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## CONSUMERS' BEHAVIOURS RELATED TO PACKAGING AND THEIR ATTITUDES TOWARDS ENVIRONMENT

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**Abstract.** The aim of the research was to establish the relationship between the attitude of consumers towards the environment and their behaviours when choosing food products taking into consideration their packaging. This relationship was established according to gender, age and the educational level of the consumers. Questionnaire study was carried out in 2010 within 548 adults from Warsaw. Participants were asked questions on attitudes towards environment and behaviours related to reduction of packaging waste. Frequency, factor and cluster analysis were used. Significantly more women than men agreed that buying products in larger packages and beverages in glass bottles can reduce the amount of garbage. Over twice more people with positive attitude claimed not buying food in disposable plastic or paper packaging. Negative attitude fostered doing nothing to minimize waste packaging. Attitudes towards the environment have had significant impact on the choice of food packaging. More positive attitudes favoured the reduction of the amount of packaging waste. Thus, environmental campaigns focused on attitudes and environmentally relevant use of food packing are required.

**Key words:** consumer, attitude towards the environment, multi-use packaging

### INTRODUCTION

Food production and consumers' food choices have an essential impact on the environment (Tukker and Jansen, 2006; Lea and Worsley, 2008; Vanhonacker et al., 2013). A significant influence of food packaging

is also observed. On the one hand, food packaging use is combined with ensuring the safety of products during transport and storage and their special functions (e.g. the package intended for the microwave). On the other hand, they constitute post-consumption waste and are becoming a major source of garbage produced in the household. The necessity of packaging waste management is an important issue from the perspective of environmental protection and sustainable consumption.

Plastic packaging of food and plastic shopping bags affect the environment with regard to energy use and greenhouse gas emissions during their production and to their contribution to increase amount of waste. Packaging as a source of waste is also an option for the consumers to reduce their impact on the environment (Jungbluth et al., 2000, Lea and Worsley, 2008; Vanhonacker et al., 2013).

The food itself may contribute to an increase in the amount of waste from households. It is facilitated by making excessive purchases of food or purchasing food products in large packages and by lack of control over food resources which are currently available at home. Numerous projects have examined the willingness of consumers to purchase and consume organic food (Lockie et al. 2004; Shepherd et al., 2005), studies on reducing meat consumption or purchasing local products have also been carried out (Lea and Worsley, 2008). However, there are only a few studies that examine consumer beliefs on other environmentally friendly

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behaviours, including use of food packaging (Tobler et al., 2011). Therefore, we have conducted a study to examine consumer beliefs on environmentally friendly behaviours and their willingness to buy multi-use packaging in order to reduce the amount of waste produced in the households.

The aim of the research was to establish the relationship between the attitude of consumers towards the environment and their behaviours when choosing food products taking into consideration their packaging. This relationship was established according to gender, age and the educational level of the consumers.

## MATERIALS AND METHODS

Empirical research was carried out in 2010 on a group of 548 adult consumers from Warsaw using interviews method with a questionnaire developed by authors. The criterion of participation in the study was the purchase of food at least once a week. The study group included 58.8% women and 41.2% men; 17.5% of people with an education lower than secondary, 41.2% with secondary education and 41.2% with higher education. Persons aged 25 and below accounted for 14.6% of the population, 26–35 years – 24.2%, 36–45 years – 18.2%, 46–55 years – 32.1% and at the age of 55 – 10.9% of the study population. Participants were asked to provide their opinions expressing attitudes towards the environment on a 5-point scale, where 1 – no, 2 – rather no, 3 – neither yes nor no, 4 – rather yes, and 5 – yes. The list of 22 statements (Table 1) has been developed as a result of analysis of literature related to consumer's attitude towards the environment (Tobler et al., 2011; Vanhonnacker et al., 2013).

To assess behaviours relating to reduction of household packaging waste participants were asked to answer the question: "What actions do you take to minimize the amount of packaging waste?". Respondents could answer this question using the following options: 1 – I buy products in large packaging; 2 – I do not buy food in disposable plastic packaging; 3 – I do not buy disposable paper packaging; 4 – I use special containers to store food in the refrigerator; 5 – None of the above.

