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# Factors Determining Preferences of Particular Environmentally Friendly Non-food Products

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Consumption-related social and ecological aspects are widely discussed and addressed as sustainable consumption is one of the main prerequisites for sustainable development. Choosing and paying for environmentally friendly goods is one of the options to contribute to positive consumption patterns. Nevertheless, different drivers might shape willingness to choose and to pay for eco-labelled products. The paper aims to assess the main factors for choosing eco-labelled non-food products in Lithuania. Statistical analysis of the survey data indicates that different products attract different willingness to choose particular eco-labelled products. In addition, products reveal different factors behind, though they are dominated by income factor. Influence of advertising and friends is not so significant. Growing economy and income could lead to the increase in eco-labelled products' demand, but different consumer groups should be already addressed to contribute to more sustainable consumption.

**Keywords:** *sustainable consumption, eco-labelled products, factors, willingness to choose.*

## Introduction

Nowadays it is accepted that society is expressed symbolically and materially via consumption (Černevičiūtė, 2006). As was stated by Belk (1988), 'we are what we have'. The consumption of symbolic meanings attached to consumer possessions provides an individual with the chance to construct, maintain and send messages

of identity (Elliott, 1997). Today, one of the biggest problems associated with environmental issues concerns consumption patterns (Schultz, 2002). Reshaping consumption patterns and decreasing related environmental impacts are key issues for sustainable consumption. Sustainable consumption is not the reduction in the

consumption of goods and services or completely their refusal; it is efficient consumption, which not only improves the quality of life, but also reduces the environmental impacts (UNEP, 1999).

Environmental issues have become important in the last years because of increasing industrial pollution, waste problems, effects of global warming, etc. As a result, consumers start to demand green products. Research results (Sule, 2012) show that habits of consumption have direct influence on the state of the environment. It is commonly associated with life cycle assessment of products. For example, beef and beef products, followed by dairy products, cause the greatest environmental impact (Tukker, Jansen, 2006). The products of textile as well as food mostly affect environment indirectly (fibres production, materials production, decoration, sewing, consumption and waste) (Kazakevičiūtė, Valienė, 2001; Sule, 2012). Therefore, eco-labels, or labels certifying the environmental friendliness of goods, are increasingly appearing on a wide range of goods in countries all over the world. Consumption of environment friendly products could be one of the solutions to reduce the impact of consumption (Liobikienė *et al.*, 2016).

Behaviour of consumers depends on various factors. 'A friend' is factor which has direct influence in the decision to choose by the society of youth. Young people with their friends are going shopping, because they like share their knowledge about the products; also it is more fun to spend time (Mangleburg *et al.*, 2004). Advertising is another factor behind consumption. It is a form of communication for marketing and is used to encourage, persuade, or manipulate an audience (for example, groups of consumers) to take or consume something new. Usually, advertising plays a major role in modern life. It shapes the attitudes of the society and the individual and inevitably influences consumers' behaviour. The results of theoretical surveys have shown that advertising influences the consumer through cognitive aspects (Jakštienė, Susnienė *et al.*, 2008). Advertising is often dedicated to different groups of consumers. For example, research reveals that men and women differently react to advertising (Martin, 2003). While consumers have increasingly become concerned with harmful consequences of industrial activity on the environment, marketers have begun to recognise both the need and the value of environmental marketing

(Yam-Tang, Chan, 1998). Recent evidence has shown that green advertising has grown exponentially in the last two decades. Study of Tang *et al.* (2015) suggests that types of advertising appeals determine the effectiveness of green advertising.

By Zinkhan and Carlson (1995), environmental (green) advertisements refer to all appeals that include ecological, environmental sustainability and nature-friendly messages that target the needs and desires of environmentally concerned stakeholders. Some green advertisements have an educational content, others are purely commercial in nature, and still others are image-focused (Menon *et al.*, 1999). Other researchers have identified three major benefits that environmental associations can generate if the individual believes that the product can help the environment. The first is *experiential benefit*. The consumer's satisfaction increases on believing that, by purchasing the brand, he/she is contributing to social welfare. The second benefit is *symbolic benefit*, related to the needs of external personal expression. Consumers may consider not to purchase a brand if they feel that it does not adequately reflect their ideology (Montoro Rios *et al.*, 2006). And the third benefit is *nature-related* stemming from sensations and feelings normally experienced through contact with nature (Kals, Schumacher, Montada, 1999).

