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Research on Intention of "Little Yellow Dog" Intelligent Garbage Recycling Machine

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ABSTRACT
In order to actively respond to the government policy of garbage sorting, "little yellow dog" intelligent garbage recycling machines were introduced into the campus. Students can classify waste cartons, beverage bottles and other kinds of garbage into the "little yellow dog" machine. This paper is to investigate the green consumption intention of campus users to use the "little yellow dog" machine, as well as the influence of environmental belief and social value orientation on it. Totally 253 valid questionnaires were collected from the campus. The results of statistical analysis show that: environmental belief and social value orientation have significant positive effects on users' intention to use "little yellow dog"; social value orientation have greater impact on their intention.

Keywords: *"little yellow dog", intelligent garbage recycling machine, environmental belief, social value orientation, green consumption intention*

1. INTRODUCTION

In order to actively respond to the government policy of garbage sorting, "little yellow dog" intelligent garbage recycling machines were introduced into the campus. Students can put various kinds of garbage such as waste cartons and beverage bottles into the "little yellow dog" machine, while reimburse money will be paid back via their smart-phone [1].

"Little yellow dog" intelligent garbage recycling machine is in bright yellow color and eye-catching, so most students should have already noticed them. It is composed of six garbage bins, can deal with paper, textile, metal, plastic, glass and hazardous waste etc.[2].

The purpose of this paper is to study their green consumption intention of campus users to use "little yellow dog", and to explore the impact of their environmental beliefs and social value orientation on their intention.

2. LITERATURE REVIEW

2.1. Environmental Belief

Environmental belief refers to an individual's judgment that his behavior will cause beneficial or harmful consequences to the environment, and that he should be responsible for such consequences. According to Value-Belief-Norm(VBN) theory [3], three components (personal norms, values, and environmental beliefs) can lead to environmentally significant behavior [4][5].

Mi(2018) found that environmental belief is an antecedent of ecological consumption behavior. And there are significant differences in environmental belief due to gender, marriage, education, age and other demographic characteristics [6]. Medina (2019) reviewed past cross-ethnic environmental studies on environmental belief and found obvious diversity among different ethnic groups[7].

2.2. Social Value

The Social Value Orientation scale is used to classify people based on 'stable preferences for certain patterns of outcomes for oneself and others.' Based on scale scores, respondents are classified as either prosocials, individualists, or competitors. Prosocials strive for equality, and tend to maximize outcomes for both themselves and others. Individualists maximize their own outcomes with little or no regard for others' outcomes. Competitors tend to maximize their own outcomes relative to others' outcomes [8].

Report found that participants classified as prosocials expressed stronger pro-environmental behavioral intentions than did participants classified as proself (individualists and competitors combined)[9].

3. HYPOTHESIS

3.1. Environmental Belief and Green Consumption Intention

According to Value-Belief-Norm (VBN) theory [3], three components (personal norms, values, and environmental beliefs) can lead to environmentally significant behavior [4][5]. Mi (2018) conducted that environmental belief is an antecedent of ecological consumption behavior. And there are significant differences in environmental belief due to gender, marriage, education, age and other demographic characteristics [6].

Since environmental belief can lead to green consumption behavior, its reasonable green consumption intention can also be influenced by environmental belief.

H1: Environmental belief has significant positive impact on green consumption intention.

3.2. Social Value Orientation and Green Consumption Intention

Cameron(1998) found that prosocial individuals are more supportive of reducing vehicle pollution projects, while proself individuals are more opposed to such projects [9]. Gärling(2003) conducted that prosocial individuals have stronger motivation to protect the environment [10]. Lange(2010) also found that prosocial individuals have stronger preference to choose public transport system [11].

Yang(2006) conducted study and found that prosocial value orientation can lead to prosocial behavior intention of college students in daily life[12]. Qi(2017) reviewed past studies and concluded that social value orientation affects prosocial behavior in many experimental situations, including trust behavior, cooperative behavior and fair decision-making behavior in social dilemma[13].

Since green consumption behavior is also one of prosocial behavior, its reasonable social value orientation can lead to green consumption intention.

H2: social value orientation has significant positive impact on green consumption intention.

4. RESEARCH METHODS

4.1. Questionnaire

The questionnaire of this study refers to relevant literature, and scales of environmental beliefs and social value orientation are originally adopted [6][8].

Scale of green consumption intention are planted into the object of "little yellow dog"[14].