To assess the multi-use of packaging in households, the following question was asked: "Which of the following packaging suitable for multi-use are collected in your household?" Respondents could mark optional answers from: 1 – paper packages and boxes; 2 – glass

bottles and jars; 3 – aluminium cans; 4 – plastic packaging; 5 – none of the above.

The questionnaire enclosed also questions on a sociodemographic characteristics of the respondents, related to their gender, age and education.

Statements regarding the attitude towards the environment have been presented as mean value and standard deviation. To assess the relationship between the opinions and the sociodemographic characteristics, the values of the V-Cramer coefficient have been used ( $p < 0.05$ ), in which the gender, age and education level of the respondents was taken into consideration.

Factor analysis has been used to choose the variables differentiating the attitudes of the respondents towards the environment. The Kaiser-Mayer-Olkin coefficient (KMO) (0.890) and the Bartlett's test of sphericity ( $\chi^2 = 2663.088$ ;  $df = 465$ ;  $p < 0.001$ ) have been calculated. To distinguish the seven factors, the Varimax rotation method with Kaiser normalization has been applied. Convergence was achieved in 10 iterations.

The relationships between the factors and participants' opinions expressing their attitudes towards the environment have been assessed based on the bilateral correlation coefficient. Only the opinions with the value of the correlation coefficient  $r \geq 0.60$  have been taken into consideration (Table 2).

The factors have been used in the cluster analysis carried out with a k-mean method to separate two homogenous groups (cluster) of respondents based on their attitudes towards the environment. The decision on the number of clusters has been made arbitrarily by the authors. One-way ANOVA with the level of significance  $p < 0.01$  has been used to define the statistically significant differences between the opinions and the belonging to the clusters (Table 2).

IBM SPSS 20.0. has been used in the statistical analysis.

## RESULTS AND DISCUSSION

Table 1 shows the opinions expressing the attitudes towards the environment and the bilateral relationships between these opinions and the sociodemographic characteristics of the study population.

The lowest mean value (lower than 2.25) was noted in the opinions regarding: importance of the country of production, knowledge about the product life cycle, impact of the production process on the environment and

**Table 1.** Respondents' opinions on selected beliefs and behaviours concerning environment protection in accordance to sociodemographic characteristics (mean value; standard deviation; correlation coefficient)  
**Tabela 1.** Opinie respondentów na temat wybranych poglądów i zachowań dotyczących ochrony środowiska z uwzględnieniem cech socjodemograficznych (wartość średnia, odchylenie standardowe, współczynnik korelacji)

Statements Stwierdzenia	Mean; SD Wartość średnia; SD	Respondents' characteristics Cechy respondentów			
		gender płeć	age wiek	education wykształcenie	
1	2	3	4	5	
During purchasing I pay attention to the place of origin of the product Przy zakupie produktu zwracam uwagę, w jakim regionie kraju został on wyprodukowany	2.21*; 1.07	-0.02	<b>0.12**</b>	0.06	
I want to know not only the product characteristics but also the entire product life cycle Chcę wiedzieć nie tylko o cechach użytkowych produktu, ale o całym cyklu życia produktu	2.20; 1.06	0.07	0.02	-0.03	
I collect and dispose waste paper into special containers Zbieram, a następnie wyrzucam makulaturę do specjalnych pojemników	3.16; 1.45	<b>-0.17**</b>	0.09	<b>0.21**</b>	
I wash the dishes in the kitchen sink, not under running water Naczynia zmywam w kąpieli wodnej, a nie pod bieżącą wodą	2.55; 1.46	-0.05	0.03	0.03	
Environment is common wealth, therefore producers should pay penalties for polluting it Środowisko jest dobrem powszechnym, dlatego producenci muszą płacić za jego zanieczyszczanie	4.45; 0.82	-0.09	0.09	0.11	
During purchasing I take into consideration the ecological characteristics of the packaging Przy zakupie produktów żywnościowych biorę pod uwagę ekologiczne cechy opakowania	2.77; 1.14	<b>-0.15**</b>	0.09	<b>0.12**</b>	
I dispose used batteries and car-batteries in special collecting places or containers Zużyte baterie i akumulatory odnoszę do specjalnego punktu skupu lub wyrzucam do specjalnych pojemników	3.04; 1.48	-0.08	<b>0.13**</b>	<b>0.15**</b>	
During shopping I do not use disposable bags but canvas bags or baskets W trakcie zakupów nie korzystam z reklamówek, ale z torby płóciennej lub koszyka	2.07; 1.16	-0.11	0.08	-0.03	
I prefer beverages in glass bottles because of their lower influence on the environment Preferuję napoje w szklanych butelkach ze względu na ich mniejszy wpływ na środowisko	2.99; 1.25	<b>-0.13**</b>	0.05	0.07	
When purchasing toilet paper I pay attention whether it has been made of waste paper Kupując papier toaletowy, zwracam uwagę, czy jest on wykonany z papieru makulaturowego	2.28; 1.11	-0.08	-0.01	0.02	
I turn off the light when leaving the room for a long time Wychodząc na dłużej z pomieszczenia, gaszę światło	4.43; 0.83	-0.09	0.13	0.08	

