

PRO-ENVIRONMENTAL ACTIVITIES OF CONSUMERS

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Abstract: The aim of the study is to compare pro-environmental activities between consumers in Serbia, Croatia, Bosnia and Herzegovina, FYR Macedonia, Slovenia and Montenegro. Empirical research was conducted on a sample of 1,550 participants from these countries. The results indicate that there are differences between consumers from: Montenegro and Serbia, Montenegro and Macedonia, Montenegro and Slovenia, Bosnia and Herzegovina and Slovenia and Bosnia and Herzegovina and Macedonia. Consumers from Montenegro and Bosnia and Herzegovina achieve significantly lower scores in the pro-environmental activities. Also, results indicate that there are no differences in gender, age and professional qualification related to pro-environmental activities between consumers. Differences in monthly incomes by households exist but post hoc test not indicate the exact differences. The received data can be used by all market participants from these countries for increase pro-environmental activities of consumers.

Key words: pro-environmental activities, consumer behavior, cross-cultural comparison

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Introduction

Today's behavior of consumers is unsustainable. Environmental, social and economic costs of today's behavior of consumers are: natural disasters, loss of biodiversity, poverty, disease epidemics, etc. (UNEP, 2008). Some data indicate that 60% of the Earth's ecosystems have been degraded in the last 50 years while we will need more than two planets if we continue with the same trend of irresponsible consumer behavior (UNEP and Ministry of Sweden, 2010). Because of that, environmentally irresponsible behavior of consumers is a global problem that should be urgently resolved. In order to increase pro-environmental behavior of consumers it is necessary to analyze, through empirical research, the present situation and the structure of pro-environmental behaviors of consumers. For this purpose, various cross-cultural studies (Arbuthnot and Lingg, 1975; Sriram and Forman, 1993; Gooch, 1995; Roozen and Pelsmacker, 2000) were carried out on the subject of pro-environmental consumer behavior.

The research of the cross-cultural, pro-environmental studies (Arbuthnot and Lingg, 1975; Sriram and Forman, 1993; Gooch, 1995; Roozen and Pelsmacker,

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2000) revealed that there are no published articles on the subject of pro-environmental activities of consumers in Serbia, Croatia, Bosnia and Herzegovina, FYR Macedonia, Slovenia and Montenegro (referred to us *six researched countries* hereinafter). On the territory of these countries was conducted only one research related to pro-environmental behavior (Raletić et al., 2016).

The aim of the research is to compare pro-environmental activities between consumers in the six researched countries which once were within Yugoslavia, a country that existed for 73 years in different constitutional systems until its end in 1991. Today, all these countries are independent states with different demographic, socio-economic and macro-structural characteristics.

Pro-environmental Behaviors of Consumers from Different Countries

Pro-environmental behaviors were more common in consumers from the USA than French consumers (Arbuthnot and Lingg, 1975). According to Gooch (1995) Swedish consumers are more pro-environmental active in comparing to the consumers in Baltic states. Similar results were found by Roozen and Pelsmacker (2000) about the consumers in Belgium in comparison to Polish consumers. On the other hand, Sriram and Forman (1993) found out that there was no difference in pro-environmental behavior of the consumers in the USA and Germany.

The results of cross-cultural researches (Arbuthnot and Lingg, 1975; Gooch, 1995; Roozen and Pelsmacker, 2000) indicate that it may be assumed:

(H1): There are differences in pro-environmental activities between consumers of the six researched countries.

Relationships between pro-environmental behaviors of consumer and demographic and socio-economic characteristics of consumers: gender, age, professional qualifications and monthly income by household, were analyzed in numerous studies conducted in different countries (Kinnear et al., 1974; Samdahl and Robertson, 1989; Granzin and Olsen, 1991; Shamdasani et al, 1993; Roberts, 1996; Chan, 1999; Gilg et al., 2005; Jain and Kaur, 2006; Tilikidou and Delistavrou, 2008; Abeliotis et al, 2010; Paço and Raposo, 2010; Pedrini and Ferri, 2014; Pinto et al., 2014; Pagiaslis and Krontalis, 2014). These relationships are shown in the Tables 1, 2, 3 and 4.

