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RESEARCH ON FACTORS INFLUENCING GREEN CONSUMPTION BEHAVIOR OF CHINESE COLLEGE STUDENTS

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Based on the theory of planned behavior, this article constructs a model of influencing factors of college students' green consumption behavior, 520 students of the University of Science and Technology of Inner Mongolia data samples is analyzed through empirical research. The study found that college students' subjective norms and perceived behavioral control have a significant impact on green product purchase intention.

Keywords: theory of planned behavior, green consumption, consumer behavior, environmentally friendly products, green consumption intention.

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ИССЛЕДОВАНИЕ ФАКТОРОВ, ВЛИЯЮЩИХ НА ЭКОЛОГИЧНОЕ ПОТРЕБИТЕЛЬСКОЕ ПОВЕДЕНИЕ СТУДЕНТОВ КИТАЙСКИХ КОЛЛЕДЖЕЙ

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Основываясь на теории планируемого поведения, построена модель факторов, влияющих на экологичное потребительское поведение студентов колледжей. Проанализирована выборка данных о 520 студентах бакалавриата Университета науки и технологий Внутренней Монголии с помощью эмпирического исследования. В результате исследований установлено, что субъективные нормы студентов колледжей и предполагаемый поведенческий контроль оказывают значительное влияние на намерение приобрести экологически чистый продукт.

Ключевые слова: теория планируемого поведения, «зеленое» потребление, потребительское поведение, экологически чистые продукты, намерение в отношении «зеленого» потребления.

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Introduction

Green consumption behavior is a pro-environmental behavior in daily life. Green consumption is related to sustainable development and consumer behavior. Individuals consider the impact of their own behavior on the environment when they purchase or use products, and refers to them trying to minimizing the negative impact. Green consumption behavior is often accompanied with some cost to individuals.

Economic, social and cultural factors have created the basis for “green” consumerism. Ecological consumer behavior is crucial as more and more consumers care about the environment, but there is a gap between intentions and actions, which has led to the importance of this study.

In the new stage of China's economic development, green consumption behaviors, such as purchasing environmentally friendly products and reducing the use of disposable items, are becoming more and more important. As the main force of the future society, the consumption behavior of college students is crucial to sustainable development. Many students are not fully aware of its importance, so studying the factors influencing college students' behavior regarding green consumption is of great importance for popularizing their green consumption.

Research ideas and methods

The main research ideas of this paper are: to summarize the results of previous studies on sustainable consumption to compile a model and questionnaire; to use the theory of “planned behavior” to create a research model and hypotheses; data analysis to draw conclusions.

The method of literary research, which allowed to create a research model, formulate hypotheses was used and a questionnaire method, which allowed to collect data using a questionnaire based on the developed scheme of the research model.

The method of empirical analysis using the AMOS24.0 software to verify the degree of compliance of the parameters with the required standards, as well as the reliability of the developed model, and SPSS26.0 for reliability analysis.

Model and hypothesis

This paper is based on the theory of planned behavior or “TPB” model. The TPB is a cognitive theory by Azjen (1985) that proposes that an individual's decision to engage in a specific behavior can be predicated by their intention to engage in that behavior [1]. Based on “TPB” model, the authors have developed a scheme for the influence of factors on consumer behavior (Fig. 1). Attitude, subjective norms, and perceived behavioral control are used as independent variables, green consumption willingness is used as a mediating variable, green consumption behavior is used as a dependent variable, and consumer willingness to pay a premium is used as a moderating variable.

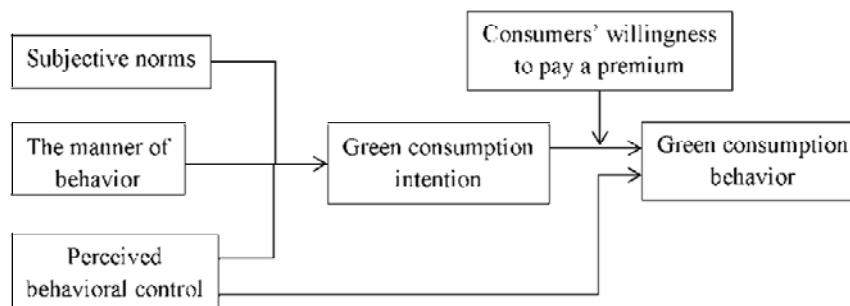


Fig. 1. Research model diagram
Source. Compiled by the authors.