Table 1 – cont. / Tabela 1 – cd.

	1	2	3	4	5
I buy products in large packaging to minimize waste disposal in my household Kupuję produkty w większych opakowaniach, aby zmniejszyć ilość śmieci w domu		2.98; 1.14	<b>-0.12**</b>	-0.01	0.10
There should be severe penalties for unpermitted waste disposal Za wyrzucanie śmieci w niedozwolonych miejscach powinny być stosowane surowe kary		4.64; 0.72	<b>-0.16**</b>	0.06	<b>0.22**</b>
During purchasing any products I pay attention whether they have "recyclable" written on the packaging Kupując różne produkty, zwracam uwagę, czy są oznakowane „nadające się do recyklingu”		2.59; 1.09	-0.10	-0.01	<b>0.19**</b>
I take into consideration how the food production process influences the environment Biorę pod uwagę, w jaki sposób proces produkcji żywności oddziałuje na środowisko		2.24; 0.94	-0.02	0.05	0.03
Eating excessive amount of meat endangers balance of the environment Spożywanie dużych ilości mięsa zagraża równowadze w środowisku		2.85; 0.92	<b>-0.23**</b>	0.03	0.11
I think about how long the packaging putrefies in the environment Zastanawiam się nad tym, jak długo kupione opakowania będą rozkładać się w środowisku		2.38; 1.13	<b>-0.17**</b>	<b>0.12**</b>	<b>0.18**</b>
After twisting off I squeeze the empty plastic bottle before throwing it away Po odkręceniu nakrętki zgniatać butelkę przed wyrzuceniem		3.73; 1.28	-0.05	-0.02	<b>0.14**</b>
During purchasing I think about the packaging Dokonyując zakupu produktów, zastanawiam się nad tym, w co są one opakowane		2.90; 1.14	-0.06	0.10	0.10
Actions such as "Clean up the World" are a good example of ecological education of young people Akcje „sprzątanie świata” są przykładem odpowiedniej edukacji ekologicznej dla młodzieży		4.47; 0.74	<b>-0.22**</b>	<b>0.14**</b>	<b>0.13**</b>
Excessive use of washing powder and other detergents endangers the environment Proszki do prania i detergenty używane w nadmiernych ilościach są zagrożeniem dla środowiska		4.27; 0.86	-0.01	0.08	<b>0.23**</b>
I select glass, paper and plastic waste Segreguję odpady ze szkła, papieru i tworzyw sztucznych		3.15; 1.40	<b>-0.18**</b>	<b>0.17**</b>	<b>0.16**</b>

\* Mean value calculated in a 5-points scale, where 1 – no, 2 – rather no, 3 – neither yes nor no, 4 – rather yes, 5 – yes.

\*\* Bilateral correlation coefficient,  $p = 0.01$ .

Source: own research.

\* Wartość średnia obliczona na podstawie ocen z 5-punktowej skali, gdzie 1 – nie, 2 – raczej nie, 3 – ani nie ani tak, 4 – raczej tak, 5 – tak.

\*\* Wartość współczynnika korelacji dwustronnej przy  $p = 0.01$ .

Source: own research.

