Pro-ecological Behaviours of Polish Consumers

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Abstract

This study investigates the nature and specificity of pro-ecological behaviours of Polish customers. Pro-environmental behaviours are consciously chosen by consumers in order to minimize the negative impact of their actions on the environment. The numerous factors determine individuals reactions in this area, including objective features (e.g. demographic and social criteria). The study assumes the hypothesis that demographic and social attributes of Polish customers affects their pro-ecological behaviours. This study partially has an overview character. A critical analysis of the literature on the subject of pro-ecological behaviour based on books and journals, reports of research companies, as well as Internet sources is used in the study. Documentary methods are applied, and the results of quantitative research based on survey research methodology are presented. The article consist of five parts. Introduction presents the importance and consequences of pro-ecological behaviours. The essence of pro-ecological behaviours is presented in the first part of body of paper. Then, the research methods and respondents characteristics are presented. The main part of the article shows the results of the survey. Pro-ecological actions taken by Polish consumers are shown (taking into account differences in behaviour due to age and level of education). The article ends with discussion and conclusions.

Keywords: consumer behaviour; ecological awareness; ecology; pro-environmental activity.

1. Introduction

Environmental protection is very important challenge facing contemporary society. Shaping a pro-ecological attitude and a healthy lifestyle among the society is one of the main goals of education for sustainable development (Unece Strategy 2014)[1]. Updating knowledge about pro-ecological attitudes and behavior is important due to the changing market conditions and threat to the natural environment. Individual behaviours contributing to environmental sustainability could consist in actions like limiting energy consumption, avoiding waste, recycling, and environmental activism (Mesmer-Magnus et al., 2012, p.160). Pro-ecological behaviours may be realised public, e.g. taking mass transit, or private, for example using textile, not plastic bags or trying to limit home air conditioning usage. Acting in ways that benefit the ecology and specially environment is generally a personal choice. But a lot of societal structures or urban programmes may support pro-environmental behaviours. The presence of a electricity prosumers projects, a public transportation system or recycling program in the city are important cause for pro-ecological behaviours. The cognition of the pro-environmental behaviour in society and the factors that influence it is important for planning boost programs. Pro-environmental behaviour is the behaviour of individual person that contributes towards environmental preservation. The study assumes the hypothesis that demographic and social attributes of Polish customers affects their pro-ecological behaviours. A critical analysis of the literature on the subject of pro-ecological behaviour based on books and journals, reports of research companies, as well as Internet sources is used in the study. The results of quantitative research based on survey research methodology are presented. Introduction presents the importance and consequences of pro-ecological behaviours. The essence of pro-ecological behaviours is presented in the first part of body of paper. Then, the research methods and respondents characteristics are presented. The main part of the article shows the results of the survey. Pro-ecological actions taken by Polish consumers are shown (taking into account differences in behaviour due to age and level of education). The article ends with discussion and conclusions.

2. Body of paper

2.1 Pro-ecological behaviours and they detrminants – literature review

An attitude is "a relatively enduring organization of beliefs, feelings, and behavioral tendencies towards socially significant objects, groups, events or symbols" (Hogg & Vaughan 2005, p. 150) or "...a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 1) An attitude consists of three components: cognitive, affective and behavioral. These components interact with each other (Lindzey, Aronson 1985). Behavioral component is the way the attitude have influences how the people act or behave. But the cognitive and affective components of behavior do not always match with behavior (LaPiere, 1934).

[1] The concept of sustainable consumption have influenced the development of the Voluntary Simplicity (VS) movement (‘a way of life that is externally simple and intrinsically rich’). This trend is related to food or diet, buying sustainable products, extending the life cycle of products, avoiding waste, recycling and transport (Alexander & Ussher, 2012).

Pro-ecological behaviour are seen as a combination of self-interest and concern for others people, next generations, other living beings or the whole ecosystem (Bamberg & Moser, 2007). Pro-environmental behaviour is a individual effort to reduce the negative impact due to the destruction of nature by improving and preserving the environment. Pro-environmental behaviour is a behaviour that harms the environment as little as possible but at one provides huge benefits to the environment (Steg & Vlek, 2009).