Based on the TPB model, the authors have developed a number of hypotheses. Attitude is both the most important variable in the TPB model and the hottest research topic in green purchasing behavior. Many domestic and foreign scholars have conducted empirical research on the relationship between attitude and intention. Hao Yue (2020) showed that the attitude of individual psychological variables can directly affect consumers' willingness to make green purchases [2]. Scalco (2017) used the theory of planned behavior as the theoretical basis and analyzed that the ratio has the greatest impact on the willingness to buy organic food [3]. On this basis, this paper believes that consumers' attitudes on consumers' green shopping intention are highly predictable. That is, the hypotheses of the H1 and H1 a studies are put forward (Table 1).

Green consumer behavior is influenced by subjective norms, which include social culture, morals, rules and values. Social values and the attitudes of people around them have a significant impact on individuals' green consumption behaviors. Therefore, subjective norms will positively affect the willingness to participate in green consumption behavior, and then affect green consumption behavior [4]. Many scientists [2, 5] have tested the influence of subjective norms on "green" purchasing behavior, and this conclusion has been widely recognized. The above results show that subjective norms directly affect green purchase Willingness to act, which allows us to put forward hypotheses H2 and H2a (Table 1).

Perceived behavioral control is an individual's perception of the difficulty of executing a behavior, which affects their behavioral intention. Scholars' researchs (Hao Yue, 2020, Yang Yu's (2019) has found that research shows that perceived behavioral control in external situational variables will have a direct impact on consumers' willingness to purchase green products [2], [6], which allows us to put forward hypothesis H3 and H3a (Table 1).

According to the theory of planned behavior, personal behavior is usually a specific behavior of personal behavioral intention, and the same is true for green consumption behavior [7]. The normative perception, attitude and perceived control of green consumption are all affected by the willingness to consume green, indicating that green consumption behavior is mainly affected by the willingness to consume green products [7–9]. Thus, this article suggests investigating the H4 hypothesis (Table 1).

Willingness to pay is an economic indicator that measures consumers' recognition of the value of goods or services and their ability to bear prices. Some scholars have found that will affect consumers' willingness to purchase green products [10]. Thus, this article suggests investigating the H5, H5a and H5b hypothesis (Table 1).

Table 1

Hypotheses put forward

Serial number	Research hypothesis
Hypothesis H1	College student consumers' green consumption attitude positively affects green consumption behavior intention
Hypothesis H1a	The green consumption attitude of college students positively affects green consumption behavior through green consumption intention
Hypothesis H2	The subjective norms of green consumption among college students positively affect their willingness to engage in green consumption behavior
Hypothesis H2a	The subjective norms of green consumption of college students positively affect green consumption behavior through green consumption intention
Hypothesis H3	Green consumption perception and behavioral control of college students positively affect green consumption behavior intention
Hypothesis H3a	Green consumption perception and behavioral control of college students positively affect green consumption behavior through green consumption intention

Final part of table 1

Serial number	Research hypothesis
Hypothesis H4	College students' green consumption intention positively affects green consumption behavior
Hypothesis H5	The willingness of college students to pay a premium moderates the impact of green consumption intention on green consumption behavior
Hypothesis H5a	When college student consumers are more willing to pay a premium, green consumption willingness has a significant impact on green consumption behavior
Hypothesis H5b	When college student consumers' willingness to pay a premium is low, green consumption willingness has no significant impact on green consumption behavior

Source. Compiled by the authors.

Scale design and data collection

Based on the developed scheme (Fig. 1), a questionnaire was developed by authors aimed at in-depth study of knowledge and skills in the field of green consumption. All measurement elements were measured using a five-point Likert scale (Table 2).