Źródło: badanie własne.

the use of multi-use shopping bags. The participants agreed to the greatest extent with the statements regarding: the environmental pollution caused by excessive use of washing powder and other detergents, the penalties for unpermitted waste disposal and the penalties for producers polluting the environment. The respondents claimed turning off lights when leaving the room for a long time and supporting the “Clean up the World” actions as good examples of ecological education of young people (mean value  $\geq 3.75$ ). The mean value of the opinions in other statements oscillated around “3”, therefore they can be treated as neutral. The results have been confirmed by other researchers (Jungbluth et al., 2000; Tobler et al., 2011).

The sociodemographic characteristics have shown a significant relationships with the declared opinions, but the strength of them was weak. Women more often than men have claimed to: collect waste paper and dispose of it into special containers, buy products in large packaging to minimize waste disposal, sort glass, paper and plastics, prefer beverages in glass bottles and take into consideration the sustainability of packaging when purchasing. Moreover, women more often than men have supported the “Clean up the World” action as a good form of the ecological education of young people as well as the penalties for unpermitted waste disposal. They indicated greater agreement with the statement “I think about how long packaging putrefies in the environment” (Table 1).

The higher education level, the greater compliance with the nine statements has been observed. The greatest agreement concerned the waste paper disposal to designated containers, the penalties for unpermitted waste disposal and the environmental pollution from excessive use of washing powder and other detergents (Table 1).

In the case of age, only four weak but statistically significant correlations have been noted. Elder respondents agreed more with the statements about: paying attention to the country of origin of the product, disposing batteries and car-batteries to designated containers, proper ecological education through organizing “Clean up the World” actions and thought about the time of packaging putrefaction in the environment (Table 1).

The results of factor analysis are presented in Table 2. Seven main factors, explaining 58.1% of the variance, have been isolated. The first one was responsible for 26.2% of the variance, the second – for 10.3%, the

third – 5.5%, the fourth – 4.4%, the fifth – 4.1%, the sixth – 3.8%, and the seventh – 3.8%. The initial value of the factors was 8.1; 2.3; 1.6; 1.4; 1.3; 1.2 and 1.2, respectively.

Based on the opinions representing principal factors, two homogeneous clusters have been distinguished. Profile of those clusters is presented in Table 2. The first cluster consisted of consumers with a more positive attitudes towards the environment, reflected in their opinions and declared behaviours. The mean values regarding all the statements were statistically significant higher than in the second cluster, showing a higher level of conformity with the statements and thus a more positive attitudes towards the environment. The second cluster consisted of people with a more negative attitude towards the environment. The first cluster comprised 50.7% and the second – 49.3% of the study population.

Gender and education level significantly differentiated the respondents assignment to the clusters (Table 3). Women and people with higher education constituted a greater proportion in the first cluster, thus these consumers represented more positive attitudes towards the environment. Results from Samdhal and Robertson's study (1989) confirmed these observations. McCrigh's (2010) research within young consumers has shown the relationship between gender and knowledge about climate change and its influence on consumer behaviour. According to Tjernström and Tietenberg (2008), the sensitivity to climate change rose with the level of education. In the presented research, the age of the respondents did not differentiate the membership in particular clusters, while in the research regarding climate change, age, as well as education level, have been variables significantly differentiating the opinions on environmental issues (Tjernström and Tietenberg, 2008).

Results of this research have confirmed the relevance of the discussion regarding the importance of sociodemographic characteristics in determining consumers' opinions and behaviours (Dagevos, 2005; Ronteltap et al., 2007; Siegrist, 2008; Jeżewska-Zychowicz, 2014). This influence has been noted in the presented research, although rather weak relationships between the sociodemographic characteristics and the attitudes have been demonstrated, while the relationship between the opinions and the behaviours was stronger.

The attitudes towards the environment have significantly differentiated some behaviours connected with minimizing packaging waste. Over twice more people

**Table 2.** Values of factor loadings and clusters characteristics in accordance to respondents' opinions (correlation coefficient; mean value, standard deviation)  
**Tabela 2.** Wartości ładunków czynnikowych (analiza czynnikowa) i skupienia z uwzględnieniem opinii respondentów (współczynnik korelacji, wartość średnia, odchylenie standardowe)

