The influence Mechanism of Environmental values on Urban residents' Green Food Purchasing Behavior based on TPB and VBN Theory

Gao yuru

(Beijing Forestry University　School of Economics and Management)

Abstract Aimed at exploring how environmental values affect green consumption behavior of Chinese urban consumers, this paper combined relevant precedent researches and constructed a decision-making model about green food consumption under the framework of TPB(Theory of Planned Behavior) mode and VBN(Theory of Planned Behavior) mode. This article chose Beijing youth consumer group as the research object, carried out questionnaire investigation, and sent out 394 copies of questionnaires with 387 valid. Then by using the SPSS24.0 software and structural equation model to carry on the descriptive statistical analysis to the data, test the reliability and the validity analysis, do confirmatory factor analysis and measure the fitness of the model, the conclusion comes out that: Altruism and Ecological values can play a positive role in the control of perceived behavior, and then directly or indirectly affect the behavior of green food consumption intention; while the egoistic values will follow the same route to negatively affect the green food purchasing behavior. The result also turns out that three intrinsic dimensions of environmental values interact with each other, among which altruism and ecological values enhance one another, but instead negatively correlated to egoistic values.

Key Words： Environmental Values, Theory of Planned Behavior, Value-Belif-Norm Theory, Structural Equation Model，Green Food Purchasing Behavior

1 Introduction

The environmental burden and resource consumption caused by rapid economic growth are becoming more and more serious. More and more countries and organizations begin to seek the potential path for the co-evolution of human society and nature. According to the report of the 19th CPC National Congress, China's economy has changed from a stage of high-speed growth to a stage of high-quality development, and is in the critical period of changing the mode of development, optimizing the economic structure and changing the driving force of growth. Therefore, it is the only way to reach the goal of the development of the national circular ecological economy by raising citizens' awareness of green consumption and to construct a sustainable consumption mode.

Green consumption is at the core of sustainable consumption (Bai Guanglin, 2012), which roughly includes three layers: using non-polluting green products which are conducive to the environment;cultivate the concept of sustainable consumption and pursue the quality of life while saving energy and reduce emissions;pay attention to the disposal of waste. At present, most scholars pay close attention to the discussion of the overall influencing factors of green consumption behavior, and rarely study the "green consumption"in a certain level. Therefore, these research conclusions usually lack a certain practical significance. This study focuses on the purchase and use of green products, taking "green food" as an example to respond to the development strategy requirements of national green agriculture. The purpose is to explore the influence of psychological factors such as environmental values on the green food consumption behavior of urban consumers in China, in order to further promote the development of green food, to individuals, enterprises and authorities how to participate in the construction of a harmonious green consumption environment to put forward appropriate recommendations.

2 Research Review

2.1 Green Consumption

Green consumption, which aims to protect consumers' health,conserve resources and conforms to human health and environmental protection standards, is actually a kind of comprehensive consideration of environmental impact and resource use efficiency. Modern consumption patterns of consumer rights (Cui Qiaohuan,2007). Some scholars have defined it as a kind of behavior,under the premises of environmental protection and resource conservation, least harmful to the environment during the process of purchasing,using and disposing(Lao Kefu,2013).

In the light of the 5R principle of green consumption on a international level, green consumption includes: reduce; reevalueate;reuse; recycle; rescue.The Consumer Association of China believes that green consumption should entail three meanings: one is to advocate consumers to choose green products which are conducive to public health in consumption content; secondly, to pay attention to the disposal of waste and

to reduce environmental pollution as far as possible; thirdly, to guide people save resources and energy while chasing the convenience and comfort of life in order to achieve sustainable conumption(Consumer Association of China,2001). In other words, people's consumption is not only matter to ourselves, but also vital to meet the future generations' needs and health demands.Whether according to definition of 5R or the definition of China's Consumer Association, it lays emphasis on environmental selections or purchasing decisions, that is, consumers comprehensively consider factors such as resource utilization, resource efficiency and environmental protection in the purchase decision-making process. With no or less harm to the human living environment as the guide, preferential purchase of green products(Zhang Liangang,2010). Therefore, the research focus in the field of green consumption lies in the discussion and analysis of green purchase behavior.

2.2 Green Purchase

Green purchase, also known as environment-friendly purchasing, refers to the behavior of consumers to buy and use products that are environmentally-beneficial, recyclable, and able to alleviate ecological problems(M.M. Mostafa,2007). First of all, green purchasing is the premise and basis of green consumption. Green consumption refers to a new type of consumption behavior and process characterized by moderate control of consumption, avoidance or reduction of damage to the environment, advocating of nature and protection of ecology, etc. Green purchasing not only provides the green content and object of consumption, but also ensures the environmental consequences of consumption. Secondly, green purchasing promotes green production and green marketing. In the modern economy dominated by demand, the enhancement of consumers' green demand and the improvement of green purchase will make more and more enterprises consciously or have to pay attention to the green performance and images of enterprise, carry out green production and green marketing and rovide more green products for the society(Chen Kai, Li Junchang, 2015).The positive interaction between supply and demand will promote the sustainable development of the whole society, economy and ecological environment. Nowadays, the influence mechanism of green purchasing behavior is explored from different angles mainly concerning four aspects: demographic factors, psychological factors, external intervention factors and product factors(Zhan Yong,Wang,Ying,2018):

After a cross-disciplinary literature review, Adamantios(2003) proposed six key socio-demographic variables, namely, gender, marital status, age, number of children, education and social strata. Along with empirical analysis, the study found that women pay more attention to environmental quality,who are more willing to participate in social environmental activities. Marital status and the number of children have nothing to do with environmental awareness, the level of education has a partial impact on environmental behavior; Tsay(2009) surveyed 230 buyers in Taiwan, pointing out that older people with higher incomes are more willing to buy green products; Some scholars think that there is a relationship between demographics

and green buying behavior, but the explanation is very weak(Pickett&Ozaki,2008; Beckford C L et al,2010). According to the previous theories, the influence path of demographic variables on green consumption behavior has not been conclusive, and the conclusions obtained by different research methods are not quite the same. Dong Junwu(2002) and Li Jianxin(2007) think that demographics have limited influence and cannot be used to predict green consumption alone, but must be considered in combination with other variables such as lifestyle, attitude and so on.

Chan(2001) and Chen Kai(2013) think that collectivism is beneficial to the formation of green consumption behavior. Wang Dandan(2013) found that the cultural values of the unity of heaven and man can also promote green consumption; Kumar (2015) found that environmental responsibility, green product purchase experience and so on greatly affected people's consumption choice based on the investigation of population in multi-country regions. In addition, moral identity can lead to a sense of responsibility for environmental protection and further stimulate the intention to buy green products(Bo Wu,Zhiyong Yang,2018); perceived consumer effectiveness and environmental attitudes can also promote green consumption(Khan Md et al,2018).

