
Analysis of the Influence Factors of University Ecological Supermarket Construction under the Multi-log Multiple Regression Model

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Abstract: How to promote the benign development of ecological civilization construction is an important indicator to measure the degree of modernization of a region. Based on this, many regions adopt the ecological management model of innovative ecological supermarket. The survey found that there is little research on the construction of ecological supermarkets in universities. This paper will study the subjective influence factors of the construction of ecological supermarkets in universities through the multi-log multi-variate regression model from the three dimensions of subject characteristics, behavior habits and education guidance. The research results show that the independent variable of “ecological supermarket” is positively influenced by seniority, classification habits, consumption habits, supermarket attention, and the negative influence of monthly income (pocket money). Universities should strengthen the guidance of the participants and the rooted of ecological concept, and provide more higher education channels. Finally, we should adopt the way of “ecology + consumption”, and link business and ecology to realize the construction of ecological supermarkets in colleges and universities.

Keywords: University ecological supermarket; Ecological civilization construction; Multi-log and multiple regression model

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1. Background Review

The Resolution of the CPC Central Committee of November 11, 2021 on the Major Achievements and Historical Experience of the Party’s Struggle in the past 100 years pointed out that the importance and urgency of strengthening ecological and environmental protection should be fully recognized, and the importance of ecological progress in the overall development of the cause of the Party and the country should be clarified. With the continuous advancement of policies, all regions are still facing problems such as irregular ecological governance and incomplete ecological system. The means and form of subject and object governance effect is not ideal, and how to develop an innovative ecological governance mode has become a top priority. Various localities have launched a new governance mode of “ecological supermarket”. By giving traditional supermarkets with low-carbon functions such as recycling and recyclables, they can realize the organic combination of environmental governance and green consumption, and promote and practice the new social fashion of green environmental protection and solid waste recycling. For example, scholars Chen Shaojun

and others from the perspective of ecological compensation of Anhui Huangshan ecological beauty supermarket implementation and feasibility studied^[1], scholars Chen Anqi and others of Zhejiang Quzhou supermarket garbage exchange status satisfaction system discusses^[2], scholars Xu Jialiang and others through organizational ecology theory of the charity supermarket living space analyzed the^[3], scholars Chen Jingyi of O2O model ecological supermarket multiple value to realize the mechanism evolution process of^[4]. The above are similar to the innovative means and consumption to form the “ecological supermarket” system. However, the team has found that many of the above “ecological supermarkets” are mostly distributed in residential areas in urban and rural areas, while the number of “ecological supermarkets” in colleges and universities is relatively small. As the subject with strong adaptability to the introduction of new things, this attribute makes the development of ecological supermarkets in colleges and universities with better adjustment. In order to further create a green campus, low carbon campus, to explore the possibility of “ecological supermarket” in the construction of colleges and universities, the survey

through questionnaires, field interviews, try from the subject characteristics, behavior habits, education leads the three dimensions, and using multiple logarithmic multiple regression model of the feasibility of college “ecological supermarket”, with the influence of related factors to participants to reflect its rationality.

2. Theoretical Basis and Research Assumptions

Subject behavior is often composed of its subject characteristics. Through the basic perceptual structure of the ternary “motivation-behavior-event-event” framework, it can reflect its interactive influence^[5] on events. From the psychological point of view, the behavior habit will affect the subjective efficiency and the implementation path of the behavior subject, which has the plasticity and necessity^[6]. Consumer subjects will also be influenced by the degree of education guidance and produce different consumption mode^[7]. This study focuses on the university subject, based on the possibility of event realization, its final realization effectiveness may be influenced by the following factors:

H1-1: The higher the qualifications of the university participants, the higher their enthusiasm to participate in the construction;

H1-2: The older the university participants are, the more inclined they are to build an “ecological supermarket”;

H1-3: The more monthly income (pocket money) of university participants, the less likely they are to participate in green consumption;

H2-1: The better the daily environmental protection habits of the university participants, the more likely they are to agree with the construction of an “ecological supermarket”;

H2-2: The daily consumption habits of the participants are positively related to universities and the construction of “ecological supermarket”;

H3-1: The higher the school attaches to environmental protection, the greater the rationality of low-carbon campus construction;

H3-2: The more attention supermarkets attach to environmental protection, the more likely the rationality of low-carbon campus construction is.