Pro-ecological behaviour are described through several related terms, i.e. pro-environmental behaviours (Kollmuss & Agyeman, 2002), environmentally significant behaviours (Stern, 2000, A), green consumer behavior (Steg & Vlek, 2009), ecological behaviour (Kaiser, 1999), environmentally responsible behaviours (De Young, 2000), environmentally-supportive behaviour (Huddart-Kennedy, 2009), responsible environmental behaviours (Cottrel, 2003), pro-environmental behaviours (Bamberg, 2007). Table 1 contains selected definitions of pro-ecological behaviour.

Table 1: The comparison of terms and definitions of pro-ecological behaviour

Author, year	Term	Definition
Stern, 2000, A	Environmentally significant behaviours	Degree of effect to modify the accessibility of environmental resources or changes the state of the ecosystem; this concept stems from the human willingness to undertake behaviour for the betterment of the environment.
Kollmuss & Agyeman, 2002	Pro-environmental behaviours (PEB)	Behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world
Huddart-Kennedy et. al., 2009	Environmentally-supportive behaviour	Actions that are taken with the intention of benefiting or reducing negative human impacts on the natural environment
Steg & Vlek, 2009	Green consumer behavior	Form of consumption that harms the environment as little as possible, or even benefits the environment (it is a form of pro-environmental behavior)
Mesmer-Magnus et al., 2012	Pro-environmental behaviors	Individual behaviors contributing to environmental sustainability (such as limiting energy consumption, avoiding waste, recycling, and environmental activism); they may be public or private

Source: Own research base on literature

The pro-environmental or „green" consumer behavior is a multidimensional construct (Ertz et al., 2016) which is composed of private and public sphere. First sphere relete to the purchase, use and disposal of personal and household products that have environmental impact (e.g. automobiles, public transportation, recycling). Public-sphere behavior make reference to behavior that affects the environment directly through committed environmental activism (e.g. involvement in environmental organizations and demonstrations) or indirectly by influencing public policies (e.g. petitioning on environmental issues) (Stern, 2000).

Pro-environmental behaviour has six indicators: energy conservation, mobility and transportation, waste avoidance, recycling, consumerism and vicarious behaviours toward conservation (Kaiser & Oerke, 2007) These indicators can be used to explain and measure the pro-environmental behaviour. Another essentializing this indicators presents table 2.

Table 2: Forms of pro-ecological behaviour

Form of pro-ecological behaviour	Examples
Recycling	Waste segregation Taking rubbish to special collection points (e.g. batteries)
Conservation of energy	Saving energy by turning off the light in empty rooms; Saving energy by switching off devices that are not used at the moment
Conservation of water	Saving water during household chores
Transport	Using public transport instead of car
Consumption – Food	Buying organic products Trying to avoid food waste
Consumption –Products	Not using disposable plastic products (e.g. cutlery, plates)
Consumption – Reuse	Using reusable shopping bags

Source: Own study - adapted from:Whitmarsh and O'Neill (2010), Lynn and Longhi (2011), Longhi (2013), De Leeuw et al. (2015), Binder and Blankenberg (2017), Brick et al. (2017), Melo et al. (2018), Schmitt et al. (2018)

Different types of factors that influence pro-environmental behavior exist. This situation generates a variety of theories to explain or predict which variables are especially significant. For example the norm activation model (NAM), describes that there were three variables that affected the process of the occurrence of a behavior. They include personal norms, awareness of consequence and ascription of responsibility (responsibility for negative consequences). One of the related theories is Ajzen's theory of planned behavior (TPB) (Ajzen, 1988). This theory explains that there are three antecedent variables: attitudes toward behavior, subjective norms and perceived behavior control (Greaves et al., 2013). The theory of planned behaviour (TPB) is the one of the widely used in the literature to explain pro-environmental behaviour including recycling, energy consumption, water conservation, travel mode choice, food choice etc. (Stern, 2000). According to the Theory of Planned Behaviour the best prediction of behaviour is given by asking people if they are intending to behave in a certain way. The intention express itself in behaviour providing that it is physically possible to perform the behaviour or if unexpected barriers don't stand in the way. Based on the theory of planned behaviour (TPB), there are several variables used to explain pro-environmental behaviour. The attitude toward behaviour, subjective norm, perception of behavioural control and intention they are. According to the model attitudes, subjective norms and perceived behavioural control predict the intention, which in turn predicts the behaviour (Macovei, 2015).