Statements Stwierdzenia	Factor loadings Ładunki czynnikowe										Cluster Skupienia*	
	1	2	3	4	5	6	7	8	9	10	1	2
During purchasing I pay attention to the place of origin of the product Przy zakupie produktu zwracam uwagę, w jakim regionie kraju został wyprodukowany	0.01	0.06	0.12	<b>0.74**</b>	0.06	0.09	0.03	0.03	2.50	1.93	1.11	0.96
I want to know not only the product characteristics but also the entire product life cycle Chcę wiedzieć nie tylko o cechach użytkowych produktu, ale o całym cyklu życia produktu	0.33	0.03	0.07	<b>0.69**</b>	-0.05	0.02	-0.02	-0.02	2.49	1.92	1.12	0.91
I wash the dishes in the kitchen sink, not under running water Naczynia zmywam w kąpieli wodnej, a nie pod bieżącą wodą	0.16	-0.20	0.19	-0.05	-0.09	0.18	<b>0.65**</b>	0.10	2.95	2.09	1.39	1.36
Environment is common wealth, therefore producers should pay penalties for polluting it Środowisko jest dobrem powszechnym, dlatego producenci muszą płacić za jego zanieczyszczanie	0.24	<b>0.70**</b>	-0.04	-0.02	-0.14	0.11	0.10	0.10	4.62	4.29	0.72	0.89
I dispose used batteries and car-batteries in special collecting places or containers Zużyte baterie i akumulatory odnoszę do specjalnego punktu skupu lub wyrzucam do specjalnych pojemników	0.23	0.14	<b>0.70**</b>	-0.01	0.08	0.13	0.14	0.14	4.12	1.93	0.99	0.97
During shopping I do not use disposable bags but canvas bags or baskets W trakcie zakupów nie korzystam z reklamówek, ale z torby płóciennej lub koszyka	0.29	-0.11	0.18	0.08	-0.03	<b>0.70**</b>	0.04	0.04	2.48	1.65	1.22	0.94
When purchasing toilet paper I pay attention whether it has been made of waste paper Kupując papier toaletowy, zwracam uwagę, czy jest on wykonany z papieru makulaturowego	<b>0.69**</b>	0.03	0.16	0.01	-0.08	0.30	0.07	0.07	2.72	1.84	1.16	0.86

Table 2 – cont. / Tabela 2 – cd.

	1	2	3	4	5	6	7	8	9	10
I turn off the light when leaving the room for a long time Wychodząc na dłużej z pomieszczenia, gaszę światło		0.07	0.22	0.12	0.11	0.29	-0.03	<b>0.64**</b>	4.66 0.53	4.18 1.00
I buy products in large packaging to minimize waste disposal in my household Kupuję produkty, w większych opakowaniach, aby zmniejszyć ilość śmieci w domu		<b>0.66**</b>	0.01	0.18	-0.04	-0.01	0.02	0.19	3.46 1.09	2.49 0.97
During purchasing any products I pay attention whether they have “recyclable” written on the packaging Kupując różne produkty, zwracam uwagę, czy są oznakowane „nadające się do recyklingu”		<b>0.60**</b>	0.09	0.26	0.27	0.26	0.11	-0.03	3.12 1.11	2.05 0.76
After twisting off I squeeze the empty plastic bottle before throwing it away Po odkręceniu nakrętki zgniata butelkę przed wyrzuceniem		0.06	0.11	0.28	0.07	<b>0.67**</b>	0.01	0.27	4.26 0.87	3.21 1.41
Actions such as “Clean up the World” are a good example of ecological education of young people Akcje „sprzątanie świata” są przykładem odpowiedniej edukacji ekologicznej dla młodzieży		0.16	<b>0.63**</b>	0.03	0.01	0.19	-0.14	-0.02	4.61 0.74	4.34 0.73
Excessive use of washing powder and other detergents endangers the environment Proszki do prania i detergenty używane w nadmiernych ilościach są zagrożeniem dla środowiska		0.06	<b>0.65**</b>	0.12	0.09	0.19	0.16	0.03	4.53 0.69	4.03 0.94
I select glass, paper and plastic waste Segreguję odpady ze szkła, papieru i tworzyw sztucznych		0.23	0.12	<b>0.78**</b>	0.11	0.06	0.10	0.15	4.19 0.83	2.11 1.02

\* Mean value calculated in a 5-points scale, where 1 – no, 2 – rather no, 3 – neither yes nor no, 4 – rather yes, 5 – yes.