As far as external factors are concerned, the government's environmental protection policy and subsequent incentive system, the positive interaction between enterprises and consumers can effectively promote green consumption behavior (Wang Caiyu,Wu Bo,2018;Cai Yuanyuan et al,2018); Wang Na et al. (2017)found that brand authenticity can enhance consumers' confidence in the brand, thereby strengthening the intention of green buying behavior. In addition, the functional utility of green products and different demands on products will also indirectly affect consumer choice(Lin YC，Chang C A. ,2012;Yang Defeng et al,2017) .

2.3 Green Food Purchase

In addition to the above-mentioned research from the general level (not related to specific product content) of green consumption behavior factors, some scholars have also studied the green consumption behavior of specific product categories. Schlegelmilch(1996) and others have studied the pruchase of five kinds of products: recycled paper products,non-animal testing products, ozone-friendly sprayer products, environment-friendly detergents and organic growth fruits and vegetables. Verhoef (2005) studied the purchase behavior of organic meat,.Roberts and Bacon(1997) studied the purchase of energy-saving furniture.

As China is an agricultural country, agriculture takes priority over any other fileds when considering promoting green consumption. Therefore, the research on green food consumption in product segmentation should be emphasized by Chinese scholars. The internationally recognized green food refers to those coming from a good environment and produced under standard technical norms and sustainable principle; the whole process involves quality control and is free of pollution[29]. Through a survey of Malaysian consumers, Taufique(2015) shows that food safety and health consideration are the mainly influencing factors for people to choose and buy green food; Liu H B(2016) found that income, education, age, sex, existence of young

children, family size and overseas experience were all variables influencing green food purchase; Zhou Jing(2007) did the marketing combination factor analysis, and found that green food distribution channels, types, manufacturer's promotion, the product pricing and other factors affect the green food purchase behavior to various degrees; Yang Xiaoli(2006) pointed out that green food purchase showed relative differences in different gender groups and family backgrounds. Wang Zhaofeng(2007) also found that urban residents had a positive attitude towards green food consumption through the analysis of food safety awareness and other factors. Yin Shijiu(2008) found that purchasing convenience also affects green food consumption.

However, few domestic scholars take personal environmental values as a starting point to explore their internal psychological impact on green food puechasing behavior. Values are the root of all individual behavior and the decisive factor of attitude and behavior. Environmental values are subjective criteria used by individuals to evaluate environmental-related behaviors, and they are used to reflect the general views and attitudes of human beings to environmental problems. Therefore, environmental values are worthy of studying on the influence path of green food purchase. In this study, we introduced environmental values variables, relying on Planning Behavior theory and Values-Beliefs-Norms theory. To explore the internal influencing factors of urban consumers' intention to consume green food from the perspective of circular economy, and to fill the theoretical gap in this field, here comes this research. Because young consumer groups have the higher acceptance degree of new ideas and big potential to consume, the paper choose youths in Beijing as samples to implement investigation.

3 Conceptual Background and hypotheses

3.1 Theory of Planned Behavior (TPB)

Based on hypothesis of rational man,American scholars Fishbein&Ajzen(1975) once proposed ***Theory of Rational Behavior(TRA)***.They think that the occurrence of behavior is due to the control of individual willpower, which is the execution after considering all kinds of information and the meaning of one's own behavior.But in reality, there are many kinds of constraints, such as money, time, information resources and so on, and a person's will cannot completely control corresponding behaviors. Therefore, on the basis of TRA, Ajzen(1985) adds Perceived Behavior Control variable(PBC) as a new variable to reflect people's past experience and anticipatory obstacles, which evolved into ***Theory of Planned Behavior(TPB)***.

The Theory of Planned Behavior is a mature and effective analytical method in analyzing behavioral psychology at present. Its theoretical framework mainly includes five elements: Attitude, Subjective Norm, Perceived Behavior Control, Behavior Intention and Behavior. Attitudes reflect the positive or negative feelings of the individual for the act; subjective norms emphasize the social pressures perceived by individuals when making a decision from surrounding groups or other individuals; Perceived Behavior Control is the result of pre-judgment of objective resources and

behavioral difficulties based on experience, which is not only a kind of motivation, but also has a guiding effect on behavior intention. TPB holds that the interaction between attitude, subjective norm and Perceived Behavior Control determines the behavior intention of a person.

Based on TPB theory, Tarkiainer and Sundqvist(2005) examined the relationship between Attitudes, Subjective Norms and Willingness to buy organic food; Lodorfos and Dennis(2008)showed that TPB theory could be used to explain the willingness of consumers to buy green products such as organic food. He Aizhong(2011), Luo Cheng (2010), Lao kefu(2013), Kim(2011)etc. all found out that the more positive the green consumption attitude and subjective norms are, as well as the stronger perceived Behavior Control, people become more prone to to do green consumption.In this paper, the three variables of Perceived Behavior Control, intention and behavior in TPB theory are selected to build a partial research model of green food consumption.

Perceived Behavior Control, as a realistic perception of whether consumers have the ability to choose green food, can not only be regarded as the evaluation of individuals' knowledge and skills of the behavior they perform, but also extend to the limitation of external resources, etc. (Ajzen I， Fishbein M.,2005). In this paper, it is defined as the knowledge, autonomy and related skills of green food purchasing behavior. When Perceived Behavior Control is enhanced, which means individuals based on experience think that they have enough knowledge of green food, their tolerance of risk will correspondingly increase. To a certain degree, the difficulty to obtain information will fall , so does expected obstacles. In this case, people's willingness to consume green food will be more stronger.In general, behavior is the concrete expression of intention(Ajzen,I.,1991). As a direct precursor of action, the stronger the intention, the greater the occurence probability of such purchasing behavior.Based on mentioned analysis, the paper put forward following hypotheses:

H1 Perceived Behavioral Control of Green Food Purchase (PB) has a positive effect on Behavior Intention (BI).
H2 Behavior intention (BI) of Green Food purchase has a positive effect on Behavior(BH).