Table 1. Pro-environmental behaviors of consumers and the gender of consumers

Country	Women and men are equal	Women are more active than men
USA		Granzin and Olsen, 1991
Singapore	Shamdasani et al, 1993	
UK	Gilg et al., 2005	
Greece	Tilikidou and Delistavrou, 2008	
Portugal	Paço and Raposo, 2010	
Italy	Pedrini and Ferri, 2014	
India		Jain and Kaur, 2006
Germany		Pinto et al., 2014

Table 2. Pro-environmental behaviors of consumers and the age of consumers

Country	Older consumers are more active	Younger consumers are more active	Age does not affect
USA	Roberts, 1996	Granzin and Olsen, 1991	Kinnear et al., 1974
Singapore			Shamdasani et al, 1993
UK	Gilg et al., 2005		
China	Chan, 1999		
Portugal	Paço and Raposo, 2010		
Germany	Pagiaslis, Krontalis, 2014		Pinto et al, 2014

Table 3. Pro-environmental behaviors of consumers and qualifications of consumers

Country	Educated consumers are more active	Less educated are more active	Qualifications does not affect
USA	Granzin and Olsen, 1991; Roberts, 1996	Arbuthnot and Lingg, 1975	Kinnear et al., 1974
Singapore			Shamdasani et al, 1993
UK		Samdahl and Robertson, 1989	
China	Chan, 1999		
Greece	Abeliotis et al., 2010		
Portugal	Paço and Raposo, 2010		
Italy	Pedrini and Ferri, 2014		
India	Jain and Kaur, 2006		
Germany	Pagiaslis and Krontalis, 2014		

Table 4. Pro-environmental behaviors of consumers and monthly income of consumers

Country	Consumers who have higher incomes are more active	Consumers who have lower incomes are more active	Monthly earnings does not affect
USA	Granzin and Olsen, 1991		
Singapore			Shamdasani et al, 1993
UK		Samdahl and Robertson, 1989	
China	Chan, 1999		
Portugal	Paço and Raposo, 2010		
Italy	Pedrini and Ferri, 2014		
India	Jain and Kaur, 2006		
Greece	Abeliotis et al., 2010		
Germany	Pagiaslis, Krontalis, 2014		

From Tables 1, 2, 3 and 4 it can be concluded that the countries' demographic and socio-economic characteristics influence the differences in the pro-environmental activities of consumers. Given the results of previously conducted research from tables above, the basic assumption is that:

(H2): There are demographic differences in the pro-environmental activities between consumers of the six researched countries.

(H2a): *There are gender differences in the pro-environmental activities between consumers of the six researched countries.*

(H2b): *There are age differences in the pro-environmental activities between consumers of the six researched countries.*

(H2c): *There are professional qualifications differences in the pro-environmental activities between consumers of the six researched countries.*

(H2d): *There are monthly incomes of household differences in the pro-environmental activities between consumers of the six researched countries.*

Methodology

Our study encompassed 1,550 respondents, out of which there were: 276 respondents from Serbia, 265 respondents from Bosnia and Herzegovina, 256 respondents from Slovenia, 353 respondents from Macedonia, 250 respondents from Croatia and 250 respondents from Montenegro. Table 5 presents the demographic and socio-economic characteristics.

Table 5. Demographic and socio-economic characteristics of the sample

Demographic and socio-economic characteristics		RS	SI	MK	BA	ME	HR	Total
Gender	male	114	70	93	111	109	78	575
	female	162	186	160	154	141	172	975
Age	18-30	118	84	105	146	197	137	787
	31-40	86	89	68	66	34	48	391
	41-50	22	55	28	36	19	34	194
	51-60	32	22	24	15	2	24	119
	61-70	14	5	14	1	1	6	41
	71-80	2	0	8	0	0	1	11
Professional Qualification	elementary school	5	2	6	0	0	2	15
	high school	126	44	69	134	123	121	617
	higher education	93	153	104	83	89	95	617
	Ma/MR/PhD	50	56	70	48	41	32	297
Monthly income by household	below average	70	50	28	21	57	42	522
	average	111	84	79	193	120	174	758
	above average	94	121	146	51	76	34	268
Total		276	256	253	265	250	250	1550

