, 64.98% of the respondents preferred durable furniture made of solid wood; 59.39% of the respondents highlighted solid plates and low formaldehyde content; 57.94% of the respondents cared about

the absence of formaldehyde content in coatings; and 55.23% of the respondents placed an emphasis on whether the green furniture bears an ecolabel (eco-mark). According to an article entitled "'Green Furniture' May Not Be Environmentally Friendly. The Formaldehyde and Radiation of Some Furniture Seriously Exceed the Standard." Released by Liaoning Daily, "green" has long been one of the main factors that furniture consumers consider when buying furniture. Furniture sellers are also making use of the "green" concept to sell furniture. In the furniture market, almost all the furniture is self-labelled as green furniture. However, there is no way to identify (Shi, 2013). Besides, there are a myriad of ecolabels. Even if a piece of furniture is attached with an ecolabel, or the furniture seller can provide a green certificate, it does not necessarily indicate that the product is truly green.

In terms of furniture environmental certification, the state does not have mandatory provisions. Instead, enterprises may choose whether to be certified based on their own willingness. So, environmental certification in the home market is relatively confusing, which creates opportunities for some pseudo-green products to make a profit in troubled situation. As there are various types of ecolabels used in the development of standards and qualified assessment methods and consumers lack corresponding knowledge of ecolabels, consumers have a low level of trust in eco-labeling.

X. M. Zhang and Wang (2019) proposed that while using eco-labeling tools, companies should first ensure that their quality level matches the eco-label. Secondly, the government can increase the level of consumer trust in green products through a practical eco-labeling program. At present, the highest standard of green certification is the China Environmental Labelling (commonly known as the "ten-ring label"), which is not only green certification authorized by China's Ministry of Ecology and Environment but also the only highest authority environmentally friendly mark issued by the Chinese government. Enterprises must obtain this label through passing the highest-level product certification by the China Environmental United Certification Centre approved by the China's Ministry of Ecology and Environment formed by the representatives and renowned experts of 11 ministries and commissions such as the Ministry of Ecology and Environment and the General Administration of Quality Supervision, Inspection and Quarantine. The state expressly provides that only the furniture products bearing the "ten-ring label" can be regarded as "green products".

In addition, the more authoritative environmental certification of the domestic furniture industry is the China Quality Certification (CQC). Products passing the CQC certification have such environmental advantages as low toxicity and are resource-saving and less harmful. Consumers are concerned about and want to buy green furniture. But they have cognitive bias

of green furniture and lack knowledge of ecolabels. As a result, they are not able to distinguish good products, which may cause green products to be forced out of the market due to their lack of consumers resulting from high prices.

Yang (2015) found in his study that compared with the western developed countries, Chinese consumers have a low level of trust in green ecolabels, and consumers are more willing to pay a green premium for major brands, which to a certain extent hinders the long-term development of China's green product market. It is recommended that furniture consumers require businesses to provide the national authoritative ecolabel in addition to looking at the brand and material of furniture while purchasing green furniture products so as to ensure that the products they consume are truly green.

(3) Green furniture in the Suzhou market enjoys a huge room for development.

The survey shows that only 6.32% of the 554 respondents were not willing to pay more for green furniture; 35.38% of them were willing to buy furniture priced less than 10% higher than traditional furniture; and 25.81% of them were willing to buy furniture priced 10%-15% higher than traditional furniture. These two price ranges account for a relatively large number of consumers in Suzhou, indicating that most consumers are willing to pay 15% more than non-green furniture to buy green furniture and have a strong preference for green furniture. As long as furniture suppliers control costs and ensure that the prices of green furniture are no more than 15% higher than those of non-green furniture, the sales of green furniture is expected to increase significantly.

(4) The factors influencing the purchase of green furniture are diverse.

The hypotheses testing results suggest that attitude is not significantly related to purchase intention, which contradicts the results of previous studies (Han & Kim, 2010). This may be due to the fact that consumers' behavioral attitudes in Suzhou are more susceptible to other factors, not only by individuals' PBC, but also by market product information propaganda. The direct influence of subjective norms on consumers' purchase intention is significant, which indicates that consumers currently have a more serious herd mentality and are easily influenced by their friends and relatives.