There are a few factors that affect an individual and his positive or negative in pro-environmental behaviour (Bamberg & Moser, 2007). Very important are demographic factors (gender, age, education) and external factors like social, economic, cultural, institutional. But also significant factors are motivation, awareness, values, attitudes, emotions, environmental knowledge, responsibility and priority (Kollmuss & Agyeman, 2002). The demographical factors are supposed to influence the behaviour through the three determinants and the intention. Attitudes, subjective norms and the perceived behavioural are that determinants. They control and explain the behavioural intention before the behaviour takes place for real. The actual behaviour leads to feedback about the expectations of the behaviour. Personal values are key to creating attitudes towards the ecology and environment but they not always provoke the pro-ecological reaction. There is need an intervention strategy that aims to support and removal of barriers to pro-ecology behaviour (Mtutu & Thondhlana, 2016).

Consumer pro-ecological behaviours are affected as these factors change (Jones & Dunlap, 1992). The age becomes one of the fundamental demographic factors affecting consumer behavior and buying decisions, also these pro-ecological. As people grow, their needs, knowledge and environmental sensitivity change. While some have concluded that older people are more concerned in the environment than younger ones [Shen & Saijo, 2008], others have found that younger people demonstrate a greater sense of obligation to the environment [Cottrell, 2003]. Jones and Dunlap (1992) concluded that age was the strongest determinant of environmental concern. Especially young adults is the most interested group. The relationship between age and environmental behavior could depend on the specific individual's situaton.

Differences between male and female's attitudes and lifestyle also affect their buying choices and pro-ecological behaviours. Generally speaking, women demonstrate greater concern for the environment (Bronfman et al., 2015). Hunter et al. (2004) concluded that compared to men, women are more committed to pro-environmental behaviors such as recycling, buying organic products and reducing automobile usage. The fact is that sustainable consumption is, for men, a way to reinforce their social image, showing to others that they care about environment, instead for women is intrinsically important. The evidence is that green consumers are mainly female, aged between 30 and 44 years old, well educated, in a household with a high annual income (Pinto et al., 2014).

Education affects how people view reality around them. The positive relationship between education level and environmental awareness has been widely recorded in literature (Cottrell, 2003). More educated people tend to be more concerned for the environment and more willing to adhere to pro-environmental behaviors (Shen & Saijo, 2008). People’s preferences can change with education. It affects the level of ecological sensitivity while making purchases. The more educated a person is, the higher the level of pro-ecologial attitude he will employ in making purchases.

2.2 Research method and sample characteristics

Identifying the relationship between pro-ecological behavior and demographic and social features is the aim of the article. More specifically, whether gender, age and education have an impact on pro-eological actions. A research tool was the inquiry form (questionnaire subjected to validation – Chi-squared test value). The impact of the demographic factors on pro-ecological behaviours was determined with the help of correlation coefficients.

The study was conducted online (method CAWI). It had a regional dimension (it covered the Silesian Voivodeship) and it was performed in January 2019. There were 531 respondents who participated in the survey. Non-random, quota sample selection was applied. The share of people in the sample was determined in such a way that it was proportional to their actual share in the total population in Silesian Voivodeship by sex. The sample's characteristics are reported in table 1.