As it is shown in Table 5, from the total sample size 63% of participants were female (975). Most of the sample, 51% (787), were younger persons, aged 18-30. Only 11 participants were aged 71-80 (<1%). 7 participants did not give information about their age. The majority of the sample has high school or higher level of education 80% (1234). 15 participants have an elementary level of education (<1%). 4 participants did not provide information about their professional qualifications. Finally, 49% of participants (758) estimated their monthly income by household as average, while 17.3% of the participants (268)

estimated their monthly income by household as above average. Only 2 participants did not provide information about their monthly income. Age difference and professional qualifications of the respondents in the sample (age categories 61-70 and 71-80 and the educational level: primary school) can be considered as a limitation of the research. The authors decided to include these disparities in research, but they should be interpreted with great caution. However, it should be understood that it is really hard to create the same pattern of demographic and socio-economic characteristics within all the categories in several different countries (Raaij, 1978). The cross-cultural research carried out by Arbuthnot and Lingg (1975) also had a sample disparity. The disparities exist because younger people and more educated people are generally more ready to participate in such studies as opposed to those who are older and less educated (Chan, 2001). Limited financial resources affect the choice of the study sample. Survey sampling method is stratified sample. The population of about 21 million is divided into strata, for each country separately. Then, the method of simple random sampling is used for each stratum.

The questionnaire was created for research purposes following the example of previous studies (Granzin and Olsen, 1991; Gilg et al., 2005; Roozen and Pelsmacker, 2000; Tilikidou and Delistavrou, 2008; Paço and Raposo, 2010). The items in the questionnaire are consistent with the comparative cross-cultural study, as well as with national and international environments of the countries where the research was conducted.

The questionnaire consists of three parts. The first part of the questionnaire is agreement on completing the questionnaire. The second part refers to the demographic and socio-economic characteristics of the respondents: country, age, professional qualifications and monthly household income. In order to adjust the questionnaire to the cross-cultural research, it was necessary to standardize the data on income due to the fact that the statistical yearbooks (2013) from different countries, show the data in a different way. For example, the data on revenue are presented annually for households in the Statistical Yearbook of Macedonia (Macedonia Central Bureau of Statistics, 2014, 296), on a monthly basis per a household member in the Statistical Yearbook of Serbia (Statistical Office of the Republic of Serbia, 2014 123) and monthly for households in the statistical yearbooks of Montenegro (Statistical Office of Montenegro, 2014, 68) and Slovenia (Statistical Office of Slovenia, 2014, 27). However, there is no data on revenue for Bosnia and Herzegovina and Croatia. Standardization means a reduction of the income data in one time instance and income equality to which it refers. The authors have opted for monthly income per household; as such information is available in two of the four statistical yearbooks of the countries. In addition, the issue of monthly income per household was raised in the currency of the country in which the survey was conducted, so it would be easier to understand and respond to it. The third part of the questionnaire has 7 items (statements) that relate to seven different product groups: 1) food and beverage, 2) chemistry, 3)

clothing, 4) furniture, 5) electrical appliances, 6) means of transport and 7) office supplies (Table 6). Each item is rated on a five-point Likert scale, ranging from 1- "completely disagree" to 5- "totally agree". Descriptive statistics on the dimensions of pro-environmental consumer activities through items are shown in Table 6.

Table 6. Descriptive statistics of items of the total sample

Item	M	SD
I'm careful to always wring the water tap after use.	4.65	0.81
I try to use home chemistry products according to the instructions.	4.16	0.98
I have no problem to wear clothes which my friends already wore.	3.40	1.48
I try to various ways to keep furniture because of longer life.	4.11	0.99
I always turn off mobile phone charger when notice that the phone is charged.	3.52	1.51
When I have an opportunity, I walk or ride by bicycle before drive car or drive to public transport.	3.72	1.32
I use badly print paper or paper with mistake for writing.	3.89	1.25

Prior to drafting the final questionnaire that would be applied in all six researched countries, a pilot questionnaire was made. The pilot questionnaire was applied to a total sample of 200 participants, 100 from Serbia, and 100 participants from Bosnia and Herzegovina. The aim was to verify the metric properties, a possible factor structure, using principal component analysis, and to verify reliability of the questionnaire. Items that have been shown to have the most inter-correlations with other items were replaced with items which were assumed to describe the non-purchasing environmentally responsible consumer behavior more adequately.