Therefore, improving the overall social atmosphere and the national environmental protection awareness has the most direct impact on increasing consumers' green purchase intention. The direct effect of PBC on consumers' purchase intention is not significant, which means that even when consumers have time, resources and easier access to green furniture, furniture purchase intention will not be significantly improved. Green perceived value is significantly related to consumers' purchase intention and purchase behavior, which means

when consumers perceive the green value of green furniture and feel that buying green furniture is more meaningful compared to buying non-green furniture, they tend to be inclined to buying green furniture. The correlation coefficient between purchase intention and purchase behavior is 0.769, which shows that purchase intention determines purchase behavior to a great extent.

## 5.2 Innovations

Compared with previous studies, this thesis is innovative in the following aspects.

First, this thesis has adopted an innovative perspective as it constructs an extended TPB model to explore the factors influencing the purchase of green furniture by the residents of Suzhou City, one of the representative economically developed cities in China.

Currently, there is only a small body of literature on green furniture purchase in China; India, which is also a developing country, has more a greater body of literature on green furniture, while in Europe and America, there are many studies related to green furniture purchase. Based on the TPB model, this thesis studies the influencing factors of green furniture purchase by residents in Suzhou, which represents one of the most economically developed cities in China. It is an innovation to study the factors influencing the purchase of green furniture based on the TPB model from a Chinese perspective.

Second, this thesis is innovative in research contents as it investigates consumers' green furniture purchase intention and behavior based on the TPB model with green perceived value, income, willingness to pay, and environmental awareness as variables.

There is a large body of literature on the use of the attitude, subjective norms and PBC dimensions of the TPB model in the study of green furniture purchase, and previous authors have provided abundant research results for us. It is an innovation to add green perceived value, income, WTP and environmental awareness to form an extended TPB model to study and analyze consumers' intention to purchase green furniture products as well as their green furniture purchase behavior.

Third, this thesis is innovative in practical implications. This study provides a reference basis for global furniture enterprises and Chinese furniture enterprises to design, produce and sell green furniture products in China. Currently, China's "dual-carbon" (carbon emission peak and carbon neutrality) policy has been upgraded to a national strategy, which will have a long-lasting and far-reaching impact on all industries. Particularly, traditional industries such as the furniture industry, will definitely take green products as the mainstream products in the future. This trend cannot be changed by any individual enterprise, and enterprises must jump on this

bandwagon. This thesis adds the variables of perceived value, income, WTP and environmental awareness to the original TPB dimensions of attitude, subjective norms and PBC to form an extended TPB model. Through questionnaire survey and data analysis, it identifies the factors influencing customers' green furniture purchase intention and behavior, providing a reference basis for global furniture enterprises and Chinese furniture enterprises to design, produce and sell green furniture products.

## 5.3 Recommendations

### 5.3.1 Ensure green standards at each and every link to produce trustworthy green furniture for consumer.

Furniture suppliers should effectively control the production process. Starting with raw materials, they should strive to use natural materials that do not contain harmful substances, do not emit toxic gases, and allow for recycling and reuse even if they are no longer in use. It can be seen from the questionnaire survey results that consumers prefer solid wood furniture. Nevertheless, green furniture is not the same as solid wood furniture. Panel furniture can also be green furniture as long as the production process, panels, paints and other raw materials are strictly controlled in line with relevant quality standard. The main substrate of panel furniture is wood-based panels, which are made of wood veneer, wood blocks, or shavings bonded by adhesives. The main pollutants produced by wood-based panels are formaldehyde and total volatile organic compound (TVOC).

According to China's latest GB18580-2017 "Indoor Decorating and Refurbishing Materials: Limit of Formaldehyde Emission of Wood-based Panels and Furnishing Products", the formaldehyde emission requirement of wood-based panels is 0.124mg/m³. According to China's latest GB/T35601-2017 "Green Product Assessment: Wood-based Panels and Wooden Flooring", the TVOC emission requirement is 100μg/m³. Unhealthy furniture products tend to exert adverse effects on health, and consumers pay more attention to this impact.