3.2 Theory of Value--Belief-Norm (VBN)

Based on Value Theory, Normative Activation theory and New Ecological Paradigm, Stern(2000) proposed the ***Thoery of Value-Belief-Norm (VBN)***, which has become the most extensive and effective basis for the study of environmental-friendly behavior. The causal chain of the model starts from the intrinsic environmental values of human beings, and Stern divides it into three dimensions: egoistic values, altruistic values and ecological circle values. In general, values are persistent beliefs about the importance of goals, but do not directly determine behaviour, but rather enhance the perception of environmental risk among social actors by emphasizing adverse consequences and a sense of personal responsibility. And through psychological intervention, it positively strengthens environmental protection behavior(Zhang Xiaojie et al,2017) . Nordlund and Garvil(2003) have embodied the conduction path

of this theory when it comes to reducing personal vehicle use intention. Abrahamse,W. And Steg,L.(2007)also verified the validity of the VBN theory in household energy use studies, and Tong LuQiong(2017)found that people were able to look at environmental beneficial and harmful products with sustainable insight and prefered those environmentally beneficial products. Wu Bo(2016) found that individuals with strong environmental values can enhance their sense of responsibility for environmental protection and promote green consumption regardless of their internal or external motivation.

This paper measures the Environmental Values and Awareness of Consciousness in VBN, and explores the role of "Environmental Values" in environmental behavior such as green food consumption.More specifically, Self-Interest orientation emphasizes individual interests and highlights the characteristics of "Economic Man"; Altruistic Orientation is similar to the deep-rooted collectivism in China, which is the psychological tendency of putting social interests ahead and giving priority to the welfare of others; Ecological values include not only human interests, but also concerns for other living species. Green food, as an environment-friendly product, has a certain positive externality. The purchase of green food may require consumers to sacrifice certain personal interests to contribute to environmental protection. Therefore, when consuming, those who are more concerned about others' interests and the protection of the environment, are easier to show a positive attitude towards green food purchasing(Lao kefu, Wang Lulu, 2015).The formation of altruism and ecological value orientation is based on humanism or the centralism of ecological interests, taking into account the mutual benefit between human beings and nature, reflecting support for a stable social order and a virtuous biological cycle. Therefore, there may be mutually reinforcing relationship between them, which both have a positive role in promoting green consumption behavior. On the contrary, Self-Interest Orientation is on the opposite,regarding oneself as the centre of everything and ignoring other species' welfare. The more obvious the tendency of egoism is, the other two orientations are more likely to be rejected,which has a relatively negative impcat on green food purchasing behavior. This is also confirmed in William's(2005) study. Therefore, the following hypothesis are being proposed:

H3 Altruism(AL)and Ecological Orientation(EC) have positive interaction.
H4 Altruism(AL) and Self-Interest(SI) have negative interaction.
H5 Self-Interest(SI) and Ecological Orientation(EC) have negative interaction.

3.3 Comprehensive Model

Value is the basic belief and judgment of the existence and importance of objective things. As an important social factor, it is not only the goal of encouraging people to act, but also some kind of motivation. And Perceived Behavioral Control, conceptually a combination of self-efficacy and external convenience, includes both internal control factors, such as personal shortcomings, skills, abilities and emotions, and other external factors like information, opportunities, resource restraints. Kivetz and Zheng(2006) demonstrated differential self-control when consumers realize that different products have different effects on their long-term and short-term interests by

introducing Perceived conflicts. Combined with the above analysis, this paper believes that environmental values will have an inherent impact on the assessment of Perceived Behavior Control, and different value orientations will affect the intensity of PBC.

Altruism and ecological value tendency represent an environment-friendly and green thinking mode, which can be considered as positive environmental values. Therefore, the stronger the altruistic and ecological values are, the more positive the environmental values will be, so as the intrinsic motivation for executive behavior will be. In turn, individual's internal belief will grow stronger, and self-assurance will be potentially enhanced when confronted with difficult problems. On the contrary, when the cost-effectiveness of green food consumption is insufficient, the tendency of Self-Interest Value will lead people to make choices to maximize their own interests. Based on the judgment of experience, they will potentially enhance the psychological obstacles and implementation difficulty of green food purchase and then avoid such behavior. Accordingly, the following hypotheses are made:

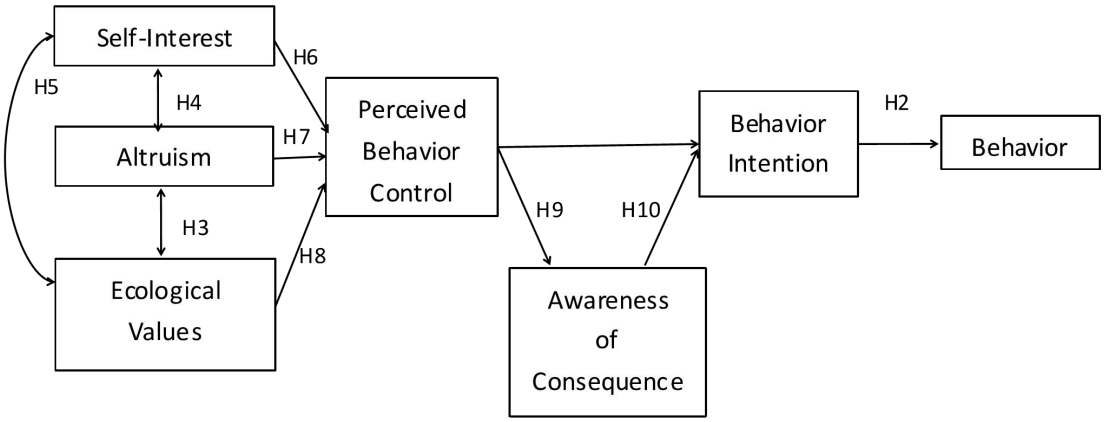
H6 Self-Interest(SI) has a negative effect on Perceived Behavioral Control (PBC).
H7 Altruism(AL) has a positive effect on Perceived Behavioral Control (PBC).
H8 Ecological Orientation(EC) has a positive effect on Perceived Behavioral Control (PBC).

The Normative Activation Theory for the first time proposed the concept of "Awareness of Consequence", which refers to the individual's perception of the negative consequences without taking environmental protections and positive outcomes when conducting protection measures(Schwartz S H.,1977). The Perceived Behavior Control of green food purchasing is the possibility and difficulty of purchasing green food which consumers regard as the perception of the factors that promote or hinder the green food purchase. The perceived possibility and difficulty will prejudge the consequences of implementing the event, such as whether the cost-effectiveness achieves the expected level and whether the value needs are satisfied, that is, to influence Awareness of Consequence. The intensity of green purchasing intention can be further determined by Awareness of Consequence. The stronger the positive Awareness of Consequence is, the greater the probability of producing specific behavior is, that is, the more obvious the intention is. The following hypotheses are therefore made:

H9 Perceived Behavior Control(PBC) of green food purchasing has a positive effect on Awareness of Consequence(AC).
H10 Awareness of Consequence(AC) of green food purchasing has a positive effect on Behavior Intention(BI).