Other socio-demographic factors are also of importance. Kollmuss and Agyeman (2002) indicated the demographic factors to be one of the most influencing factors in pro-environmental behaviour. Environmental conscious consumer is a woman, professional and usually younger (Harris *et al.*, 2000). Education, gender and age (Brouhle, Khanna, 2012) as well as marital status and income (Boztepe, 2012) play a significant role in the decision to choose eco-labelled products. Recently, values and awareness or cultural aspects have been widely discussed as factors for environmentally friendly behaviour (van der Werff *et al.*, 2013; Liobikienė, Juknys, 2016; Liobikienė *et al.*, 2016).

Most of the studies focus on eco-labelled food products or are very general, and there is a rather limited number of studies for non-food eco-labelled products, especially in Lithuania. Therefore, this study presents the results of a respondents' survey regarding preferences of eco-labelled non-food products and factors behind.

## Materials and methods

Based on 28 close and dichotomous types of questions, the survey of students and employees of universities in Lithuania was carried out in 2011–2012 (December – February). The questionnaire was prepared by the authors. Respondents filled questionnaires online. The link to the survey was distributed via universities' intranet, public forums and social networks of universities in Lithuania. In total, 396 respondents were surveyed. Binary probit regression was used to evaluate the factors, which influenced the respondents' decision. The respondents' profile, study approach and limitations are to be found in our previous paper (Dagiliūtė, Paulauskaitė, 2013). This study focuses on non-food (particular) products with the emphasis on the influence of friends and advertising, not neglecting the importance of other factors.

## Results and discussion

### Consumer willingness to choose and pay for eco-friendly non-food products

The respondents were asked in general which eco-friendly product they usually preferred or would choose in the future (Table 1). As it can be seen from the results, more than 68% of the respondents preferred to choose cosmetic and hygiene eco-labelled products.

**Table 1**

Respondents' choice of eco-friendly products

Eco-friendly products	Frequency	%
1	2	3
Medicines	145	36.6
Cosmetic/hygiene products	271	68.4
Cleaning products	195	49.2
Clothes and footwear	109	27.5
Other	7	1.8

Also, many of the respondents were inclined to choose eco-friendly cleaning products. Lower proportions of the respondents preferred or would choose eco-friendly medicines (more than 36%). The least part of the respondents were willing to choose eco-friendly clothes and footwear (more than 27%). The respondents also mentioned other eco-friendly products which they would choose. It was stationery, household equipment and different types of packaging, e.g. gift bags or shopping bags. Liobikienė and Juknys (2016) indicate that more than 38% of Lithuanians sometimes buy environmentally friendly household goods; often and always account only for 19% and 1%, respectively.

As it is very often declared that eco-products are expensive and not affordable, in order to analyse whether price has influence on the preference of eco-products, we add prices to certain non-food products (Table 2).

Product	Lithuanian conventional (priced)	Imported conventional (priced)	Lithuanian eco – friendly (priced)	Imported eco-friendly (priced)	Binomial test
1	2	3	4	5	6
Tricot	28.5%	37.9%	13.4%	20.2%	<b>&lt;0.001*</b>
Hair shampoo	9.6%	17.7%	43.7%	29.0%	<b>&lt;0.001</b>
Soap	27.0%	23.2%	37.4%	12.4%	0.960
Face cream	11.4%	12.9%	43.9%	31.8%	<b>&lt;0.001</b>
Window cleaner	37.9%	26.8%	26.3%	9.1%	<b>&lt;0.001</b>
Dish washer	28.0%	26.0%	28.5%	17.4%	0.119

\*bold values  $p < 0.05$

**Table 2**

Choice among product attributes

Among non-food products, one could notice the tendency to choose and pay more for environment friendly goods in the case of hair shampoo and face cream, but not for tricot, dish washer or window cleaner. Nevertheless, in the latter case, mostly Lithuanian products were given a priority.

Respondent choices also indicated that price was not a limiting factor for consumption and people did not always tend to buy only the cheapest products. For example, eco-friendly hair shampoo was more expensive than conventional ones; hence, it was given the priority. This one example indicates willingness to pay for eco-friendly products, but not in the case of tricot, window cleaner or dish washer. The latter might be influenced by price (which was twice and more higher for eco-friendly than conventional ones) as well as by other product attributes and factors.

### Perceived impact of friends and advertising for choosing eco-friendly products

We found that more than 82% of the respondents had knowledge about these products. And knowledge plays an important role as a factor in environmentally friendly behaviour (Dagiliūtė, Liobikienė, 2015). Thus, in order to carry out further analysis, it was important to find out the main sources of information about eco-friendly products. A number of possible sources of information

about eco-friendly products were suggested for the respondents. The sources of information were media and internet, various events, friends and acquaintances, leaflets, family and place of trading/location services.