Long-term high concentration of furniture pollution on human health can cause significant harm, mainly on the respiratory system. It may result in a decline in respiratory function and increased respiratory symptoms. In serious cases, it can lead to chronic bronchitis, asthma, emphysema and other airway obstructive disease deterioration and increased mortality, and increased prevalence of lung cancer. Even low concentrations can cause an "uncomfortable" sensation, which is mainly manifested by an unpleasant odor and irritation. As even low

concentration of pollution has some kind of odor and irritation on the human body as well as long-term interference with people, it may cause psychological and mental harm to people, resulting in incalculable potential harm to the human body.

Consumers tend to buy green furniture for two reasons. One is because green furniture has small pollution on the environment. The other is that they can perceive the value of green furniture to themselves as they believe that the use of green furniture is for the benefit of their own health and the health of their families. Therefore, furniture suppliers should focus on the functional value and environmental value of furniture in the production process.

On the one hand, furniture design should be ergonomic, reduce redundant functions, ensure comfort and convenience, and avoid having adverse effects or harm on the human body in normal and abnormal use.

On the other hand, furniture producers should try to use natural and non-polluting materials as raw materials for furniture products, increase technical investment, introduce advanced production technology, reduce the pollution of the environment and the possibility of being polluted during the production of furniture products, try to extend the product life cycle as much as possible in the design and production process, increase the durability of furniture, thus reducing the energy consumption in reprocessing. These efforts will enable consumers to obtain the maximum benefit in the purchase of green furniture and create a green furniture brand that consumers can trust.

### 5.3.2 Control production cost to increase consumers' willingness to pay

Consumers' income levels and product prices will have an impact on their intention to purchase green furniture, and purchase intention directly affects purchase behavior (Ajzen, 1985; Yadav & Pathak, 2017). Therefore, green furniture manufacturers should work closely with raw material suppliers and furniture dealers to reduce unnecessary intermediate links and minimize production costs, so as to control the price of green furniture within an acceptable range for consumers, reduce consumer barriers to purchase, increase consumers' willingness to purchase, and increase their purchase behavior. In the process of cost control, the interests of production staff, consumers, society and nature should not be harmed; product quality requirements should not be ignored; the practice of selling seconds at best quality products should be avoided, and optimization should be made in many ways. Design, as the first link of furniture production, should make full use of the panels and reduce the generation of offcut materials without affecting the functions.

### 5.3.3 Improve consumers' understanding of green furniture and importance attached to green product certification

The survey found that consumers do not know enough about the green furniture ecolabel and cannot judge green furniture correctly, which is one of the most important obstacles affecting green furniture purchase. Furniture suppliers should provide consumers with reliable information through various ways to help them correctly choose green furniture and increase consumers' green furniture awareness. Consumers should have their own judgment when purchasing green furniture, avoid blindly trusting the business, can ask the business to provide product quality inspection reports to check whether the furniture harmful substances is within the allowable range specified in the national standards. For example, national mandatory standard GB 18584-2001 "Indoor Decorating and Refurbishing Materials-limit of Harmful Substances of Wood-Based Furniture" provides that the limit of formaldehyde emission by wood-based furniture products is 1.5mg/L. "E0", which means the limit of formaldehyde emission by wood-based furniture products should not exceed 0.050mg/m³, was written into the national standard GB/T 39600-2021 "Formaldehyde Emission Grading for Wood-based Panel and Finishing Products".

In general, we judge whether the furniture is green mainly based on its formaldehyde emissions, and the greener the furniture, the lower the formaldehyde emissions. If conditions allow, it is recommended that consumers buy furniture that achieve E1 (European) standard. E1 is the national mandatory health standards and is the mandatory threshold for "safety standards". Only the real E1 standard panels can really be harmless to the human body. Based on the materials used, furniture can be classified into such types as solid wood furniture, panel furniture, steel furniture, plastic furniture and fabric furniture. Regardless of the type of materials used, the priority is to guarantee healthy.

When buying furniture, consumers can check the relevant quality inspection reports to ensure that the furniture they intend to buy is healthy, environmentally friendly, and in line with national quality standards. In addition, consumers can also check the furniture eco-label, which is the environmental certification mark.