3. Questionnaire Inquiry

3.1 Basic Characteristics of the Research

A total of 370 questionnaires were distributed in this survey, and relevant data were collected through the online university information sharing platform and offline field interview questionnaires. A total of 363 questionnaires were effectively recovered, with a recovery rate of 98.11%. The questionnaire was divided into four parts and set up 9 indicators. The first part is into the subject characteristics, mainly includes “education”, “age”, “monthly income (pocket money)” and other basic information. The second part is for the behavioral habits. It mainly includes “whether you will classify garbage”, “whether you will go to the supermarket for consumption” and other information. The third part is the leading part of education. It mainly includes “your university attaches great importance to ecological civilization construction”, “your university supermarket attaches great importance to ecological civilization construction” and other indicators. The fourth part is divided into the subject implementation validity analysis. It is divided into “whether you agree with the” ecological supermarket “this governance mode”, “your attitude towards the ecological supermarket”, “this mode implementation of the governance mode in universities” and other indicators. Based on this basis, this paper uses Eviews3.0 software to make statistics and make related analysis.

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3.2 Sample Description

At the age of 17~22, college students accounted for 80.44%, university education accounted for 78.24%, the group occupies a large proportion, shows that most of the respondents can understand the questionnaire content, and conform to the representative of social governance in universities, is the main actor of low-carbon campus construction, sample distribution is reasonable.

Table 1. Basic characteristics of the Table 1 sample

Variable	Option	Valid samples	Percent(%)
Sex	Male	167	46.01
	Female	196	53.99
	Primary school	18	4.96
Qualification	Junior middle school	18	4.96
	senior middle school	28	7.71
	College	284	78.24
Age	Graduate student or above	15	4.13
	Under 12	10	2.75
	12~16	36	9.92
	17~22	292	80.44
	Over 22	25	6.89
	Under 1500	96	26.45
Income	1500-2500	161	44.35
	2501-3500	71	19.56
	Over 3500	35	9.64

Note: Sample size: N=363

3.3 Variables

1) The dependent variable. In this study, the dependent variable was defined as the subject implementation validity, namely the behavior of university ecological participants (Subjectivity). Thus divided into objective perceived validity (Subjectivity 1) and subjective perceived validity (Subjectivity 2). By giving its four options “very agree”, “more agree”, “disagree”, “very disagree”, give “4 points”, “3 points”, “2 points”, “1 point” respectively. Subject implementation validity (Subjectivity) is the synthesis of objective perception validity (Subjectivity 1) assignment and subjective perception validity (Subjectivity 2) assignment. Thus, the behavioral index of determining the subject implementation validity was determined.

2) Independent variables. The independent variables of this study are divided into three parts, namely, subject characteristics, behavioral habits, and educational guidance. (1) Subject characteristics, defining “gender (Sex)”, “seniority (education stage) (Qualification)”, “age (Age)”, “monthly income (pocket money) (Income)” four indicators. Among, “Education” is divided into “primary school”, “junior high school”, “high school”, “university”, “graduate student and above” are respectively assigned to “1-5 points”. “Age” is divided into “under 12 years old”, “12-16 years old”, “17-22 years old” and “over 22 years old” are given “1-4 points” respectively. “Monthly income (pocket money)” is divided into “1500 yuan below”, “1500-2500 yuan”, “2501 yuan-3500 yuan”, “3500 yuan above” are given “1 point-4 points”; (2) Behavioral habit. Define “Will you classify garbage (Habit 1)”, “Will you go to the supermarket to consume (Habit 2)”, corresponding to “never”, “very few”, “occasionally”, “often” are respectively given “1-4 points”; (3) Education Lead. Define “the importance of your university to ecological civilization construction (Education 1)” and “the importance of your university supermarket to ecological civilization construction (Education 2)”, corresponding to the “not very much seriously”, “not too much seriously”, “more seriously”, “very seriously” four indicators were given “1-4 points”.