The results of this research showed that the vast majority of the respondents (60.9%) chose media and internet as a source of information about eco-friendly products. For a number of the respondents, sources of information about such products were places of trading/local services (11.1%), various events (8.6%), friends and acquaintances (6.3%) and leaflets (4.8%). The smallest part of the respondents chose family (2%) as a source of information. The respondents also indicated other sources of information (6.3%). Some of them became aware of product eco-friendliness because of its package. Some respondents mentioned study place and lectures as a source of information.

As indicated, friends and acquaintances were a source of information for some respondents. Our previous study (Dagiliūtė, Paulauskaitė, 2013) indicates that in general friends' opinion is influential for up to 4% of respondents. Therefore, it is important to find out in more detail how much friends' opinion influenced the choice of eco-friendly products. Only for more than 1% of the respondents, their friends' opinion was very important (Table 3). For the vast majority of them (more than

**Table 3**  
Influence of friends and advertising on choosing eco-friendly products

Friends' influence on choosing	Frequency	%
1	2	3
Always, opinion of friends is very important to me	6	1.5
Yes, if opinion of friends would be acceptable to me	253	63.9
No, because I trust only myself	121	30.6
No, because I want to stand out from friends and colleagues	5	1.3
Other	11	2.8
Advertisement influence on choosing		
Always prefer only advertised products	1	0.3
Yes, if those products are needed and acceptable to me	210	53
No, because advertisement is not important for me	157	39.6
Never choose products which are advertised	28	7.1

63%), friends' opinion was important if it corresponded with their personal attitude. More than 30% answered that friends' opinion was not important at all, because they trusted only themselves. For some respondents, income, rather than friends, had the biggest influence; personal opinion was also more important than the opinion of friends.

Nowadays, advertising is also one of the most important sources of information. Advertising, as indicated in the introduction, also has a tremendous influence on society. However, there is a disagreement as to whether this influence has been bad or good. It is generally believed that young people are more susceptible to innovation; thus, advertising has more influence on their choice (Vosyliūtė, 2003). The results reveal that less than 1% of the respondents mentioned that advertising was important to them. The vast majority of the respondents answered that they chose products which were advertised if it corresponded with their opinion and the

products were really necessary. For more than 39% of the respondents, advertising was not so important (Table 3). Nevertheless, green advertising might play an important role fostering sustainable consumption patterns. Also proper strategies in green advertising (for example, abstract or concrete appeal) baring certain situations could be used in order to influence the consumer decision (Yang *et al.*, 2015).

### Assessed socio-demographic factors influencing the choice of eco-friendly non-food products

The binary regression analysis showed that the two socio-demographic factors had a statistically significant effect on choosing a tricot product (Table 4). The respondents who identified themselves as the middle class and wealthy were more willing to choose eco-friendly tricot products. Also, the respondents whose monthly income was greater were willing to choose eco-friendly tricot

1	Tricot			Soap			Face cream		
	Wald Chi-Square	B	p	Wald Chi-Square	B	p	Wald Chi-Square	B	p
2	3	4	5	6	7	8	9	10	
(Intercept)	1.830	0.11	0.18	0.000	-0.36	0.99	0.000	-0.72	0.99
Social status	<i>5.837</i>	<i>-0.44</i>	<i>0.05</i>	1.091	-0.14	0.58	2.983	-0.30	0.23
Children under six	0.530	0.2340	0.47	0.305	-0.16	0.58	0.016	-0.04	0.90
Membership in organisation	1.306	-0.21	0.25	<b>7.179</b>	<b>-0.50</b>	<b>0.00</b>	0.298	-0.11	0.59
Income	<b>11.703</b>	<b>0.89</b>	<b>0.00</b>	<b>9.592</b>	<b>0.80</b>	<b>0.00</b>	<b>6.245</b>	<b>0.43</b>	<b>0.04</b>
Age	3.590	-0.78	0.31	0.894	0.40	0.83	4.115	0.87	0.25
Gender	2.194	0.26	0.14	<b>7.490</b>	<b>0.46</b>	<b>0.00</b>	<b>24.568</b>	<b>0.87</b>	<b>0.00</b>
Accommodation	1.228	-0.20	0.27	0.100	-0.05	0.75	0.001	0.00	0.97
Residence	2.222	0.53	0.53	0.385	0.17	0.94	0.909	0.24	0.82
Advertisement	0.333	0.08	0.56	0.012	0.01	0.91	<b>3.292</b>	<b>-2.71</b>	<b>0.07</b>
Friends	2.413	-0.22	0.12	0.936	-0.13	0.33	1.160	0.17	0.28
Model	LR=35.62, p=0.005			LR=27.69, p=0.049			LR=56.65, p<0.001		

**Table 4**

Socio-demographic factors for purchasing eco-friendly products

\*bold values  $p < 0.05$ , italic values  $p < 0.1$

more often. Advertising and friends did not have a significant impact on the decision to choose this product.