Currently, recognized environmental certifications in the furniture industry include the "ten-ring label" and the "CQC Mark Certification" in addition to the ISO14000 series of international standards. The "ten-ring label", advocated and issued by the Ministry of Ecology and Environment, is the highest level and the most authoritative environmental product certification. The "CQC Mark Certification" can make a comprehensive evaluation of the product's environmental quality, guide consumers to use low toxicity and low harm

environmental protection products, regulate the furniture market, reduce environmental pollution, and guide green procurement.

## 5.4 Limitations and prospects

First, this thesis studies the factors influencing the purchase of green furniture by residents in Suzhou, one of the most economically developed cities in China. As the sample is limited to the residents of Suzhou only, the conclusions drawn have regional limitations. Since there are differences in economic development and residents' income between the eastern and western regions of China, whether the results of this study can be extended to other regions of China is subject to further investigation.

Future researchers may consider enlarging the geographical scope and conducting studies in different economic regions of China, such as the Pearl River Delta region and the Beijing-Tianjin-Hebei region, to test the applicability of the extended TPB model proposed in this thesis.

Second, this thesis constructs an extended TPB model by adding the variables of environmental awareness, willingness to pay, perceived green value and income to the original TPB model based on previous literature and the authors' industry experience. Although most of the hypotheses proposed in this study are supported, validating the relevance of the identified variables, there are more variables than may influence consumers' green furniture purchase intention and purchase behavior.

Future studies may consider constructing models based on existing literature by selecting or adding other variables for testing to identify variables that influence consumers' purchase intention and purchase behavior of green furniture as comprehensively as possible and provide references for furniture companies to develop more effective sales strategies.

Third, given the restraints caused by the prevention and control of the COVID-19 pandemic, this study mainly collected data through an online survey. Specifically, the questionnaire link was sent to the WeChat groups of the author's connections and the author's existing customers, which to some extent led to a relatively concentrated sample in terms of socio-demographic factors such as education and income, reflecting a higher proportion of highly educated and high-income people. This may affect the representativeness of the results of this study to some extent.

Future studies may combine online and offline surveys to collect data more extensively and comprehensively so as to ensure the research results to be more representative.

Fourth, this thesis focuses on green home furniture (commonly known as residential furniture). The purchase decision of residential furniture is mainly made by individual consumers or by households, and factors such as the material, design, price, and whether the furniture is green have a significant impact on consumers' purchase intention and purchase behavior. In contrast, different types of furniture have different functions and consumers. Therefore, the factors influencing purchase intention and purchase behavior explored in this thesis may not be applicable to other types of furniture, such as office furniture, classroom furniture and age-appropriate furniture.

Future research can test whether the extended TPB model proposed in this study is applicable to different types of furniture other than residential furniture, such as office furniture, teaching furniture, and age-appropriate furniture.

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# Annex A: Survey Questionnaire on Green Furniture Consumption

Dear Sir/Madam,

Thank you for your participation in filling out this questionnaire! This questionnaire is designed to understand consumers' green furniture purchase intention and Purchase behavior. Please read each item carefully before selecting the option closest to your actual thought (click the respective button). There is no right or wrong in the answers, and the whole process will be conducted anonymously. The questionnaire is intended for research purpose only. We promise that all the information will be kept strictly confidential. Please rest assured and fill in the questionnaire with patience. Thanks very much for your support and help!

Definition of green furniture: "*environmentally friendly furniture designed to avoid or minimize environmental impacts throughout its life cycle and has less negative impact on human health*". Green furniture sold on the market normally bears an ecolabel.




EU Ecolabel




China Environmental Labelling (Type I)




Good Environmental Choice Label




Blue Angel ecolabel

**Part 1: Green furniture awareness and Purchase behavior**

1. Are you aware of the concept of green future?

   A. Yes B. No

2. From which channels do you get to know about green furniture? (Multiple choices)

   ☐Print media such as newspapers, magazines, and books

   ☐Social media such as Weibo and WeChat

   ☐Websites

☐Television or radio

☐Friends and relatives

☐Flyers, emails or SMS

☐Outdoor advertising

☐Furniture stores or furniture exhibitions

☐Not sure

☐Other

3. What are the characteristics of green furniture in your mind? (Multiple choices)

☐Made of eco-friendly materials; free from odor; harmless to human body

☐Consideration of natural resource conservation and resource regeneration in materials selection