3.4 Model Construction

The data of this survey adopt regression analysis and multi-log analysis methods. First, the regression equation is Y_i (1), and then Equation (1) takes the logarithm to obtain Equation (2). Finally, the least squares rule (OLS) (3) is used to conduct the multiple regression analysis and introduce the multiple log model, and construct the multilog multiple regression model to obtain the Equation (4). According to this method, the influence of independ-

ent variable influencing factors on dependent variables is determined, and the correlation of ecological supermarket construction in universities is analyzed.

$$Y_i = \beta_0 + \beta_1 X_i + \mu_i \quad (1)$$

$$\ln Y_i = \beta_1 + \beta_2 \ln X_i + \mu_i \quad (2)$$

$$E(x) = \alpha_0 + \alpha_1 \varphi_1(x) + \alpha_2 \varphi_2(x) + \dots + \alpha_n \varphi_n(x) \quad (3)$$

$$\ln_{E(x)} = \ln \alpha_0 + \alpha_1 \ln_{\varphi_1(x)} + \alpha_2 \ln_{\varphi_2(x)} + \dots + \alpha_n \ln_{\varphi_n(x)} \quad (4)$$

In the (3) model, $E(x)$ is the dependent variable, $\varphi_n(x)$ represents the n th independent variable that may affect the behavioral validity of the university ecological participants, α_0 is the independent variable, $\alpha_1, \dots, \alpha_n$ is the regression coefficient corresponding to the independent variable; to improve the accuracy of the model, (4) the model shows the mutual relationship between the independent variable and the dependent variable in the logarithmic environment.

4. The Current Situation of University Subject Participation in Ecological Subject Behavior

Among the independent variable indicators selected in this paper, the survey shows that most university subjects have a certain participation in the construction of ecological civilization, which occupy a large proportion “occasionally”, while the participation of university subjects in consumption is very frequent, maintaining a “regular” which occupies a large proportion. However, school education and supermarket attention are involved to a certain extent, but they do not reach a higher level of internalization. It can be seen that the main body of colleges and universities only stays at a lower level of ecological civilization construction, and has a large space to be developed. Through the combination of ecology and consumption, a positive effect can be produced.

4.1 Subject Characteristics

According to the survey, most of the education levels are in “universities”, accounting for 78.24%, the age number is “17-22 years old”, and the monthly income level (pocket money) accounts for 26.45% of “below 1500 yuan”, 44.35% of “1500-2500 yuan”, 19.56% of “2501-3500 yuan”, and 9.64% of “more than 3500 yuan”. For the three hypotheses in H1, a specific validation will be performed based on this sample feature.

4.2 Habits of Behavior

According to the survey, Habit 1 said “whether you will classify garbage”, of which “often” accounted for 16.53%, “occasionally” accounted for 50.14%, “rarely” accounted for 30.58%, and “never” accounted for 2.75%. Although the main body of colleges and universities

Table 2. Investigation of university participants

Variable	Option	Valid samples	Percent(%)	Variable	Option	Valid samples	Percent(%)
Habit 1	Often	60	16.53	Education 2	Make much account of	92	25.34
	Occasionally	182	50.14		More attention	179	49.31
	Seldom	111	30.58		Attach little importance on	72	19.83
	Never	10	2.75		Very do not pay attention to	20	5.51
Habit 2	Often	120	33.06	Subjectivity 1	Strongly agree	162	44.63
	Occasionally	173	47.66		A little agree with	139	38.29
	Seldom	60	16.53		I don't agree	62	17.08
	Never	10	2.75		Very do not agree	0	0.00
Education 1	Make much account of	75	22.06	Subjectivity 2	Strongly agree	162	44.63
	More attention	190	55.88		A little agree with	129	35.54
	Attach little importance on	75	22.06		I don't agree	72	19.83
	Very do not pay attention to	0	0.00		Very do not agree	0	0.00

Note: Sample size: N=363

has some participation in garbage classification behavior, the frequency of participation is not high. The vast majority of college students mostly carry out occasional environmental protection behavior under unconscious or guidance. This may be due to the lack of stable intermediary in the process of conveying ecological protection knowledge in universities and the insufficient guidance of the behavior of participants. Habit 2 “Will you go to the supermarket for consumption”, “often” accounted for 33.06%, “occasionally” 47.66%, “rarely” 16.53%, and “never” 2.75%. It can be seen that compared with the Habit 2 garbage classification behavior, the consumption behavior of the university subjects is more universal and routine, and the frequency of participation is significantly higher than that of the garbage classification behavior. Total 80.72% of the university subjects are more frequent consuming behavior. The reason may be that consumption is a daily and qualitative habit, and it is related to the quality of its individual life and psychological harmony, so that consumption will inevitably occur in a certain period of time. For this, the two assumptions in H2 will be specifically verified based on this sample feature.