More factors had a significant influence in choosing cosmetic products. Membership in some organisation, income (higher), gender (woman) and advertising were those factors which had influence on choosing eco-friendly cosmetics products (soap and face cream). Nevertheless, in the case of face cream, advertising had a significant influence instead of membership in some organisation in the case of soap (Table 4). Income in all cases had a significant influence on purchasing eco-friendly products; however, some authors find that income (Liobikienė, Juknys, 2016) is not a significant factor for environmentally friendly behaviour in general. This might support our idea that specific products attract different interest, as for example in the case of face cream. The gender (woman) factor was much more influential than income. Not of the least importance might also be other factors, e.g. trust in eco-products (Liobikienė *et al.*, 2016).

## References

- Belk, R. W. (1988) Possessions and the extended self. *Journal of Consumer Research* 15: 139-168. <http://dx.doi.org/10.1086/209154>
- Boztepe, A. (2012) Green marketing and its impact on consumer buying behaviour. *European Journal of Economic and Political Studies* 5(1): 5-21.
- Brouhle, K., Khanna, M. (2012) Determinants of participation versus consumption in the Nordic Swan eco-labeled market. *Ecological Economics* 73: 142-151. <http://dx.doi.org/10.1016/j.ecolecon.2011.10.011>
- Černevičiūtė J. (2006). Vartojimas, identitetas ir gyvenimo stilius. *Filosofija. Sociologija* 3: 20-24.
- Dagiliūtė, R. Liobikienė, G. (2015) University contributions to environmental sustainability: challenges and opportunities from the Lithuanian case. *Journal of Cleaner Production* 108: 891-899 <http://dx.doi.org/10.1016/j.jclepro.2015.07.015>
- Dagiliūtė, R., Paulauskaitė, R. (2013) Eco-Preferences and actors behind: case study on academic community in Lithuania. *Environmental Research, Engineering and Management* 3(65): 31-39 <http://dx.doi.org/10.5755/j01.erem.65.3.4801>
- Elliott, R. (1997) Existential consumption and irrational desire. *European Journal of Marketing* 31: 285-296. <http://dx.doi.org/10.1108/03090569710162371>
- Harris, B., Burrell, D. and Eicher, S. (2000) *Demand for local and organic product: a brief review of literature*. Kansas: University of Kansas Institute for Public Policy and Business Research.
- Yam-Tang, P.Y., Chan, Y.K. (1998) Purchasing behaviours and perceptions of environmentally harmful products. *Marketing Intelligence & Planning* 16(6): 356-362. <http://dx.doi.org/10.1108/02634509810237532>
- Yang D., Lua Y., Zhu W., Su Ch. (2015) Going green: How different advertising appeals impact green consumption behavior. *Journal of Business Research* 68: 2663-2675 <http://dx.doi.org/10.1016/j.jbusres.2015.04.004>
- Jakštienė, S., Susnienė, D., Narbutas, V. 2008. The Psychological Impact of Advertising on the Customer Behavior. *Communication of the IBIMA* 3: 50-55.
- Kals, E., Schumacher, D., Montada, L. (1999) Emotional affinity towards nature as a motivation basis to protect nature. *Environment and Behavior* 31: 178-202. <http://dx.doi.org/10.1177/00139169921972056>
- Kazakevičiūtė, G., Valienė, V. (2001) Textile and Ecology. *Environmental Research, Engineering and Management* 4(18): 64-70.
- Kollmuss, A., Agyeman, J. (2002) Mind the Gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research* 8(3): 239-259. <http://dx.doi.org/10.1080/13504620220145401>

## Conclusions

The study contributes to overall discussion on environmentally friendly behaviour and preferences regarding eco-labelled products. Though most of the studies focus on general willingness to choose and pay for environmentally friendly goods, we found that choosing a particular specific product might be influenced by different factors behind. Eco attributes of the products (hair shampoo, cream) that could be related to health aspects more directly gained more preference than products with relatively lower influence (tricot, dish washer). Among the socio-economic factors, income dominated, although gender had a significant impact on choosing eco-labelled products in some cases. Opinion of friends and advertising had no significant influence. However, as these results are based only on the perceived influence, real effect of advertising should be researched in more detail.