\*\* Correlation coefficient  $r \geq 0.60$ .

Source: own research.

\* Wartość średnia obliczona na podstawie ocen z 5-punktowej skali, gdzie 1 – nie, 2 – raczej nie, 3 – ani nie, ani tak, 4 – raczej tak, 5 – tak.

\*\* Współczynnik korelacji  $r \geq 0.60$ .

Źródło: badanie własne.



**Table 3.** Profile of clusters according to the sociodemographic characteristics and the activity focused on the decrease of packaging waste (%)

**Tabela 3.** Charakterystyka skupień z uwzględnieniem cech socjodemograficznych oraz zachowań ukierunkowanych na ograniczenie odpadów opakowaniowych (%)

		Items Cechy	Total Ogółem	Cluster Skupienie	
				I	II
		1	2	3	4
Gender – Płeć (p < 0.05)	female – kobiety		58.8	57.3	42.7
	male – mężczyźni		41.2	41.6	58.4
Education Wykształcenie (p < 0.05)	lower than secondary education poniżej średniego		17.5	35.4	64.6
	secondary education średnie		41.2	47.7	52.3
	higher education wyższe		41.2	60.4	39.6
Age Wiek (p > 0.05)	25 years old and less – 25 lat i poniżej		14.6	43.6	56.4
	26–35 years old – 26–35 lat		24.2	50.8	49.2
	36–45 years old – 36–45 lat		18.2	44.9	55.1
	46–55 years old – 46–55 lat		32.1	54.0	46.0
	more than 55 years old – powyżej 55 lat		10.9	60.0	40.0
Activity focused on de- crease of packaging waste Podejmowane działania w celu zminimalizowania odpadów opakowaniowych	I buy products in large packaging Kupuję produkty w dużych opakowaniach (p > 0.05)		36.1	41.9	31.6
	I do not buy food in disposable plastic packaging Nie kupuję żywności w jednorazowych opakowaniach z tworzyw sztucznych (p < 0.05)		14.2	20.6	8.3
	I do not buy food in disposable paper packaging Nie kupuję jednorazowych opakowań kartonowych (p < 0.05)		5.1	8.0	2.3
	I use special containers to store food in the refrigerator Używam specjalnych pojemników do przechowywania żywności w lodówce (p < 0.05)		28.7	35.6	22.6
	None of the above – Żadne z powyższych (p < 0.05)		14.6	6.6	21.8

Table 3 – cont. / Tabela 3 – cd.

	1	2	3	4
Collecting and reuse of packaging Zbieranie i powtórne wykorzystanie opakowań	Paper packaging and boxes Opakowania kartonowe, pudełka ( $p < 0.05$ )	34.3	45.3	22.6
	Glass bottles and jars Szkłane butelki i słoiki ( $p < 0.05$ )	69.3	76.6	63.9
	Aluminum cans Puszki aluminiowe ( $p > 0.05$ )	36.9	41.6	32.3
	Plastic packaging Opakowania z tworzyw sztucznych ( $p < 0.05$ )	34.3	40.9	27.8
	None of the above Żadne z powyższych ( $p > 0.05$ )	16.8	13.1	19.5

Source: own research.  
Źródło: badanie własne.

representing a more positive attitude towards the environment have claimed not buying food in disposable plastic or paper packaging. This fact can be explained using results from earlier studies (Tukker and Jansen, 2006; Van Birgelen et al., 2009). Van Dam (1996) indicated that consumers judge environmental friendliness of packaging mainly from the perspective taking into account the material of packaging and its ability to reuse. Furthermore, consumer perception of the environmental friendliness of the packaging material was based on post-consumption waste, while the environmental effects of the production process were ignored. Moreover, significantly more participants with positive attitudes towards environment have declared using special boxes to store food in refrigerators. However, over three times more people with negative attitude towards the environment have informed about not doing anything with regard to minimizing the amount of packaging waste. The attitudes towards the environment did not significantly differentiate the purchase of products in large packaging. This behaviour have been declared by 1/3 of the study population (Table 3). Glass packaging, i.e. bottles and jars, as the packaging collected and reused in private households were indicated by about 70% of

participants, while approximately 1/3 of the respondents mentioned paper boxes, aluminium cans and plastic packaging. Participants with positive attitudes towards the environment were more likely to reuse paper boxes, glass bottles and jars, as well as plastic packaging than respondents with negative attitudes.