Therefore, combing with the theoretical framework of TPB and VBN, this paper constructs the following conceptual model based on above analyses:

Figure 1 Conceptual Model of Green Food Purchase



4 Data Analysis

4.1 Instrument and Measures

A pre-investigation was conducted in Wangjing commercial zone on Oct. 1, 2018, and 31 samples were collected. In addition to basic demographic information collection, 21 questions were set up in the questionnaire according to environmental values, Perceived Behavior Control of green food purchasing, Awareness of Consequence, green food buying intention and green consumption behavior. The results of pre-investigation showed that most consumers had doubts about the connotation and scope of green food, so the definition and concrete explanation of green food are added to the formal investigation later. At the same time, the description of some problems is adjusted and the items with ambiguity are deleted, which makes it easier for the respondents to understand and answer the questions. The results of the pre-investigation provide an important basis for the setting and adjustment of the formal investigation.

In addition to consulting the basic information of the interviewees' age, gender, income level and so on, a total of 16 questions were designed in the formal questionnaire survey. The subjects of the survey were mainly young occupational groups in Beijing. The form of the questionnaire was the Richter 5-point scale. The corresponding choices and assigned values were: strong objection (1 point), objection (2 points), general (3 points), approval (4 points), and strong approval (5 points). The questions are as follows:

Table 1 Formal Questonnaire

Variable	Question	Variable	Variable
SI1	Humans are the master of nature.	AC2	Purchasing green food helps reduce

			environmental pollution.
SI2	Humans' need makes nature valuable.		
SI3	Humans have rights to change nature.	PB1	It's not a heavy economic burden for me to buy green food.
		PB2	Whether choosing green food during next selection is completely up to me.
AL1	Protecting the environment is for the sake of next generation.	PB3	I always have time to select green food when shopping only if I want.
AL2	I would sacrifice personal interest to give way to the social groups' interets if necessary.		
		BI1	I have strong desire to purchase green food.
EC1	Humans should live in harmony with animals.	BI2	I'm willing to recommend people around me to try green food.
EC2	It's improper to overtake limited ecologic resources.		
		BH1	I usually buy green food.
AC1	Green food is conducive to the whole society.	BH2	I prefer green food compared with other kinds of food.

The survey mainly combined the online platform and offline questionnaires, collecting 387 valid samples of a total of 397 altogether. 387 is 16 times more than the number of items in this questionnaire, which guarantees the quality of data analysis. The statistical results show that the proportion of male and female consumers is 42.12% and 57.88% respectively. This may be due to the fact that the research is mainly conducted online and that young women are more willing to fill in the questionnaire. Respondents under the age of 35 accounted for 90.96%, indicating that participants in green food consumption were younger, mainly consisted of full-time college students and young employees. The cohort of youths is easier to accept the concept of green food consumption under the requirements of social sustainable development. According to the statistics of academic background, those with higher education background (undergraduates accounting for 65.63%) are more prone to particapate in the green food consumption research to a certain extent. At the same time, there are great differences in green food consumption behavior among different occupational groups. More students and employees have a higher degree of participation in green food consumption. The results of income statistics show that the proportion of people whose income is less than 15000 is higher which may be due to those respondents have limited work experience.This also indirectly illustrates that the cost of green food purchasing is within acceptable range for general consumers.

4.2 Reliability and Validity Analysis

The reliability analysis also includes two dimensions of internal and external reliability analysis. The internal reliability analysis aims at testing inherent

consistency of items in the quetionnaire, of which Cronbach α coefficient and semi-reliability analysis are generally used. In addition, external reliability measuures the consistency of a questionnaire sent out at different times.Since this research was done once and continuously, external reliabillity test goal should be satisfied. And this paper choose Cronbach α coefficient as the internal test standard.

Based on 387 valid questionnaries, this research used SPSS24.0 to complete reliability test and Cronbach α turned out to be 0.806. Moreover, Self-Interest Orientation (SI1,SI2,SI3), Altruism (AL1,AL2), Ecological Orientation (EC1,EC2), Awareness of Consequence (AC1,AC2), Perceive Behavior Control of green food purchasing (PB1,PB2,PB3), Behavior Intention (BI1,BI2), Behavior of green food purchasing (BH1,BH2)——seven latent variables have Cronbach α of 0.789, 0.707, 0.840, 0.807, 0.842, 0.908 respectively(Figure 2)——all exceeded a highly reliable standard of 0.7(Yi Danhui, 2008).

The purpose of validity analysis is to test whether the survey results can effectively reflect the actual situation of the subjects tested. The more consistent the measurement results with the content to be examined, the higher the validity and, conversely, the lower the validity. In this paper, KMO test and Bartlett sphere test are used to analyze the structural validity of the scale data. The KMO test method is as follows: when the KMO value is greater than 0.9, the scale accords with the condition of factor analysis very well; The KMO value between 0.8 and 0.9 indicates that it is more suitable for factor analysis, and it can be used for factor analysis from 0.7 to 0.8. When the KMO value is less than 0.5, the factor analysis can not be done. Bartlett's spherical test criterion is that the significant level is less than 0.05 indicating that the correlation between variables is significant.

Table 2 The result of reliability test and exploratory factor analysis

Variable	Items	Cronbach's α	KMO Value	Bartlett's test		
				Chi-Square	the level of freedom	Significance Level
SI	SI1	0.789	0.705	338.182	3	0
	SI2					
	SI3					
AL	AL1	0.707	0.500	137.161	1	0
	AL2					
EC	EC1	0.84	0.500	285.800	2	0
	EC2					
AC	AC1	0.807	0.500	234.619	1	0
	AC2					
PB	PB1	0.846	0.725	486.552	3	0
	PB2					
	PB3					
BI	BI1	0.842	0.500	290.152	1	0

	BI2					
BH	BH1	0.908	0.500	451.624	1	0
	BH2					
Model(n=16)		0.806	0.924	3731.697	120	0
The last column indicates that differences are significant at the level of 0.001						

The results of SPSS analysis show that the significant level of Bartlett spherical test and KMO value of the whole model are 0.000 and 0.924 respectively, which accord with the condition of factor analysis. The KMO values of the seven variables are no less than 0.5, and the spherical values of Bartlett are significant. Although there is a great difference among the variables, we can continue to try to do factor analysis. After satisfying the adaptability of factor analysis, the Principal Component Analysis method and orthogonal rotation method were used to extract the factors of the tested data whose Eigenvalue were more than 1. Finally, seven factors affecting the purchase of green food were extracted. The component matrix is as follows:

Table 3 Rotated Exploratory Factor Analysis

Rotated Component Analysis Matrix								
	component							Accumulative Variance
	1	2	3	4	5	6	7	
PB1	0.729							12.782
PB2	0.753							
PB3	0.704							
SI1		0.740						25.562
SI2		0.824						
SI3		0.728						
BH1			0.777					37.488
BH2			0.803					
EC2				0.784				49.386
EC3				0.852				
AC1					0.742			60.477
AC2					0.775			
BI2						0.753		71.347
BI3						0.711		
AL1							0.800	81.92
AL2							0.741	
Extraction Method:Principal Component Analysis								

Orthogonal rotation is based on the premise that each factor is independent of each other, and it can distinguish each factor to the max. According to the rotated

component matrix diagram, the 7 factors extracted are consistent with the variables of the original model.And the load of each factor is more than 0.7, and the interpretation degree of cumulative variance is 81.92%, which proves that the result of factor extraction is satisfactory. There is a high correlation between each problem and its corresponding variables, and there is no single problem corresponding to two or more variables. Therefore, the structural validity of the scale is obviously great, which can be followed by consecutive analysis.

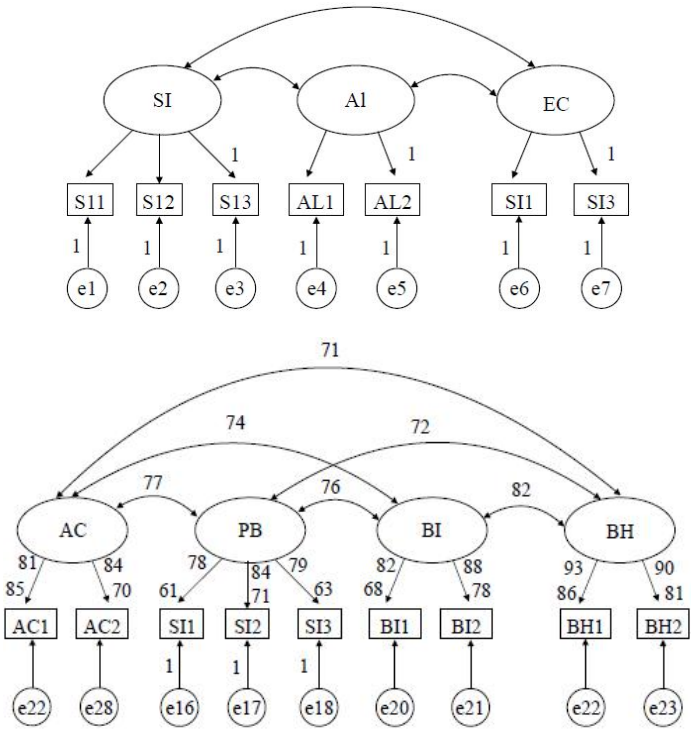
4.3 Structural Equation Model

The Structural Equation Model (SEM) is a statistical method for analyzing the relation between variables based on the covariance matrix of the variables. It's actually an extention of the general linear model, including the factor model and the structural model, which embodies the perfect combination of the traditional factor analysis and the factor analysis. It allows the variable to correspond to a plurality of corresponding variables, so as to facilitate the analysis of the complex logical relation among the multiple variables, and can analyze the direct and indirect effect effect between each factors(Yi Danhui, 2008).

4.3.1 Discriminant Validity and Correlation analysis

Generally speaking, the model with more than five variables is not stable enough, and multivariable will affect the validity test result. Amos Software can be used to construct two sub-models to measure the discriminant validity.

Figure2 Discriminant Validity Measure Model



Using Amos output results to form following table to illustrate discriminant validity of each latent variable(data along the diagonal is square roots of Average Variance Extracted, namely AVE, the rest are correlation coefficients)

Table 4 Discriminant Validity of Environmental Values

	EC	SI	AL
EC	0.723		
SI	-0.497	0.554	
AL	0.519	-0.418	0.548

Table 5 Discriminant Validity of other variables

	BH	BI	PB	AC
BH	0.838			
BI	0.705	0.723		
PB	0.598	0.609	0.646	
AC	0.571	0.605	0.594	0.681

According to statistcal results, the square roots of AVE corresponding to seven latent variables are 0.723, 0.554, 0.548, 0.838, 0.723, 0.646, 0.681 respectively.All of them obviously exceed their correlation coefficients with others, which indicates a favourable discrimination among each variable and no existence of index crossing factors.

4.3.2 SEM Aanalysis

The reliability and validity of the scale are well tested. Therefore, the influence paths of each variable are modeled and analyzed by using Amos software. Wu Minglong(2009)believes that RMSEA is the most important index of fitness evaluation, and the RMSEA value is within a good range from 0.05 to 0.08, while the RMSEA value of this study is 0.066. In addition, the ratio of chi-square to degree of freedom in this study is less than 3, and the values of NFI, GFI, CFI and IFI in other important fitness tests are all greater than 0.9, while the values greater than 0.9 belong to very good fitting evaluation results(Wu Minglong,2009). Other main fitness test indexes in this study, including PCFI (0.748), AGFI(0.884), are also in a good fitness range. The results of the main fitness test show that the theoretical model and the survey data can be matched well.

Table 6 Model Fitness Evaluation Results

	Index Name	Standard		Result
		Acceptable	Good	
Absolute Fitting	x^2/df	[3.0,5.0）	<3	2.68
	Goodness-of-Fit Index(GFI)	[0.70,0.9)	>0.9	0.92

Index	Comparative Fitting Index（CFI)	[0.70,0.9)	>0.9	0.955
	Adjusted Goodness-of-Fit Index（AGFI）	[0.70,0.9)	>0.9	0.884
	Root-Mean-Square Error of Approximation（RMSEA）	<0.08		0.066
Relative Fitting Index	PCFI	>0.5		0.748
	NFI	>0.6		0.931
	IFI	>0.7		0.956

Table 7 Fitting Results and Hypotheses testing Result

	Standard Path Coefficient	S.E.	C.R.	P	Conclusion
AL<——>SI	-0.373	0.054	-6.944	***	Support
AL<——>EC	0.402	0.052	7.666	***	Support
EC<——>SI	-0.45	-0.058	-7.811	***	Support
PB<---SI	-0.141	0.061	-2.321	*	Support
PB<---AL	0.606	0.097	6.233	***	Support
PB<---EC	0.195	0.071	2.753	**	Support
AC<---PB	0.848	0.065	13.1	***	Support
BI<---AC	0.248	0.109	2.276	*	Support
BI<---PB	0.678	0.114	5.972	***	Support
BH<---BI	1.029	0.065	15.872	***	Support
Significanse Level：p<0.001（***），p<0.01（**），p<0.05（*）					

The fitting results showed that the path coefficient of Self-Interest Orientation promoting green food purchasing Perceieved Behavior Control and Awareness of Consequence to Behavior Intention was significant at the level of $p < 0.05$. The path coefficient of Ecological Values to Intention was significant at the level of $p < 0.01$, and the other coefficients reached the significant level of $p < 0.001$. Therefore, the hypotheses from H1 to H10 in this study are supported by the verification of the survey data.