4.2. Pre-test and Sampling

To conduct pre-test, 50 questionnaires were randomly sent to students in the campus before the formal surveying. 50 questionnaires were all returned, while three are invalid and the effective rate is 94%. The results show that Cronbach's α of environmental belief is 0.806, social value is 0.943, green consumption intention is 0.914. The Cronbach's α values were all greater than 0.7, which indicated that the variables items were highly consistent. Then the formal surveying was conducted.

The total population size of the campus is around 25000, and random sampling method is adopted. The questionnaire was uploaded to a public online surveying platform, and was randomly sent to students in the campus. 266 questionnaires were received, among which 253 were valid, the effective rate was 95.1%.

5. DATA ANALYSIS AND RESULTS

5.1. Descriptive Analysis

After the formal surveying was finished, descriptive analysis, reliability and validity analysis, regression analysis were conducted by SPSS 25.

Among these samples, 221 people (87.35%) have heard of "little yellow dog" intelligent garbage recycling machine, 32 (12.65%) have never heard of it; 214 (84.58%) know that there are "little yellow dog" machines in the campus, 39 (15.42%) do not notice that; 147 people (58.10%) have used "little yellow dog" and 106 people have never used "little yellow dog"; 93 people (36.76%) knew the reimburse pricing standard of "little yellow dog", and 160 people (63.24%) did not know the pricing standard. Among these persons who had used "little yellow dog", 63 times (42.86%) were putting into metal and textile fabric, 72 times (49.98%) were putting into plastic, 109 times (74.15%) were putting into paper, 78 times (53.06%) were putting into beverage cans and bottles. In addition, in terms of the frequency, 2 people (0.79%) patronized "little yellow dog" more than once a day, 2 people (0.79%) patronized "little yellow dog" once a day, 32 (12.65%) patronized "little yellow dog" once a week, 53 (20.95%) patronized "little yellow dog" once a month, and 164 (64.82%) patronized "little yellow dog" less than once a month.

5.2. Reliability and Validity Analysis

5.2.1. Reliability Analysis

The degree of consistency and stability of the scale in the measurement results is called reliability, which means that the respondents have more consistent scores in the

same questionnaire test. The general reliability can be measured by the combined reliability of Cronbach's α, ave and Cr.

In this study, Cronbach's α is used to measure the reliability. Generally speaking, Cronbach's α value less than 0.3 is not credible, greater than or equal to 0.5 is the general level, and it is better to be above 0.7 to show that the reliability level is high. The reliability analysis result shows that the α coefficient of variable environmental belief is.0.806, which satisfies the condition that α coefficient is greater than.0.7, so the internal consistency and reliability level of environmental belief are high. In addition, the α coefficient of social value is. 943, which also meets the condition of α coefficient greater than 0.7, which has higher internal consistency and higher reliability level. Finally the α coefficient of variable green consumption intention is.0,914, which satisfies the α coefficient greater than 0.7 also.

5.2.2. Factor Analysis

Factor analysis is an essential part of data analysis. This study will analyze the environmental beliefs, social value orientation, consumption intention of the respondents in the questionnaire.

In factor analysis, the KMO value can be used to judge whether the research dimension, research variables and the number of research questions can be analyzed. Of course, in Bartlett's ball test, the items with higher correlation indicate that there are common factors, and factor analysis can be carried out. Therefore, KMO value (> 0.5), Bartlett ball test (significant), factor load value (≥ 0.7) and common factor variance extraction (≥ 0.5) are needed to obtain the results.

Factor analysis result shows that among the measured variables, KMO of social value is.0.900, KMO of green consumption intention is.0.816, which are all greater than 0.5, indicating that these variable data can be analyzed by factor analysis, and the Bartlett sphere test p value of all variables is.0.000, which is less than the standard. 001.

According to the cumulative total variance explanation, the reliability of one item to explain environmental belief is 72.841%, while that of one item to explain social value is 78.367%, and that of one item to explain consumption intention is 80.049%. In addition, since the extracted value of common factor variance of Env-bel 2 is less than 0.5, the item is deleted in factor analysis. The other items need not be deleted because the factor load value is > 0.7, KMO value is > 0.5. Bartlett ball test is significant, and common factor variance extraction value is > 0.5. Moreover, the CR values of all variables were > 0.7, ave values were > 0.5, so these variables had convergence validity.