Table 2

Variable items

Variable	Item number	Measurement table	References
Subjective norm	A1	My family, friends, classmates and other people around me are engaging in green consumption. I think we should also engage in green consumption	Duan Lijun (2015), Huang Zhixuan (2017)
	A2	Media publicity and advertising guidance encourage me to adopt green consumption	
	A3	People with social influence suggested that I buy green	
	A4	Relevant policies and regulations encourage me to engage in green consumption	
Manner	B1	Green consumption behavior is beneficial to environmental protection	Wang Jingjing (2015), Xie Jiumei (2014)
	B2	Green consumption behavior is beneficial to the health of yourself and your family	
	B3	Healthy and green consumption behaviors that benefit yourself and your family are beneficial to raising the environmental awareness of the general public	
Perceived behavioral control	C1	If I have enough financial resources, I will engage in green consumption	Wang Xiu (2015)
	C2	Whether to buy green products is entirely my personal decision	
	C3	I believe green products are truly environmentally friendly	
	C4	I am confident that I can consume green if I want to	
Consumption behavior intention	D1	Green products worth buying	Li Qian (2019), Wang Le (2019)
	D2	High likelihood of purchasing green products	
	D3	I have a strong desire to buy green products	
	D4	Based on the price shown for green products, I am considering purchasing green products	

Final part of table 2

Variable	Item number	Measurement table	References
Green consumption behavior	E1	I will try to buy products with green logos or packaging that indicates they are reusable or recyclable	Yang Jianeng (2016), Liu Zonghua, Mao Tianping (2022)
	E2	I will choose energy-saving electronic products such as laptops and tablets	
	E3	I try not to buy or use disposable products	
	E4	I will bring my own or buy biodegradable shopping bags when I go shopping	
	E5	I try to walk, ride a bike or use public transportation when I can.	
Consumers' willingness to pay a premium	F1	I think the quality of green products is consistent with the price	Tian Zhenlian (2021)
	F2	Compared with other products, I think green products are more cost-effective	
	F3	I will spend more money on green consumption behaviors that promote environmental sustainability	
	F4	I am willing to pay extra for green consumption behaviors to support relevant organizations' efforts for environmental sustainability	

Source. The authors sorted out the data based on the literature.

The data was collected by interviewing students at the place of study, as well as using the Wen-ju xing platform and social media. 520 questionnaires were distributed. After deleting 62 invalid questionnaires, 458 valid questionnaires remained with an efficiency rate of 88 %.

Empirical analysis

After eliminating the inaccurate data, a descriptive statistical analysis was performed on the main personal information characteristics of the sample of survey participants. The main characteristics of personal information in the survey samples are as follows: the largest proportion (80.3 % or 368 people) were participants aged 18 to 23 years, undergraduate students (68.8 %); female consumers slightly more (52 %) than men (48 %). The majority of respondents live in rural areas (58.3 % or 267 people), are members of the Communist Youth League (36.7 % or 168 people), and are not the only child in the family. The cost of living is mainly 1000–1500 yuan (41.5 % or 190 people). Thus, the sample is representative and can be used to test hypotheses.

Because there are certain differences between green consumption intention and purchase intention, we used SPSS26.0 software to test the reliability and validity of the subjective norm, attitude, perceived behavioral control, green consumption behavior intention, green consumption behavior, and consumer willingness to pay a premium.

The reliability test results showed that the Kronbach coefficient for the “ratio” variable in the questionnaire is the lowest and amounts to 0.785. For all other factors, the coefficient values exceed 0.85, which indicates a high degree of reliability, since the coefficient α for each variable exceeds threshold 0.7.

The Kaiser-Meyer-Olkin (KMO) values and the results of the Bartlett sphericity test were obtained using SPSS26.0. and allowed us to assess the degree of reliability. It allows to examine the strength of the partial correlation (of the factors explain each other) between the variables. The KMO and Bartlett homoscedasticity test showed that the MO value is 0.959

with a degree of freedom of 276, which is significantly more than 0.7 according to the Bartlett test. At the same time, the significance is much less than 0.05, so the conditions for factor analysis are met and it can be performed.