☐Eco-friendly process from production to usage to disposal; little or no pollution to the environment

☐A good shopping environment and aftersales service

☐Close to nature; simple and stylish

☐Other

4. What are your main considerations when purchasing green furniture? (Multiple choices)

☐Made of solid wood and durable

☐Solid plates and low formaldehyde content

☐Good veneer; wear-resistant and colorfast

☐No formaldehyde content in coatings

☐With an ecolabel (eco-mark)

☐Good design taste and good style

☐High brand awareness

☐Other

5. Are you aware of green furniture ecolabels?

A. Yes B. No

6. Have you bought any furniture with ecolabels before?

A. Yes B. No

7. Are you willing to buy or continue buying furniture with ecolabels (i.e., green furniture)?

A. Yes (Skip 9) B. No (Skip 8)

8. What the reasons for your willingness to purchase and use green furniture? (Multiple choices)

☐High quality

☐Good value for money

☐The element of creativity and personality

☐Comfort of use and alignment with ergonomics

☐Green and environmentally friendly; producing little environmental pollution

☐Conducive to human health

☐In line with development trend

☐Other

9. What are the reasons for your unwillingness to purchase and use green furniture? (Multiple choices)

☐Unwilling to try new things because conventional furniture is more acceptable

☐Green furniture is more expensive and not cost-effective.

☐Green furniture is essentially no different from conventional furniture.

☐Different from the marketing slogans, green furniture has no environmental utility.

☐Other

10. Are you willing to pay more for green furniture?

☐No

☐Yes, if the price is less than 10% higher than conventional furniture.

☐Yes, if the price is 10%-15% higher than conventional furniture.

☐Yes, if the price is 15%-20% higher than conventional furniture.

☐Yes, if the price is 20%-25% higher than conventional furniture.

☐Yes, even if the price is over 25% higher than conventional furniture.

☐Yes, no matter how expensive it is as long as it is eco-friendly and safe.

11. When was the last time you bought furniture?

☐Within the past year ☐1-3 years ago ☐More than 3 years ago

**Part 2: Green furniture consumption**

Please tick the number that best corresponds to your actual experience or thought.

(The options are classified into five levels, from 1 = "strongly disagree" to 5= "strongly agree")