5.3. Regression Analysis

According to the regression analysis results, the higher the environmental belief and social value, the higher the consumption intention. Environmental belief (β =. 436, t =, 7.685, P < 0.001) has a significant positive impact on green consumption intention, and the adjusted overall model interpretation is 18.7%, F value is 59.059. In addition, social value (β =. 570, t = 10.98, P < 0.001) also has a significant positive impact on green consumption intention, and the adjusted overall model interpretation is 32.3%, F value is 120.62. Therefore, H1 and H2 are valid, and the significant level of social value on green consumption intention is higher than environmental belief.

6. CONCLUSION

The results show that these two hypotheses are valid. Environmental belief and social value orientation have significant positive impact on green consumption intention.

And the significant level of social value orientation on green consumption intention is higher than environmental belief. So social value is the main factor influencing green consumption intention of campus users to use "little yellow dog".

To improve college students' environmental belief and social value orientation, the government and universities should strengthen such kind of education, popularize the current environmental situation of the earth, encourage college students to start from themselves, start from the little things around them.

Through strengthening their environmental belief and social value orientation of college students, their green consumption intention of "little yellow dog" could be significantly promoted.

REFERENCES

[1] T. Jing, Can you make money via recycling rubbish? Intelligent waste recycling machine first introduced into Zhuhai campus. 2018-10-13, https://www.sohu.com/a/259305574_613662.

[2] Little yellow dog environmental protection technology company website, 2020, https://www.xhg.com/.

[3] P. C. Stern, T. Dietz, The value basis of environmental concern. Journal of Social Issues, 50 (1994)65–84. DOI: https://doi.org/10.1111/j.1540-4560.1994.tb02420.x

[4] P. C. Stern, New environmental theories: toward a coherent theory of environmentally significant behavior, Journal of Social Issues, 56(2000)407–424. DOI: https://doi.org/10.1111/0022-4537.00175

[5] T. Dietz, A. Fitzgerald, R. Shwom, Environmental values. Annual Review of Environmental Resources, 30 (2005)335–372. DOI: 10.1146/annurev.energy.30.050504.144444

[6] L.Y. Mi, J.W. Lu, Cultural orientation, environmental belief and ecological consumption behavior - a comparative analysis based on the difference of population characteristics. Journal of Nanjing University of Technology (Social science edition), 17 (004) (2018) 54-66. DOI: https://doi.org/10.3969/j.issn.1671-7287.2018.04.006

[7] V. Medina, A. DeRonda, N. Ross, D. Curtin and F.L. Jia, Revisiting environmental belief and behavior among ethnic groups in the U.S., Frontiers in Psychology. (2019) DOI: https://doi.org/ 10.3389/fpsyg.2019.00629

[8] PAMV. Lange，W. Otten，EMND. Bruin，JA. Joireman, Development of prosocial, individualistic and competitive orientations: theory and preliminary evidence. Journal of Personality and Social Psychology,73.4(1997)733-746. DOI: https://doi.org/ 10.1037//0022-3514.73.4.733

[9] L. D. Cameron, P. M. Brown, J. G. Chapman, Social value orientations and decisions to take proenvironmental action, Journal of Applied Social Psychology, 28.8(1998)675-697. DOI: https://doi.org/10.1111/j.1559-1816.1998. tb01726.x

[10] T. Gärling, S. Fujii, A. Gärling, et al. Moderating effects of social value orientation on determinants of proenvironmental behavior intention, Journal of Environmental Psychology, 23(2003)1–9. DOI: https://doi.org/10.1016/S0272-4944(02)00081-6

[11] PAMV. Lange,MV. Vugt, RM. Meertens, et al. A social dilemma analysis of commuting preferences: The roles of social value orientation and trust, Journal of Applied Social Psychology, 28(9) (2010)796-820. DOI: https://doi.org/10.1111/j.1559-1816.1998.tb01732.x

[12] J.Yang, Research on prosocial value orientation and prosocial behavior of college students [D]. Huazhong University of science and technology, 2006. DOI: https://doi.org/10.7666/d.d047066

[13] Y.Y. Qi, H.Y. Wu, X. Liu, The influence of social value orientation on prosocial behavior: evidence from behavior and neuro-imaging. Science Bulletin 62.011 (2017) 1136-1144. DOI: https://doi.org/CNKI:SUN:KXTB.0.2017-11-008

[14] Z.F. Mao, W.P. Yu, Y.X. Li, An empirical study on the formation mechanism of Green Purchase Intention - the interaction between green advertising appeal and self construction. Contemporary Finance, 05 (2017) 81-90 DOI: https://doi.org/CNKI:SUN:DDCJ.0.2017-05-008