4.3 Educational Guidance

According to the survey, Education 1 “your attention to the construction of ecological civilization”, the “very seriously” accounted for 22.06%, “more” accounted for 55.88%, “not” accounted for 22.06%, “not” survey sample most universities subject that is unreasonable, most

schools in ecological civilization construction have certain in, have certain lead, but transmission and content is limited, and not through the education of education teaching outline, internalized in heart, externalized in line. And Education 2 “your university supermarket attaches great importance to ecological civilization construction”, among which “more attention” accounted for 25.34%, “more attention” accounted for 49.31%, “less attention” accounted for 19.83%, “very little attention” accounted for 5.51%. Thus, on the whole supermarket attention to the construction of ecological civilization degree is slightly lower than the school, have very do not value the supermarket group, may be because the supermarket has profit nature, and for ecological environment protection such redundant “marginal cost” behavior has exclusion, and lower the school, and schools have certain positive guiding effect, it also strengthens the school lead on the ecological concept. Here, the two hypotheses in H3, will be specifically validated based on this sample feature.

5. Analysis of Influencing Factors of Main Actors in Universities

Based on the 363 samples collected by the survey, we will set up seven indicators “qualifications (Qualification)”, “age (Age)”, “income (Income)”, “will you will garbage classification (Habit 1)”, “your college supermarket attention to the construction of ecological civilization (Habit 2)”, “your attention to the construction of ecologi-

cal civilization (Education 1)”, “your college supermarket attention to the construction of ecological civilization (Education 2)” regression analysis. The following results are obtained.

Table 3. Results of the relevant index regression analysis

Variable	Coefficient	t-Statistic	Prob.
Log(c)	0.312	0.772	
Log(Qualification)	0.234	3.422	**
Log(Age)	0.215	1.898	
Log(Income)	-0.24	-2.414	**
Log(Habit 1)	0.2	3.213	**
Log(Habit 2)	0.17	2.615	**
Log(Education 1)	0.56	6.319	**
Log(Education 2)	0.29	5.133	**

Note: * * and * are significant at the statistical levels of 1% and 5%, respectively.

$R^2=0.114$, and the adjusted $R^2=0.096$

5.1 Correlation Analysis of Subject Characteristic Variables on Independent Variables

Survey results show that (Table 3), the subject of academic correlation coefficient of 0.234, the significance level of 0.0007, that the subject of college degree of “ecological supermarket construction will” has a positive impact relationship, influence fit higher, and conform to H1-1: the higher the qualifications of the subject, the higher the enthusiasm of the hypothesis. However, the correlation coefficient of the age of university subjects was 0.215, and the significance level was 0.0584, indicating that the age of university subjects has a positive impact on the “willingness of ecological supermarket construction”, but the fit is low.

It is not significant, so in the enthusiasm influence factor of participating in the construction, the age of the university subject does not affect the participation behavior of the university subject. For the hypothesis of H1-2, it can not be verified. The main body of the monthly income (pocket money) correlation coefficient of 0.24, significance level of 0.0000, the main body of the monthly income level of “ecological supermarket construction will” has a negative impact, and influence fit is higher, meet H1-3: the more monthly income (pocket money), the smaller the possibility of participating in green consumption hypothesis.

5.2 Correlation Analysis of Behavioral and Habit Characteristic Variables on Independent Variables

1) The subject’s garbage classification habits

The significance of the willingness and behavior of the

participants will be affected by the cognition, individual characteristics, and promotion measures under the garbage classification mechanism^[8]. Survey results show that (Table 3), the university participant Habit 1 “will you do garbage classification” correlation coefficient of 0.2, significance level is 0.0014, visible subject ecological supermarket construction behavior will be significantly affected by the garbage classification habits, verify the hypothesis of H2-1: the better the daily environmental habit, the better the possibility of the approval of “ecological supermarket” construction.

2) The consumption behavior and habits of the subject

According to the survey results, university participants Habit 2 “will you go to the supermarket for consumption” correlation coefficient is 0.17, significance level is 0.0093, the main ecological supermarket construction behavior and subject consumption behavior habits has a significant positive relationship, verified the H2-2 hypothesis: universities participants in daily consumption habits and “ecological supermarket” construction has a positive relationship.

To sum up, it can be known that the garbage classification habit and the consumption behavior habit have a positive relationship on the construction behavior of ecological supermarket in universities. From the above behavior habits, the frequency of consumption behavior is significantly greater than the garbage classification. Universities participants in consumption behavior has higher possibility, if the introduction of “ecological supermarket” mechanism, ecological environmental protection behavior with the combination of consumption behavior, produce linkage effect, consumption behavior frequency will drive garbage classification habit frequency, form a virtuous cycle, so strengthen the main participation enthusiasm, more effective construction of low carbon university, green campus, form the “university ecological supermarket” system of benign interaction.