| No. | Item | Strongly disagree | Disagree | Neither disagree nor agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | I think buying green furniture is extremely good. | 1 | 2 | 3 | 4 | 5 |
| 2 | I think buying green furniture is extremely desirable. | 1 | 2 | 3 | 4 | 5 |
| 3 | I think buying green furniture is extremely enjoyable. | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | I think buying green furniture is extremely wise. | 1 | 2 | 3 | 4 | 5 |
| 5 | I think buying green furniture is extremely favorable. | 1 | 2 | 3 | 4 | 5 |
| 6 | I think buying green furniture is extremely pleasant. | 1 | 2 | 3 | 4 | 5 |
| 7 | Most people who are important to me think I should purchase green furniture. | 1 | 2 | 3 | 4 | 5 |
| 8 | Most people who are important to me would want me to purchase green furniture. | 1 | 2 | 3 | 4 | 5 |
| 9 | People whose opinions I value would prefer me to purchase green furniture. | 1 | 2 | 3 | 4 | 5 |
| 10 | Whether or not I buy green furniture in place of conventional non-green furniture is completely up to me. | 1 | 2 | 3 | 4 | 5 |
| 11 | I have resources, time and opportunities to buy green furniture. | 1 | 2 | 3 | 4 | 5 |
| 12 | I am confident that if I want to, I can buy green furniture in place of conventional non-green furniture. | 1 | 2 | 3 | 4 | 5 |
| 13 | I would pay more for a green furniture that is making efforts to be environmentally sustainable. | 1 | 2 | 3 | 4 | 5 |
| 14 | I would be willing to pay this extra percentage on the green furniture to support the organization's/product efforts to be environmentally sustainable. | 1 | 2 | 3 | 4 | 5 |
| 15 | I feel proud to have green furniture in my house though they are more costly than conventional products. | 1 | 2 | 3 | 4 | 5 |
| 16 | The green furniture environmental functions provide good value to me. | 1 | 2 | 3 | 4 | 5 |
| 17 | The green furniture environmental performance meets my expectations. | 1 | 2 | 3 | 4 | 5 |
| 18 | I purchase green furniture because it has more environmental concern than non-green products. | 1 | 2 | 3 | 4 | 5 |
| 19 | I purchase green furniture because it is environmentally friendly. | 1 | 2 | 3 | 4 | 5 |
| 20 | I purchase green product because it has more environmental benefit than non-green products. | 1 | 2 | 3 | 4 | 5 |
| 21 | I am extremely worried about the world's environment. | 1 | 2 | 3 | 4 | 5 |
| 22 | To achieve sustainable development, I think people should live in harmony with nature. | 1 | 2 | 3 | 4 | 5 |
| 23 | The balance of nature is very delicate and easily upset. | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24 | I am willing to control my consumption to realize the sustainable development. | 1 | 2 | 3 | 4 | 5 |
| 25 | I think individuals have the responsibility to protect the environment. | 1 | 2 | 3 | 4 | 5 |
| 26 | I would purchase green furniture even if their performance is the same as that of conventional furniture. | 1 | 2 | 3 | 4 | 5 |
| 27 | I would purchase green furniture even if its design is not novel. | 1 | 2 | 3 | 4 | 5 |
| 28 | I am more likely to purchase green furniture. | 1 | 2 | 3 | 4 | 5 |
| 29 | When I replace any furniture, I would plan to purchase green furniture. | 1 | 2 | 3 | 4 | 5 |
| 30 | When I have the need, I would purchase green furniture rather than conventional furniture. | 1 | 2 | 3 | 4 | 5 |
| 31 | I plan to spend on green furniture. | 1 | 2 | 3 | 4 | 5 |
| 32 | My family purchase green furniture at a much higher frequency than conventional furniture. | 1 | 2 | 3 | 4 | 5 |
| 33 | My family spends much more on green furniture than on conventional furniture. | 1 | 2 | 3 | 4 | 5 |
| 34 | My family purchases much more pieces of green furniture a than conventional furniture. | 1 | 2 | 3 | 4 | 5 |
| 35 | Out of ecological considerations, I have replaced some conventional furniture items into green furniture. | 1 | 2 | 3 | 4 | 5 |
| 36 | When I buy furniture, I will always look at the composition label to see whether it contains substance harmful to the environment. | 1 | 2 | 3 | 4 | 5 |

**Part 3: Personal information**

1. What is your gender?

A. Male □ B. Female □

2. What is your age?

A. 18-24 years old □ B. 25-34 years old □

C. 35-44 years old □ D. 45-54 years old □

E. 55 years old or above □

3. What is your marital status?

A. Married (Please go to Item No. 5) □ B. Unmarried (Please continue answering in order) □

C. Other (divorced, separated, widowed etc.) (Please go to Item No. 5) □

4. What is the number of children under 18 years old in your family?

A.0 B.1 C.2. D.3 or more

5.What is your highest level of education?

(1) Less than a high school diploma □

(2) High school diploma or technical secondary school diploma □

(3) Associate college degree □

(4) Bachelor's degree □

(5) Graduate degree □

6. What is your type of occupation?

A. Employee of a government agency/public institution/state-owned enterprise

B. Employee of a private company

C. Freelancer D. Student E. Other (Please specify_____)

7. Where is your permanent residence?

A. City or town B. Countryside

8. Which income (after tax) group does your household fall under?

(1) Less than 50,000 yuan (2) 50,000-100,000 yuan

(3) 100,000-200,000 yuan (4) 200,000-300,000 yuan

(5) Above 300,000 yuan

9. Which members of your family are living in the same household at present?

A. I live by myself.

B. I live with my spouse.

C. I live with my parent(s).

D. I live with my spouse and parent(s).

E. I live with my child/children.

F. I live with my spouse and child/children.

G. I live with my child/children and parent(s).

H. I live with my spouse, child/children and parent(s).

E. Other (Please specify: _____)

**Thanks again for your support and help!**