5 Discussion

5.1 Theoretical Conclusions

By discussing the internal mechanism between environmental values and green food purchasing behavior, this study verifies the influence path of the deep psychological factors on green purchasing behavior. It is not only an important expansion of the substantive content of environmental values, but also a supplement to the field of green consumption. In addition, this paper also makes an analysis of the

relationship among the three values within the values of the environment. Specifically, the following conclusions have been reached:

First of all, different from most scholars's study on how environmental values affect green consumption behavior, analysis in this paper verified that the three sub-dimensions of environmental values are related to each other in different ways: **Altruism and Ecological tendency have a positive influence on each other, however have a two-way negative effect on Self-Interest tendency.** Those who hold the social altruistic values will sacrifice their personal interests and bear the corresponding costs to protect the environment, taking into account the overall interests of the society. From the angle of environmental protection, people who hold ecological values emphasize that ecological balance and see care for the environment as some kind of responsibilities and obligations of human beings. When altruistic tendency is more obvious, individual empathy ability is stronger, which allow them to pay more attention to others' interests and be willing to take positive action in favor of society. However, in addition to the economic and social environment, everyone is also a natural environmental acceptor, their own consumption activities will also reversely impact on the natural ecology. Altruistic values urge people to treat the ecological environment like life, which is of positive significance to the shaping of ecological circle values. Similarly, the stronger the ecological values are, the more you can grasp the value orientation of life activities from the overall dimension of the interactive relationship between man and nature, and you will regard ecological issues not only as questions of pure nature, but also as human beings, human beings and nature. The harmonious nature of human beings and human society can further promote the cultivation of altruistic values. But people with self-interest values are more likely to consider environmental issues related to their own interests, or oppose environmental behavior when perceived costs are higher than benefits. This conflicts with the other two value tendencies and certainly restrain the other two value pursuit. Reversely, the more attention paid to social collectivity and ecology, the lower the importance of self.

Secondly, altruism and ecological values have a significant positive impact on perceived behavior control, while self-interest tendencies negatively affect perceived behavior control. Based on TPB, attitude has great ability to explain and predict behavior compared to other variables, so it should be analyzed emphatically. However, according to the research conclusions of Yam-Tang(1998), Paco(2009) and Lao kefu (2011,2005), the influence of attitude on green consumption is not significant which may be due to positive externalities of green products and the asymmetric information of products. Based on this characteristic, this study did not include attitudes in the measurement of factors affecting green food purchasing, but focused on perceieved behavior control supplementarily proposed by Ajzen. Kim & Choi(2005). Chen Kai(2014) introduced the perceived effectiveness factor into the research model to reflect the expected power or resistance when the individual engaged in a certain behavior. Zhu Jianrong(2019) verified that environmental values need to be adjusted by perceived effectiveness to influence green consumption behavior. However, this research consider that the internal dimention in perceived

behavior control has already coversed consumers' perception of the degree of obstruction or promotion of green food purchase, and therefore no longer introduces perceptual effect. The paper directly measured the influence of environmental values on perceived behavior control. When Altruism and Ecological values are relatively strong and Self-Interest tendency is relatively weak, people will be more confident of their ability to change the social situation and affect the natural environment and weaken expected obstacles to implement green food purchasing. The motivation to choose environment-friendly behavior will be stronger, that is to say, Perceived Behavioral Control will be enhanced from the internal level.

Finally, Perceived Behavior Control can directly affect the green food purchase intention and promote the purchase behavior, and it can also indirectly enhance such intention through the positive and significant impact on the Awareness of Consequence. According to TPB, the Perceived Behavior Control of a particular movement can positively affect the behavior intention of the person. This can also be applied in study of green food purchases. The better the consumers feel that they have the ability and conditions to buy green food, the less obstacles they expect, the more confident they feel, and the more interested they are to buy green food. This is also certified by Lao Kefu(2001,2005) and Wang Jianhua(2014). And Awareness of Consequence is the reflection of environment in people's mind (an environmental belief). If consumers feel strongly about the consequences of environmental behavior, it shows that consumers are more sensitive to the quality of the surrounding environment. For example, sensitive perception of the severity of atmospheric haze, depletion of natural resources such as the Earth's forests, climate warming, etc., will lead to more concentration on the environment and people will be more willing to take green actions. Therefore, when the Perceived Behavior Control is more strong, the consumer's perceived possibility and difficulty of executing the behavior will further strengthen the consumer's prediction of the consequences of the event.

5.2 Managerial Implications

Above conclusions made some contributions to explore influential factors and mechanism of Chinese citizens' green consumption.To futher constitute a sustainable consumption mode, policy makers need to act quickly from following aspects:

First of all, cultivate altruistic and ecological values, and speed up the transformation of food consumption concept. The results show that Altruism and Ecological Values play a positive role in promoting green food consumption behavior. The state should advocate a positive and healthy concept of life, set up the friendly values of harmony and equality between man and nature in the whole society, guide consumers to realize the importance of conceptual transformation and call on everyone to pay attention to the ecological environment for the sake of all species' interests. Try hard to attract people to actively engaged in the construction tide of ecological civilization.

Secondly, the government formulates the positive guidance policy and reduces the food consumption cost. General Secretary Xi Jinping once advocated building a beautiful China, fighting a good defense war against pollution, promoting green consumption, forming a moderately economical, green and low-carbon, civilized and healthy lifestyle and consumption pattern, and issued a series of calls such as "Clear your Plate Campaign". But most of the initiatives are focused on the end of the value chain, that is, the consumption part.Policies rarely from the upstream value chain to actively attract consumers to choose more cost-effective products and services. The government should promulgate encouraging industrial policies and give certain preferential policies or subsidies to enterprises that produce green food, vigorously develop green agriculture, reduce tax collection and lower the cost pricing and consumption threshold of products. It clears objective hindrance in the decision-making level for consumers and makes more limited income groups favor the cost-effective green food and expand consumer groups.