5.3 Relevant Analysis of Independent Variables by the Characteristics of Educational Leading Variables

1) School-level education guidance

Strengthening the campus ecological civilization education has an important role in promoting the construction of ecological civilization, and in colleges and universities, especially college students, they are the main object of ecological civilization education^[9]. According to the survey results, the university main body Education 1 “your emphasis on the construction of ecological civilization” correlation coefficient is 0.56, the significance level of 0.0000, visible subject ecological supermarket construc-

tion behavior and colleges to the importance of ecological civilization construction of degree has significant positive correlation, verified the hypothesis of H3-1: the higher the importance of the school to environmental protection, the greater the rationality of low carbon campus construction.

2) Behavior orientation at the supermarket level

According to the survey results, the university main body Education 2 “your university supermarket on the importance of ecological civilization construction” correlation coefficient is 0.29, significance level of 0.0000, visible subject ecological supermarket construction behavior and university supermarket emphasis on ecological civilization construction has significant positive correlation, verify the hypothesis of H3-2 is the higher the supermarket for the importance of environmental protection, the greater the rationality of low carbon campus construction.

6. Conclusions and Suggestions

In summary, Under the analysis of a multi-log multiple regression model, In the university subject of “ecological supermarket” construction behavior = $0.312 + 0.234 * \text{qualification (Qualification)} - 0.24 * \text{income (Income)} + 0.2 * \text{will you conduct garbage classification (Habit 1)} + 0.17 * \text{will you go to the supermarket for consumption (Habit2)} + 0.56 * \text{your university to ecological civilization construction attention (Education 1)} + 0.29 * \text{your university supermarket to ecological civilization construction attention (Education 2)}$, That is, while controlling for other factors, the qualifications (academic background) of the university participants will be increased by 0.234 units. Average monthly income (pocket money) increased by one unit. Its “ecological supermarket” construction behavior will be reduced by 0.24 units. Whether their individual will do the habit of garbage sorting for each additional unit, its “ecological supermarket” construction behavior will increase by 0.2 units. Whether the individual has the habit of consumption of each additional unit, its “ecological supermarket” construction behavior will increase by 0.17 units. Universities’ attention to the construction of ecological civilization will significantly increase by 0.56 units of “ecological supermarket” construction behavior. And the importance of ecological civilization construction of university supermarkets will increase by 0.29 units of “ecological supermarket” construction behavior. In short, the independent variable of “ecological supermarket” construction behavior is positively affected by qualifications, classification habits, consumption habits, supermarket attention, and university attention; and negatively affected by the monthly income

(pocket money).

This paper analyzes the influencing factors of the university subject participating in the construction of “ecological supermarket” through the survey data. From the perspective of the research results, the overall enthusiasm of colleges and universities to participate in the construction of “ecological supermarket” is relatively low, and the overall guidance is insufficient, and the development of their subject consciousness is still immature. This paper draws the following enlightenment: First of all, on the whole, we should strengthen the education guidance, especially the importance of colleges and universities to the construction of ecological civilization, with colleges and universities to lead the participation of the main body. The survey results show that the construction behavior of “ecological supermarket” is the most influenced by the guidance of universities. Therefore, the primary condition of the construction of ecological supermarket is the education construction of the university itself. By taking the concept of “ecological” in the classroom and implementing the course construction, the students can promote the “ecological supermarket” and change from the potential behavior to the subjective behavior; secondly, the qualifications and income of universities will have certain influence on the construction of “ecological supermarket”. Therefore, when the education level of colleges and universities should be strengthened, it should provide higher education channels for more students, stimulate the enthusiasm of colleges and universities to participate in ecological construction, and subtly change the overall quality. In the monthly income level (pocket money) of college students, thrift should be advocated to avoid carrying a lot of currency on campus, which can not only reduce the phenomenon of blind consumption and fraud crisis in the face of the Internet, but also effectively reduce the unecological behavior caused by income. Finally, starting from the behavior habits, the research results show that the overall awareness of garbage classification is low, while the consumption behavior has a high frequency. Through the way of “consumption + ecology”, creating the linkage mode under the ecological supermarket and driving the ecology with commerce can promote the environmental awareness of the university groups and strengthen the participation of the main body of ecological civilization construction.

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