For factor analysis, SPSS26.0 is used. The factors for each group (Table 2) ranked in descending order of importance. The final results are shown in Table 3.

Table 3

Exploratory factor analysis

Dimensions	Question	Standardized factor loadings	Cumulative Contribution Rate
Subjective norm content	A2	0.736	72.246 %
	A1	0.733	
	A4	0.728	
	A3	0.679	
	B1	0.768	
	B3	0.762	
	B2	0.565	
Perceived behavioral control	C4	0.763	
	C2	0.746	
	C1	0.743	
	C3	0.612	
Green consumption behavior intention	D4	0.653	
	D1	0.560	
	D2	0.537	
	D3	0.514	
Green consumption behavior	E4	0.768	
	E3	0.737	
	E2	0.719	
	E5	0.659	
	E1	0.622	
Consumers' willingness to pay a premium	F3	0.749	
	F1	0.738	
	F4	0.735	
	F2	0.683	

Source. The authors analyzed and sorted based on SPSS26.0.

As can be seen from the above Table 3, the standardized factor loading of all items are greater than 0.5, which indicates that the measured variables are highly correlated with their corresponding common factors. In addition, the cumulative contribution rate of each dimension is 72.246 %, which exceeds 60 %. Thus, it can be concluded that the questionnaire has good reliability and reliability.

After checking the reliability and validity, we used the AMOS24.0 software. As the results of the analysis showed, the described measurement model is in good agreement with the actual data of the questionnaire, and the model is well adapted.

The path hypothesis test was performed by the authors using the maximum likelihood estimate, and the test results are shown in Table 4.

Table 4

Path test

Path	Estimate	SE	CR	P
Green consumption intention ← attitude	0.117	0.065	1.82	0.069
Green consumption intention ← subjective norm	0.355	0.065	5.472	***
Green consumption intention ← perceived behavioral control	0.459	0.053	8.597	***
Green consumption behavior ← Green consumption intention	0.84	0.052	16.056	***
Green consumption behavior ← perceived behavioral control	0.161	0.073	2.206	0.027

***Indicates significant level $P < 0.001$.

According to the data in Table 4, it can be concluded that in addition to the impact path of attitude on green consumption intention, the standardized coefficients of the four paths are all greater than 0, and the critical ratio (CR) is also significantly greater than 1.96. In addition, three of the paths have P values less than 0.001, indicating a highly significant relationship between these paths. Based on the above results, it can be concluded that the research hypotheses H1, H3, H3a, and H4 have been further verified, that is, these hypotheses are established. However, the P value of the H2 path is greater than the standard value of 0.05, so this assumption is not true.

The mediating effect means that the dependent variable Y is influenced by the independent variable X through the variable M. The results of the analysis in AMOS24.0 showed that the mediating pathway has a significant effect. Thus, the hypotheses H1 a, H2 and H3a are confirmed.

The study also included an analysis of regulatory impacts. Readiness for eco-friendly consumption and payment of a premium for eco-friendly consumption are used as independent variables, and behavior in the field of eco-friendly consumption is used as dependent variables. The results of the analysis showed that the deterrent effect of consumers' willingness to pay a premium has been established. The influence of consumers' willingness to pay more on eco-friendly consumer behavior plays a regulatory role in this process: the coefficient of the general assessment of premiums for eco-friendly consumption ($t = 19.14$, $p = 0.000$) and the coefficient of the general assessment of readiness for eco-friendly consumer behavior ($t = 11.373$, $p = 0.000$) are statistically significant.

To further verify the correctness of the results, the PROCESS3.3 program was used, which was used to study the deterrent effect of consumers' willingness to pay a premium. Since this paper assumes that the deterrent effect manifests itself in the second half of the path of the hypothetical model (moderated mediation model), readiness for ecological consumption is used as an independent variable, and behavior in the field of ecological consumption is used as a dependent variable. The results of the analysis showed that consumers' willingness to pay an additional fee plays a deterrent role in the process of forming readiness for environmentally friendly consumption, affecting behavior in the field of green consumption. Consumers' willingness to pay a surcharge can positively influence eco-friendly behavior. At the same time, the deterrent effect of consumers' willingness to pay a surcharge has been established. It plays a deterrent role in the process of forming readiness for environmentally friendly consumption, affecting consumer behavior in the field of green consumption. Thus, the hypotheses H5, H5a, H5b are confirmed.