The final questionnaires were made in Serbian, Croatian, Slovenian and Macedonian languages. The respondents in Serbia, Bosnia and Herzegovina and Montenegro filled in the questionnaires in Serbian language because they can be classified as the same linguistic field.

The final questionnaires were placed as hard copies or in electronic format as a link of Internet platform Google drive, which was then sent to the e-mail address or Facebook profiles. As independent variables in the study the authors listed: country, sex, age, professional qualification and monthly income per household (Table 5). The dependent variable was pro-environmental activities (Table 6).

The software package SPSS 20 was used for data analysis. Preparation of data for the main analysis involves the replacement of missing values by EM method and treatment of extreme values that have resulted in showing no exceptions.

After this, exploratory factor analysis (EFA) was conducted. The results of EFA require that there is a stable factor of the questionnaire structure, with three different dimensions. Further, the obtained solution factor was confirmed using confirmatory factor analysis (CFA) in statistical packages "lavaan" and "semTools" (Pornprasertmanit et al., 2013), written for the R environment.

One-way ANOVA-s with factor: country (6 levels) and Scheffe post hoc test were used as the methods for determining the difference in pro-environmental activities among the consumers in the six researched countries. Likewise, several two-way

ANOVA-s were used to test differences in demographic and socio-economic characteristics of the respondents in connection with the pro-environmental activities. The factors are: earth (6 levels), sex (level 2), the age category (6 levels), professional qualifications (level 3), and monthly income per household (3 levels). Scheffe post hoc test was used as a further method for determining the demographic and socio-economic differences in pro-environmental activities among consumers in the six researched countries.

Results

It can be concluded that the distribution of subscale does not deviate significantly from normal values (values Škūnis and Kurtosis are within the permissible value), despite substantial value K-S statistic (Table 7). Reliability of the coefficients for the subscale is not shown quite adequately in the case of most countries, in accordance with their values, which are lower than 0.70. Cronbach alpha level can be explained by a small number of items for each subscale. The authors have opted for a smaller number of items, due to the nature of this cross-cultural study.

Table 7. Descriptive statistics and reliability coefficients of questionnaire

Country	Subscale	M	SD	Skunis	Kurtosis	K-S	A
Serbia	Consumption	27.99	4.73	-.824	.841	.117*	.618
Croatia	Consumption	27.51	4.96	-.696	.396	.086*	.711
Bosnia and Herzegovina	Consumption	26.63	5.15	-.676	.376	.084*	.657
Montenegro	Consumption	26.21	5.12	-.748	.917	.094*	.643
Macedonia	Consumption	28.24	4.70	-.839	1.018	.099*	.681
Slovenia	Consumption	28.13	4.35	-.555	-.298	.101*	.639
Total	Consumption	27.45	4.89	-.746	.627	.091*	.658

Note: *p<.01.

The results of a one-way ANOVA with factor: country (6 levels) indicate a significant main effect of country $F(5, 1544) = 7.79, p < .01, \eta^2 = .03$ related to environmentally responsible consumption. Post hoc test (Scheffe) shows that there are significant differences between participants from Montenegro ($M = 26.21, SD = 5.12$) and Serbia ($M = 27.97, SD = 4.73; p < .01$), Montenegro and Macedonia ($M = 28.24, SD = 4.70; p < .01$), and Montenegro and Slovenia ($M = 28.14, SD = 4.35; p < .01$). Also, it is shown that participants from Bosnia and Herzegovina ($M = 26.63, SD = 5.15$) differ from participants from Slovenia ($p < .01$) and Macedonia ($p < .01$). Participants from Montenegro and Bosnia and Herzegovina achieve significantly lower scores in the environmentally responsible consumption in relation to countries from which they differ.

The results of a two-way ANOVA with factors: country (6 levels) and gender (2 levels) indicate a significant main effect of gender, $F(1, 1537) = 43.92, p < .01, \eta^2 = .02$, and a significant main effect of country, $F(5, 1537) = 7.61, p < .01, \eta^2 = .02$. The interaction of gender and country, however, is not significant, $F(5,$

1537) = <1, ns. These results indicate that female participants ($M = 28.07$, $SD = 4.66$) are more common in pro-environmental activities compared to male participants ($M = 26.40$, $SD = 5.11$), regardless of the country.