Table 1. Characteristics of respondents

Criterion	Frequency	Percent
Sex		
Women	285	53,7
Man	246	46,3
Total	531	100.0
Age		
Under 18	27	5,1
18-25	139	26,2
26-35	86	16,2
36-45	123	23,2
46-55	92	17,3
56-65	38	7,2
66 and older	26	4,8
Total	531	100.0
Education		
Lowersecondary education	23	4,3
Vocational education	6	1,1
Secondary education	133	25,1
Higher education	369	69,5
Total	531	100.0

Source: Own research

2.3 Results of research

Respondents were asked about pro-ecological actions that they are currently undertaking or intend to take in the future. Analysing the answers, the general conclusion was that respondents relatively often undertake particular pro-ecological activities. The largest group of respondents - 86.1% - saving energy by turning off the light in empty rooms and another 6.0% intend to do so in the future (figure 1). A little less respondents - 80.0% - saving water during household chores, while 7.9% of respondents declared that they will do it in the future. Over 70% of respondents also declare undertaking other pro-ecological activities such as: waste segregation (77.8%), using reusable shopping bags (77.5%), trying to avoid food waste (70.3%). The smallest group of respondents buying organic products (34.3%) and using public transport instead of car (42.6%).

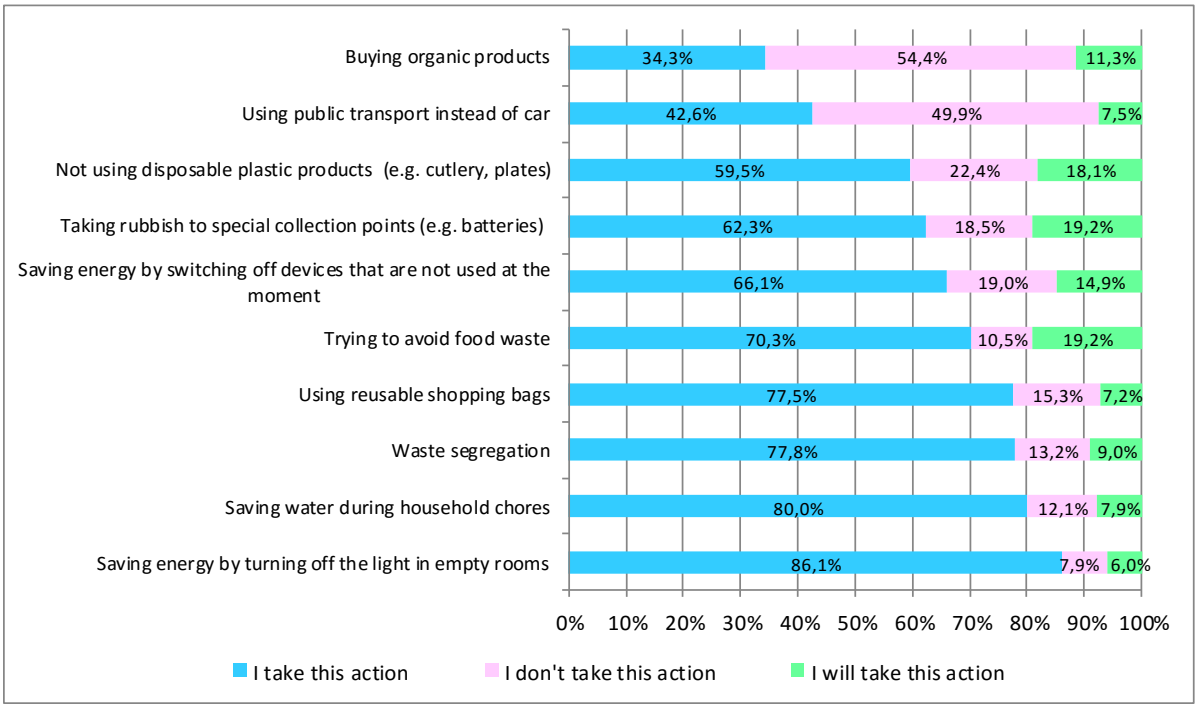


Figure 1. Pro-ecological activities undertaken by respondents in total sample surveyed (N= 531)
Source: Own research

Pro-ecological activities undertaken by the majority of respondents have a diverse nature. However, activities that allow them to save money prevail.