Finally, the enterprise exert green production and marketing in order to expand consumption choice space. Individuals have limited command of the functions and benefits of green food and are often deterred by high prices. Unlike durable goods, food is a kind of consumable supply which consumers purchase frequently and choose from various brand types. Cost-effective green food once approved by consumers, the renown will go from mouth to mouth and such food will soon be able to occupy the market. Therefore, enterprises should follow the trend of the times to increase production input, improve the level of technology, improve food efficiency, enrich the types of green food, and make rational use of individual strong awareness of the consequences of environmental behavior, with the aim of caring for the environment and sustainable service. The implementation of green marketing campaigns and reasonable publicity of green food’s advantage will certainly enhance consumers' confidence and desire to buy.

5.3 Limitations

Although good fitting results have been obtained in this study, there are some limitations. On the one hand, the sample only selects the youth consumer groups in Beijing which is of very limited scope, and may not cover the overall characteristics of the national residents. So, to expand the scope of the study object is necessary when there is an opportunity. On the other hand, in the construction of the framework, there is a disturbance of variables due to the existence of theoretical intersection. And this study does not take into account external social factors and influence of group factors, so the explanatory power is limited. In the future, it may be necessary to discuss the path of green consumption behavior under the interaction of internal and external factors, which may also need to be supported by a wider range of data.

References

[1]Bai Guanglin, Li Guohao. Cognition, attitude and behavior of green consumption and their interactive influence[J].Urban Problems,2012(09):64-68.

[2]Cui Qiaohuan. Analysis on the influencing factors and Countermeasures of Green consumption in China[J]Journal of Socialist Theory Guide,2007(10):116-118.

[3]Lao Kefu.Research on Mechanism of Consumer Innovativeness Influences Green Consumption Behavior. Nankai Business Review,2013, 16(4): 106-113.

[4]Chinese Consumer Association. Outline on the yearly theme of "Green consumption" of Chinese Consumer Association[M].Beijing:Chinese Industrial and Commercial Publisher,2001.

[5]Zhang Liangang.Analysis of factors influencing Green Buy behavior from the Perspective of Multi-group structural equation Model *-data from Eastern, Central and Western regions[J].Chinese Rural Economy,2010(2).

[6]M.M. Mostafa，“A Hierarchical Analysis of the Green Consciousness of the Egyptian Consumer，”Psychology ＆ Marketing，Vol. 24，No. 5，2007，pp. 445－473.

[7]Chen Kai, Li Changjun.Analysis of Marketing Factors about Consumer's Green Purchase Behavior[J].Resource Development & Market,2015,31(10):1228-1232.

[8]Zhan Yong,Wang Ying.Overall Review on Green Consumption[J].Journal of Xiangtan University(Philosophy and Social Sciences),2018,42(06):46-48.

[9]Adamantios Diamantopoulos, Bodo B. Schlegelmilch Rudolf R .Sinkovics,Greg M. Bohlen. Can socio-demographics still play a role in profiling green consumers?A review of the evidence and an empirical investigation[J].Journal of Business Research，2003(56)：465-480.

[10]Tsay Y Y. The impacts of economic crisis on green consumption in Taiwan[C].Management of Engineering & Technology, 2009. PICMET 2009. Portland International Conference on. IEEE, 2009: 2367-2374.

[11]Pickett-Baker J& Ozaki R. Pro-environmental products: marketing influence on consumer purchase decision. Journal of Consumer Marketing，2008(5):281-293.

[12]Beckford C L, Jacobs C, Williams N, et al. Aboriginal environmental wisdom, stewardship, and sustainability: lessons from the Walpole Island First Nations, Ontario, Canada[J]. The journal of environmental education,2010, 41(4): 239-248.

[13]Dong Junwu,Huang Jiangzhen. Analysis and Enlightenment of Green Consumer[J].Business Economics and Administration,2002(11):19-22.

[14]Li Jianxin,Zhan Zhifang.Review and Prospect of Consumer Green purchase Research[J]. Consumer Economics,2007(03):93-97.

[15]Chan,R.Y.K. Determinants of Chinese Consumers’ Green Purchase Behavior[J]. Psychology&Marketing, 2001, (4) :389-413.

[16]Chen Kai, Guo Fen, Zhao Zhanbo. An Analysis of the Mechanism of the Psychological factors of Green consumption behavior-A Research Perspective based on the Psychological process of Green consumption behavior[J].Enterprise Economy,2013,32(01):124-128.

[17]Wang Dandan.An empirical study on the influence Mechanism of Consumer Green purchase behavior[J].Statistics & Decision,2013(09):116-118.

[18]Kumar P ,Ghodeswar B. M. Factors affecting consumers’green product purchase decisions[J].Marketing Intelligence & Planning, 2015(3).

[19]Bo Wu，Zhiyong Yang．The impact of moral identity on consumers′ green consumption tendency:The role of perceived responsibility for environmental damage［J］． Journal of Environmental Psychology，2018(59)．

[20]Khan Md,Raziuddin Taufique Sridhar Vaithianathan. A fresh look at understanding green consumer behavior among young urban Indian consumers through the lens of Theory of Planned Behavior［J]. Journal of Cleaner Production，2018(183).

[21]Wang Caiyu,Wu Bo. The Influence of Time Reference on Green Consumption: The Moderation of Environmental Awareness and Skepticism toward Environmental Claims[J]. Journal of Psychological Science,2018(3).

[22]Cai Yuanyuan, Zhao Qiaoying, Zhao Jingtong.Research on the Influence of Gratitude on Green Consumption Intention:The Mediating Role of Self-accountability and Moderating Role of Impression Management[J]Consumer Economics,2018(2).

[23]Wang Na,Ran Maogang,Zhou Fei.Research on Influence Mechanisms of Brand Authenticity on Green Purchasing Behavior[J].Journal of Huaqiao University(Philosophy & Social Sciences),2017(03):99-111+131.

[24]Lin YC，Chang C A. Double Standard: The Role of Environmental Consciousness in Green Product Usage［J］.Journal of Marketing,2012,76(5).

[25]Yang Defeng,Song Qianwen,Hu Lili.Research on the influence of Green Product demand on consumers' Green purchase intention[J].Consumer Economics,2017,33(01):63-69.

[26]Schlegelmilch, B B.etc.The link between green purchasing deci-sions and measures of environmental consciousness[J].EuropeanJournal of Marketing, 1996, (5) :35-55.

[27]Verhoef, P.C.Explaining purchases of organic meat by Dutch con-sumers[J].European Reviewof Agricultural Economics,2005,32(2):245-267

[28]Roberts, J.A.and Bacon, D.R.Exploring the Subtle Relationshipsbetween Environmental Concern and Ecologically Conscious Consum-er Behavior[J].Journal of Business Research, 1997, 40:79-89.

