

AN EMPIRICAL ANALYSIS TOWARD PROMOTION OF ENVIROMENT LABELS AWARENESS

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Overview

Environmental problems are important issues, and various countermeasures have been taken. Although environmental labels are also an important environmental measure that companies take, the awareness is said to be generally low. This study focused on the environmental labels, and aimed to do clarify how consumer attributes, environmental interest degree, and carbon reduction efforts are related to environmental label recognition, and examined ways to improve cognition of environmental labels.

The hypothesis of this study is that "If the opportunity to see the environmental label is given even in the survey, consumer's recognition will increase." For this reason, the questionnaire survey was conducted twice with in a period of one year: first is 2016 survey and second is 2017 survey.

Methods

This study carried out two questionnaire surveys to monitors through an internet survey company. These surveys had preliminary surveys to screen the attributes of the monitors, in two steps to implement the present investigation.

The first survey was conducted from March 28 (Mon), 2016 to March 30 (Wed). The second survey was conducted from March 30(Thu), 2017 to April 18 (Tue). Respondents were subject to the following conditions. (1) The subjects live in the TEPCO supply area (Tokyo, Chiba, Saitama, Kanagawa, Gunma Prefecture, Tochigi Prefecture, Ibaraki Prefecture). (2) They are workers or pensioners (householders or spouses thereof, and students are not included). (3) They are to check their own electricity consumption, and live in houses that do not have established Home Energy Management System (HEMS). In the first survey, 1,036 responses were obtained for 2,390 deliveries, and the recovery rate in this survey was 43.3%.

The second survey was conducted on the same subjects of the first survey. For this latter survey, 1,406 responses were obtained for 1,946 deliveries, and the recovery rate in this survey was 72.3%. The data from surveys were strictly cleaned for analysis, and 1,278 samples were taken as the number of valid responses. The breakdown of the sample is the continuing respondents are 614, new respondents are 664. The number of deficiencies that were not answered the second time by the first respondents was 422.

Both surveys contained roughly the same questions. To the respondents, the symbols of each environmental label were displayed together with the name, and answered in four options: A) I know it well, B) I know it, C) I don't know it but I saw it, and D) I have never seen it. Other main survey items were attitudes towards the environment, electricity rates and household attributes (such as gender, age, number of family members, etc.) etc.

Answers regarding cognitive environmental labels were quantified using points, and this number was used as the environmental label recognition level. Specifically, using the selected four choices, A is two points, B is one point, the others are calculated as zero point, and the point conversion to a maximum is 24 points. The result of the investigation of the environmental label recognition is that the average is 3.08 points, out of a maximum of 23 points, and a minimum of zero point.

The analytical model is a multiple regression analysis by OLS.

$$Y = \alpha + \sum \beta_i X_i + \varepsilon \quad (1)$$

$(i=1,2,3, \dots, n)$

Here, Y is explained variable, α is constant term, β is regression coefficient, X is explanatory variable, ε is error term, and i indicates the number of explanatory variables. The explained variable is the environmental label recognition, and the explanatory variables are as Table 1.

Results

The analysis results are shown in Table 1. As the last respondent dummy was not statistically significant, the hypothesis was rejected. Although considered part of the environmental education to cooperate in such a survey, in fact it was found that there is no effect on the awareness of environmental labels.

Regression analysis shows that if the number of families is large or if respondents are employed, there is a positive relationship with the recognition of environmental labels. Also, the high degree of tolerance for renewable energy has a positive relationship with the recognition of environmental labels. Likewise, there is a positive relationship that energy conservation efforts are high due to the high level of environmental concern.

The interesting point is the attitude to information. The information desire is not statistically significant, but the information exploration is statistically adopted and is positively related to the recognition of the environmental label. On the other hand, the explanatory variables of higher age, living together with a child under 18 years old, and long stays at home on weekdays had negative correlation with the environmental label recognition.

Table 1: Regression result

	B	Standard error	t
Constant	1.4574 *	0.8809	1.6544
Gender dummy (0 : Woman, 1 : Man)	0.3364	0.3190	1.0545
Age (Year)	-0.0305 **	0.0130	-2.3462
Number of family members (Person)	0.3070 **	0.1404	2.1858
Under 18 years old child dummy (0 : No, 1 : Yes)	-1.0296 ***	0.3809	-2.7033
Non married dummy (0 : No, 1 : Yes)	-0.1387	0.3373	-0.4113
Residence years (Year)	0.0195	0.0125	1.5600
Residential area (m ²)	0.0013	0.0034	0.3909
Weekday's at home time (Hours)	-0.0476 *	0.0249	-1.9153
Household yearly income (1:Less than 2 million Yen,2:-400,3:-600,4:-800,5:-1,000,6:-1,200,7:-1,500,8:-2,000,9:2,000 more)	-0.0244	0.0751	-0.3249
Employment dummy (0 : No, 1 : Yes)	0.9154 ***	0.3180	2.8785
Attitude electricity charge (Point)	0.7942 ***	0.3083	2.5764
Need for comfort (Point)	0.0557	0.3049	0.1827
Degree of enviromental interest (Point)	0.1007 **	0.0394	2.5593
Information exploration (Point)	0.2810 ***	0.0733	3.8356
Information desire (Point)	0.0006	0.0442	0.0141
Carbon reduction efforts (Point)	0.2351 ***	0.0371	6.3337
Registration of visualization dummy (0 : No, 1 : Yes)	0.2729	0.2379	1.1472
Previous respondent dummy (0 : No, 1 : Yes)	-0.3058	0.2453	-1.2466
R-squared		0.2080	
Adjusted R-squared		0.1907	
F-test		12.0240	
Sample size		1,278	

Significance level: ***0.01, **0.05, *0.1

Conclusions

In the questionnaire survey about the information provided it could be confirmed that there is no possiblility to increase the perception of the environmental labels. On the other hand, it became clear that consumers who have a high environmental interest, make efforts of carbon reduction, and seek information, also have a high awareness of environmental labels.

As the age increased, the conrelation became negative, suggesting that the elderly 's interest in environmental labels is low. Young people are learning environmental problems in school education, but elderly people may be derived from the lack of opportunities. This suggests that we should work to increase the chances for environmental education for the elderly.

In addition, cognitive degree of environmental labels if consumers have an under-18-year-old child is reduced. To this, it is inferred that it is due to the busyness of child-rearing households. It is very important that the measures for providing environmental information for people with low interest in the environment and busy people are required.

References

Fischer, C. and Lyon, P.T. "Competing Environmental Labels." Journal of Economics & Management Strategy, Volume 23, Number 3, Fall 2014, 692–716