The results of a two-way ANOVA with factors: country (6 levels) and age category (6 levels) suggest a significant main effect of age, $F(4, 1510) = 6.17$, $p < .01$, $\eta^2 = .02$. The main effect of a country ($F(2, 1537) = <1$, ns) and the interaction of age and country ($F(22, 1510) = 1$, ns) are not significant. The post hoc tests (Scheffe) indicate that the younger participants (age: 18-30 years; $M = 26.98$, $SD = 4.90$) are less common in pro-environmental activities compared to some of the categories of older participants: a) 31-40 years; $M = 28.52$, $SD = 4.76$; $p < .01$; b) 41-50 years; $M = 28.79$, $SD = 4.07$; $p < .01$; c) 51-60 years; $M = 29.61$, $SD = 3.76$; $p < .01$.

Next, the results of a two-way ANOVA with factors: country (6 levels) and professional qualifications (4 levels) show a significant main effect of country, $F(3, 1524) = 4.86$, $p < .01$, $\eta^2 = .01$, but also a non-significant main effect of professional qualifications, $F(3, 1524) = 1$, ns, and non-significant interaction of country and professional qualifications, $F(13, 1524) = 1.72$, ns.

Finally, the results of a two-way ANOVA with factors: country (6 levels) and monthly income by household (3 levels) revealed a significant interaction of factors, $F(10, 1530) = 2.13$, $p < .01$, $\eta^2 = .02$. The results of post hoc tests (Scheffe) indicate that there is no observable difference between countries in regards to monthly income by household ($p > .05$). Next, it is shown that the main effect of the country is also significant, $F(5, 1530) = 9.44$, $p < .01$, $\eta^2 = .03$. The main effect of monthly income by household, however, is not shown as significant, $F(2, 1530) = 1.04$, $p > .05$.

Discussion

On the basis of the obtained results it can be concluded that the hypothesis H1: there are differences in the pro-environmental activities of the consumers between the six researched countries, is partly confirmed. The results indicate that there are differences in pro-environmental activities between Montenegro and Serbia, Montenegro and Macedonia, and Montenegro and Slovenia; and between Bosnia and Herzegovina and Slovenia, and Bosnia and Herzegovina and Macedonia. Participants from Montenegro and Bosnia and Herzegovina achieve significantly lower scores in the environmentally responsible consumption in relation to countries from which they differ. Other cross-cultural studies confirmed that there were differences in pro-environmental activities among other countries (Arbuthnot and Lingg, 1975; Gooch, 1995; Roozen and Pelsmacker, 2000). Other cross-cultural studies confirmed that there were differences in pro-environmental activities among other countries (Arbuthnot and Lingg, 1975; Gooch, 1995; Roozen and Pelsmacker, 2000).

By summarizing the results relating to the demographic and socio-economic differences it can be concluded that the sub-hypotheses H2a, H2b and H2c are partially confirmed. It means that the hypothesis H2: that there are demographic

differences when it comes to the pro-environmental activities between consumers of the six researched countries is also partially confirmed. There are no gender, age and qualification differences. The differences in monthly incomes by households were observed, but through Scheffe post hoc test are not given exactly differences. That man and women are equally confirmed studies: Shamdasani et al., 1993; Gilg et al., 2005; Tilikidou and Delistavrou, 2008; Abeliotis et al, 2010; Paço and Raposo, 2010; Pedrini and Ferri, 2014. That not exist difference between young and old consumers confirmed studies (Kinneer et al., 1974; Shamdasani et al., 1993; Pinto et al., 2014). That not exist difference in professional qualification related to pro-environmental behavior of consumers confirmed studies (Kinneer et al., 1974; Shamdasani et al., 1993). That exist differences between monthly incomes by households confirmed study (Shamdasani et al, 1993). The differences in the demographic and socio-economic characteristics of consumers in relation to the pro-environmental activities of consumers between the six researched countries must be taken with a grain of salt since the partial eta squared (η^2) is at a low level, which means that the obtained effects are low.