- Liobikiene, G., Juknys, R. (2016) The role of values, environmental risk perception, awareness of consequences, and willingness to assume responsibility for environmentally-friendly behaviour: the Lithuanian case. *Journal of Cleaner Production* 112: 3413-3422 <http://dx.doi.org/10.1016/j.jclepro.2015.10.049>
- Liobikienė, G., Mandravickaitė, J., Bernatoniene, J. (2016) Theory of planned behavior approach to understand the green purchasing behavior in the EU: A cross-cultural study. *Ecological Economics* (in press). <http://dx.doi.org/10.1016/j.ecolecon.2016.02.008>
- Mangleburg, T. F., Doney, P. M., Bristol, T. (2004) Shopping with friends and teens' susceptibility to peer influence. *Journal of Retailing* 80: 101-116. <http://dx.doi.org/10.1016/j.jretai.2004.04.005>
- Martin, B. A. S. (2003) The Influence of Gender on Mood Effects in Advertising. *Psychology and Marketing* 20 (3): 249-273. <http://dx.doi.org/10.1002/mar.10070>
- Menon, A., Menon, A., Chowdhury, J. and Jankovich, J. (1999) Evolving paradigm for environmental sensitivity in marketing programs: a synthesis of theory and practice. *Journal of Marketing Theory and Practice*, 7(2): 1-15. <http://dx.doi.org/10.1080/10696679.1999.11501825>
- Montoro Rios, F.J., Martinez, T.L., Moreno F.F., and Soriano, P.C. (2006) Improving attitudes toward brands with environmental associations: An experimental approach. *Journal of Consumer Marketing* 23(1): 26-33. <http://dx.doi.org/10.1108/07363760610641136>
- Schultz, W. P. (2002) Inclusion with nature: the psychology of human-nature relations. In *Psychology of Sustainable Development*, pp. 61-78. Kluwer Academic Publishers. [http://dx.doi.org/10.1007/978-1-4615-0995-0\\_4](http://dx.doi.org/10.1007/978-1-4615-0995-0_4)
- Suel, A. (2012) Life Cycle Assessment of Clothing Process. *Research Journal of Chemical Sciences* 2(2): 87-89.
- Tukker, A., Jansen, B., (2006) Environmental impact of products: a detailed review of studies. *Journal of Industrial Ecology* 10 (3): 159-182. <http://dx.doi.org/10.1162/jiec.2006.10.3.159>
- UNEP (1999) Changing consumption patterns. Industry and Environment, Vol. 22, No. 4, Special issue, October-December 1999.
- van der Werff, E., Steg, L., Keizer, K. (2013) The value of environmental self-identity: the relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behaviour. *Journal of Environmental Psychology* 34: 55-63. <http://dx.doi.org/10.1016/j.jenvp.2012.12.006>
- Vosyliūtė, A. (2003) Consumption as a social problem. *Filosofija. Sociologija* 3: 41-49.
- Zinkhan, G. M., Carlson, L. (1995) Green Advertising and the Reluctant Consumer. *Journal of Advertising* 24(2):1-6. <http://dx.doi.org/10.1080/00913367.1995.10673471>

## Veiksniai nulemiantys aplinkai draugiškų nemaisto produktų pasirinkimą

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Su vartojimu susiję socialiniai ir ekologiniai aspektai yra plačiai aptariami ir sprendžiami, kadangi darnus vartojimas yra viena iš pagrindinių darnaus vystymosi sąlygų. Aplinkai draugiškų prekių pasirinkimas ir pasiryžimas už jas mokėti yra viena iš galimybių prisidėti prie teigiamų pokyčių vartojimo įpročiuose, mažinant poveikį aplinkai. Nepaisant to, skirtingi veiksniai gali formuoti norą pasirinkti ekologinius ženklų paženklintus produktus. Tyrimas siekia įvertinti pagrindinius veiksnius, lemiančius ekologiniu ženklu paženklintų nemaisto produktų pasirinkimą Lietuvoje. Statistinė tyrimo duomenų analizė rodo, kad skirtingi produktai ir jų aplinkosauginės savybės susilaukia skirtingo dėmesio ir noro juos pasirinkti. Be to, skirtingi veiksniai lėmė atskirų produktų hipotetinį pasirinkimą, nors kaip pagrindinis veiksnys visgi dominuoja pajamos. Reklamos ir draugų įtaka yra ne tokia didelė. Auganti ekonomika ir didėjančios pajamos gali lemti didesnę ekologiniu ženklu paženklintų produktų paklausą, tačiau atsižvelgiant į nustatytus faktorius jau dabar turėtų būti skirtas dėmesys atskiroms vartotojų grupėms, siekiant darnesnio vartojimo.

**Raktiniai žodžiai:** darnus vartojimas, ekoženklų paženklinti produktai, veiksniai, pasirinkimas

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