Motives of keeping packages and using them again in new purposes may provide important directions for brands, not only from the FMCG sector. Material quality and designs of different types and forms of packages may strongly influence the product image, helping to sustain or create a positive brand image, which possibly would influence the sales quantities and values (Nalewajek and Mącik, 2012).

Reducing waste by avoiding excessive packaging was the largest environmental benefit indicated by Swiss consumers (Tobler et al., 2011); this observation was also supported by other reports (Van Dam, 1996; Lea and Worsley, 2008). Probably, the consumers personally experience the post-consumption effect of the packaging, as they have to dispose of it. Furthermore, such attitude may be the effect of environmental campaigns on waste reduction (Tobler et al., 2011).

Results obtained in other studies indicate that the consumer's willingness to perform ecologically friendly behaviours might be influenced by various motives. Thus, it is important to take into account varied motives when encouraging consumers to adopt relevant behaviours. Although some reports have shown that the argument of saving money does not seem to be promising to persuade consumers to adopt ecological patterns (Tobler et al., 2011), it is suggested to take this issue into account when preparing environmental campaigns. The participants' opinions concerning various ecological issues have pointed to the fundamental significance of economic factors in creating consumer behaviour, i.e. penalties for not complying with the applicable rules.

Past research has indicated that price, taste and health seem to be the most important factors in consumer choices (Scheibehenne et al., 2007; Van Birgelen et al., 2009). Unfortunately, products that are environmentally friendly are usually more expensive than those that are harmful to the environment. Policy changes leading to increase prices of environmentally harmful packaging of products might therefore additionally motivate people to consume them in an ecological manner. Nevertheless, altering consumer attitudes, beliefs and knowledge would probably facilitate the reduction of packaging wastes produced in their households.

## CONCLUSIONS

Our findings suggest that consumers are generally not very aware of various factors that have significant impact on the environment. This may be the consequence of the lack of knowledge on the relationship between the environment and various behavioural patterns related to sustainable consumption, including the use of food packaging. The attitudes towards the environment have had significant impact on the choice of food packaging. More positive attitudes favoured the reduction of the amount of packaging waste. Thus, environmental campaigns focused on the attitudes and the environmentally relevant use of food packing are required.

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## ZACHOWANIA KONSUMENTÓW ZWIĄZANE Z OPAKOWANIAM I ICH POSTAWY WZGLĘDEM ŚRODOWISKA

**Streszczenie.** Celem prezentowanego badania było określenie związku między postawami reprezentowanymi względem środowiska oraz zachowaniami konsumentów uwzględniającymi wybór opakowań, w których znajdują się kupowane przez nich produkty. Określono również zależności między płcią, wiekiem i wykształceniem badanych a postawami względem środowiska i zachowaniami nabywczymi uwzględniającymi wybór opakowania. Wywiady z użyciem autorskiego kwestionariusza przeprowadzono w 2010 roku w grupie 548 mieszkańców Warszawy. Pytania dotyczyły postaw wobec środowiska oraz zachowań związanych z ograniczaniem ilości odpadów opakowaniowych. W analizie statystycznej wykorzystano analizę częstości, czynnikową oraz skupień. Istotnie więcej kobiet niż mężczyzn uważało, że kupowanie produktów w większych opakowaniach oraz napojów w szklanych butelkach pozwala zmniejszyć ilość śmieci. Ponad 2-krotnie więcej osób z pozytywną postawą nie kupowało żywności w jednorazowych opakowaniach. Negatywna postawa sprzyjała niepodejmowaniu działań zmniejszających ilość odpadów opakowaniowych. Postawy względem środowiska istotnie determinowały wybór opakowań, przy czym bardziej pozytywne postawy sprzyjały ograniczeniu ilości odpadów opakowaniowych. Kampanie edukacyjne powinny w większym stopniu uwzględniać postawy względem środowiska oraz korzystanie z opakowań jako istotne elementy ochrony środowiska.

**Słowa kluczowe:** konsument, postawy względem środowiska, opakowania produktów, żywność

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