Conclusion

This pioneering study on the pro-environmental activities of consumers in the six researched countries gives valuable information. Results are: (a) there are differences in pro-environmental activities between Montenegro and Serbia, Montenegro and Macedonia, and Montenegro and Slovenia; and between Bosnia and Herzegovina and Slovenia, and Bosnia and Herzegovina and Macedonia. Participants from Montenegro and Bosnia and Herzegovina achieve significantly lower scores in the pro-environmental activities in relation to countries from which they differ; (b) there are no gender, age and qualification differences but exist the differences in monthly incomes by households.

If compare the results obtained with this study, it is concluded that the results confirm the results of the previously conducted research: there are differences in pro-environmental activities (Arbuthnot and Lingg, 1975; Gooch, 1995; Roozen and Pelsmacker, 2000), that man and women are equally (Shamdasani et al, 1993; Gilg et al., 2005; Tilikidou and Delistavrou, 2008; Abeliotis et al, 2010; Paço and Raposo, 2010; Pedrini and Ferri, 2014), that not exist difference between young and old consumers (Kinneer et al.,1974; Shamdasani et al, 1993; Pinto et al, 2014), that not exist difference in professional qualification (Kinneer et al.,1974; Shamdasani et al, 1993) and that exist differences between monthly income by households (Shamdasani et al, 1993).

The generalization of results leads to an increase in the level of knowledge about the pro-ecological behavior of consumers and more efficient management of pro-environmental activities of consumers. Various subjects whose activities are dispersed across all or some of the six researched countries can use the outcomes of the study as a starting point for the planning, organization, implementation and evaluation of the instruments of green economy to increase consumer

environmental activities. This could include the promotion education about the harmful effects on the environment, especially in Montenegro and Bosnia and Herzegovina, since these countries have lower scores in accordance with the present study in relation to others.

Limitations of research are: a) new questionnaire – a questionnaire designed for the purpose of this research is new, and not standardized; and b) socially desirable responses – pro-environmental activities is a socially desirable behavior, which is why it is assumed that certain respondents have given socially desirable answers that are not a reflection of their actual behavior.

Suggestions for future research are: a) extended research approach through the inclusion of other variables, such as product types, stimulative factors, psychological variables, etc., in order to obtain a wider picture of the pro-environmental activities of consumers in the six researched countries; and b) conducting longitudinal research on the same topic every ten years, in order to understand the changes and structure of changes in pro-environmental activities of consumers in the six researched countries.

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PRO-ŚRODOWISKOWA DZIAŁALNOŚĆ KONSUMENTÓW

Streszczenie: Celem badania jest porównanie działań proekologicznych między konsumentami w Serbii, Chorwacji, Bośni i Hercegowinie, Macedonii, Słowenii i Czarnogórze. Badania empiryczne przeprowadzono na próbie 1550 uczestników pochodzących z wymienionych krajów. Wyniki wskazują, że istnieją różnice między konsumentami z: Czarnogóry i Serbii, Czarnogóry i Macedonii, Czarnogóry i Słowenii, Bośni i Hercegowiny oraz Słowenii i Bośni i Hercegowiny oraz Macedonii. Konsument

z Czarnogóry oraz Bośni i Hercegowiny osiągają znacznie niższe wyniki w działaniach prośrodowiskowych. Ponadto wyniki wskazują, że nie ma różnic pod względem płci, wieku i kwalifikacji zawodowych związanych z działaniami prośrodowiskowymi między konsumentami. Różnice w dochodach miesięcznych według gospodarstw domowych istnieją, jednak test post hoc nie wykazał konkretnych różnic. Otrzymane dane mogą być wykorzystywane przez wszystkich uczestników rynku z tych krajów w celu zwiększenia działań prośrodowiskowych konsumentów.

Słowa kluczowe: działania proekologiczne, zachowania konsumenckie, porównanie międzykulturowe

消费者的环保活动

摘要: 前南斯拉夫马其顿, 斯洛文尼亚和黑山。对来自这些国家的1550名参与者进行了实证研究。该结果表明, 有来自黑山和塞尔维亚, 黑山和马其顿, 黑山和斯洛文尼亚, 波黑和斯洛文尼亚和波黑和马其顿消费者之间的差异。从黑山和波斯尼亚和黑塞哥维那消费者在实现亲环境活动的得分显著降低, 另外亲也, 和也专业还, 还亲也。存在家庭数量收入差异, 但存在差异。程序的接收者。

关键词: 亲环境活动, 消费行为, 跨文化比较