Conclusion

The research results provide theoretical basis and practical guidance for improving college students' green consumption behavior, aiming to promote the development of environmentally friendly lifestyles and consumption patterns. The developed model of green consumption, compiled on the basis of a theoretical model of planned behavior, and the analysis carried out allow us to draw the following conclusions.

After checking the hypotheses put forward, the authors concluded that of the eight research hypotheses, seven were confirmed as reliable H1a, H2, H2a, H3, H3a, H4, H5, H5a, H5b. Only hypothesis H2 is unreliable (Table 1).

A sample analysis allowed the authors to obtain values of the influence of factors on green consumer behavior (Fig. 3).

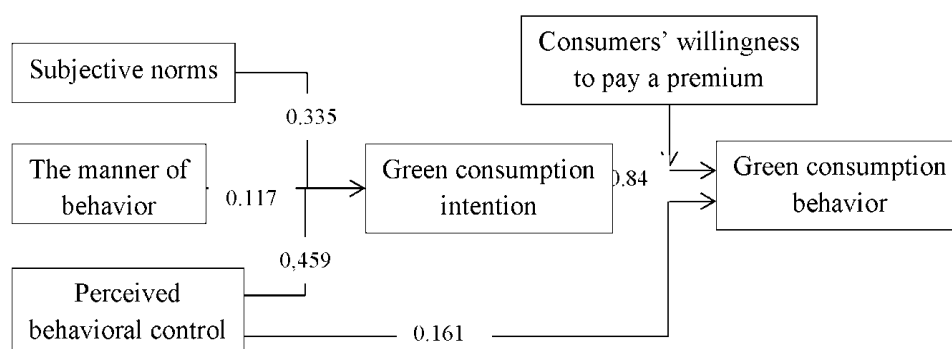


Fig. 3. Assessment of the factors influencing green consumption

Green consumption intention plays a mediating role between perceived behavioral control and green consumption behavior, while willingness to pay a premium is between green consumption intention and behavior plays a regulating role.

The figure does not show the coefficient of the impact of “consumers’ willingness to pay a premium” on “green consumption intentions” because that is the moderating variable tested separately.

Although subjective norms and perceived behavioral control have a medium impact (values are 0.335 and 0.459, respectively) on the intention to consume environmentally friendly products (Table 4), the ratio doesn’t have a significant impact on this – the value is only 0.117. The larger the absolute value of the coefficient, the stronger the impact. It means that when consumers have a positive attitude towards green consumption, they are more likely to withstand enormous pressure from social and environmental aspects, thereby demonstrating a positive environmental behavior. The influence coefficient of perceived behavioral control on green consumption intention is 0.459, indicating that perceived behavioral control has a strong positive impact on green consumption intention. This shows that when consumers are well aware of environmental protection and pollution, they prefer eco-friendly consumption to a greater extent. As control over consumer behavior increases, so does the likelihood that they will adhere to “green” consumer behavior.

Attitudes did not have a significant impact on consumers' green consumption intentions (0.161). This is largely due to differences in how individuals interpret different types of behavior. Due to the unique personality traits of college students, when they engage in green consumption behaviors, their attitudes may also be affected to a certain extent. However, for college students, the behavioral decisions made by their families or those around them often have a profound impact, causing them to hide the concept of green consumption deep in their minds instead of transforming it into actual actions. In addition, college students themselves may not have enough confidence in green consumption due to their

weak awareness of low-carbon environmental protection or lack of relevant knowledge, thus reducing their consumption behavior. Therefore, research shows that college students' consumption intentions are not positively affected by their attitudes. In addition, sometimes consumer decisions are influenced by other factors not taken into account in this study, which account for 0.089 or 8.9 % ($1 - 0,117 - 0,335 - 0,459 = 0.089$).

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