[29]http://www.greenfood.agri.cn

[30]Taufique K , Siwar C , Sarah F . Green food consumption in Malaysia: A review of consumers' buying motives[J]. International Food Research Journal, 2015, 22(1):131-138.

[31]Liu H B , Mccarthy B , Chen T . Green Food Consumption in China: Segmentation Based on Attitudes Toward Food Safety[J]. Journal of International Food & Agribusiness Marketing, 2016:1-17.

[32]Zhou Jing, Zhou Hong.Analysis on the influencing factors of Green Food consumption-based on the investigation of Liaoning Province[J].Market Modernization,2007(01):75-77.

[33]Yang Xiaoli, Zhang Daoyu.Cognition, attitude and related factors of Green Food consumption-an empirical study based on Shenyang Consumer[J].Agricultural Economy,2006(12):56-57.

[34]Wang Zhaofeng,Yu Hong.An empirical study on Consumer behavior of Green Food[J].Journal of Anhui Agricultural Sciences,2007(10):3122-3125.

[35]Yin Shijiu,Wu linhai,Chen Mo.Analysis of Organic Food Demand based on williness to pay[J].Journal of Agrotechnical Economics.2008(5) : 81-88.

[36]Fishbein M,Ajzen I. Belief,attitude,intention,and behavior:An introduction to theory and research reading.MA: Addison-Wesley,1975

[37]Ajzen I.From intentions to actions:A theory of planned behavior.In:Kuhl,Beckman J,(Eds).Action control:From cognition to behavior. Heidelberg,Germany: Springer,1985.11-39

[38]Tarkiainen A，Sundqvist S．Subjective norms, attitudes and intentions of Finnish consumers in buying organic food[J]. British Food Journal,2005,11: 808 -822.

[39]Lodforfos G N, Ennis J． Consumers’intent: In the organic food market［J］． Journal of Food Products Marketing,2008,14(2) : 17 -38.

[40]He Aizhong, Li Taowu.The Impact of Urban Residents' Low Carbon Interest Concerns and Low Carbon Sense of Responsibility on Low Carbon Consumption: Differences among the East, Middle and West China[J].China

Soft Science,2011 (8)
[41]Analysis on the influencing factors of consumers' willingness to consume safe food-based on the framework of planned behavior theory[J].China Rural Survey,2010 (6).
[42]Lao Kefu,Wu Jia.Research on Influencing Mechanism of Consumer Green Consumption Behavior Referring to TPB[J].Finance & Economics,2013(2).
[43]Kim,H.,Chung,J.,(2011), Consumer purchase int ention for organic personal care product ,Jouranl of Consumer Marketing , 28/1 .
[44]Ajzen I，Fishbein M． The influence of attitudes on behavior［M］． Mahwah，NJ: Erlbaum，2005
[45]Ajzen,I., (1991), The theory of planned behavior,Organizational Behavior and Human Decision Prcocesses ,No.50.
[46]Stern P C. Toward a coherent theory of environmentally significant behavior[J]. Journal of Social Issues，2000(56)：407-424.
[47]Zhang Xiaojie,Hu Xiayi,Wang Zhiqi.Value-Belief-Norm Theory:A New Framework for Public Environment-protection Behavior Studies[J].Journal of Jinggangshan University(Social Sciences),2017,38(04):33-40.
[48] Nordlund A M, Garvill J. Effects of values, problem awareness, and personal norm on willingness to reduce personal car use[J]. Journal of environmental psychology, 2003, 23(4): 339-347.
[49] Abrahamse W, Steg L, Vlek C, et al. The effect of tailored information, goal setting, and tailored feedback on household energy use, energy-related behaviors, and behavioral antecedents[J]. Journal of Environmental Psychology, 2007, 27(4): 265-276.
[50]Tong Luqiong,Su Song,Suo Mengchen.The Influence of Environmental Value on Consumers' Product Choice[J].Research on Economics and Management,2017（3）
[51]Wu Bo,Li Dongjin,Wang Caiyu.Green or hedonic? The impact of proenvironmental action on consumption preference[J].Acta Psychologica Sinica,2016（48）
[52]Lao Kefu,Wang Lulu.The Effect of Traditional Chinese Culture Value on Consumer Environmental Protection Behavior:Focusiing on Green Product Purchase Behavior[J].Journal of Shanghai University of Finance and Economics,2015,17(02):64-75.
[53]William Kilbourne, MarkoGrŭnhagen, Janice Foley. A cross-cultural examination of the relationship between materialism and individual values[J].JournalofEconomic Psychology, 2005, (26): 624–641
[54]Kivetz R，Zheng Y．Determinants of justification and self-control［J］．Journal of Experimental Psychology: General，2006，135(4) : 572－587．
[55]Schwartz S H.Normative influence on altruism.In L.Berkowitz (Ed.) [M]Advances in experimental social psychology (Vol.10.Pp.221-279) .New York, NY:Academic Press, 1977.
[56]Yi Danhui.Structural equation Model method and its Application[M].Beijing:Publisher of Renmin University of China ,2008.
[57]Wu Minglong.Structural equation Model and Operation and aApplication of AMOS[M].Chongqing: Publisher of Chongqing University,2009.
[58]Yam-Tang E. P. Y., Chan R. Y. K.. Purchasing Behaviors and Perceptions of Environmentally Harmful Products. Marketing Intelligence & and Planning, 1998, 16(6): 356-362.
[59]Paco, A.and Raposo , M.(2009), Green segmentation :an appli cation to the Portuguese consumer market ,Market ing Intelligence &Planning, Vol.27 No.3 .
[60]Lao Kefu.Research on Mechanism of Consumer Innovativeness Influences Green Consumption Behavior[J].Nankai Business Review,2013,16(04):106-113+132.
[61]Kim&Choi.Antecedents of Green Purchase Behavior.An Examination of Collectivism,Environmental Concern,

and PCE[J]. Advances in Consumer Research.2005,32:592-600.
[62]Chen Kai,Li Huajing,Guo Fen.An Analysis on Psychological Factors of Consumers' Green Commuting[J].East China Economic Management,2014,28(06):129-134.
[63]Zhu Jianrong,Zhou Yanyan,Zhang Yuan,Liufei.A study on the relationship between Environmental values and Ecological consumption behavior-regulated by the perceived effectiveness of consumers[J].Journal of Commercial Economics,2019(03):39-42.
[64]Wang Jianhua,Ma Yuting,Chao Manlu.Influence Factor Analysis of Farmer Cognition towards Pesticide Residues——Based on the Survey Data of 986 Farmer Households from Five Provinces in China[J].Soft Science,2014,28(09):134-138.