Considering sex of respondents, women are more active than males in the sphere of pro-ecological activities. Women statistically more often than men take pro-ecological actions, considering all studies forms of actions (figure 2). Women significantly more often than men using reusable shopping bags, trying to avoid food waste, not using disposable plastic products and buying organic products.

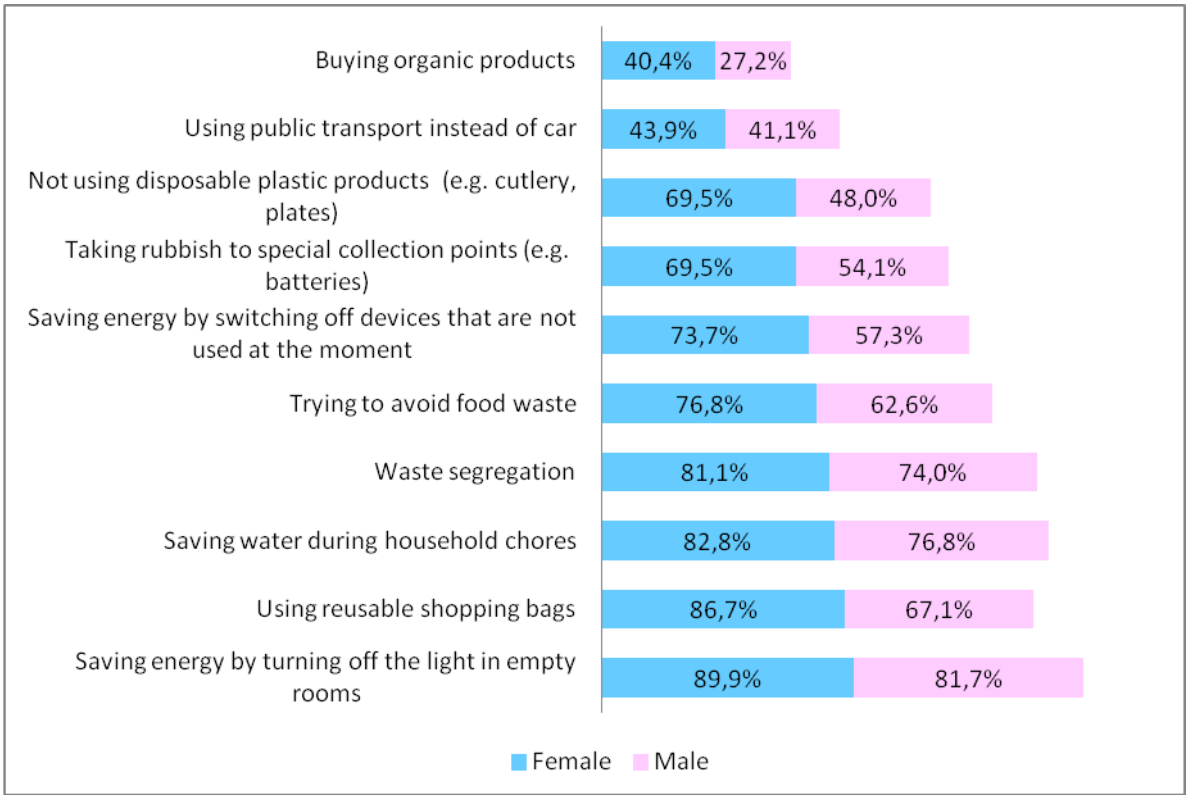


Figure 2. Pro-ecological activities undertaken by respondents – by sex
(Only respondents who undertake particular pro-ecological actions in the analysis were included)
Source: Own research

The smallest difference in pro-ecological behavior between women and men concerns using public transport instead of car.

Differences can be observed in the behavior of consumers considering their age while these differences are not statistically significant. Pro-ecological activities are more often undertaken by respondents aged 36-45 and 66+ (figure 3). In turn, the youngest (i.e. under 18 years old and at the age of 18-25) are the least frequent pro-ecological activities among all respondents. It is worth to add that respondents 66+ more often than other respondents undertake pro-ecological activities that allow them to save money.

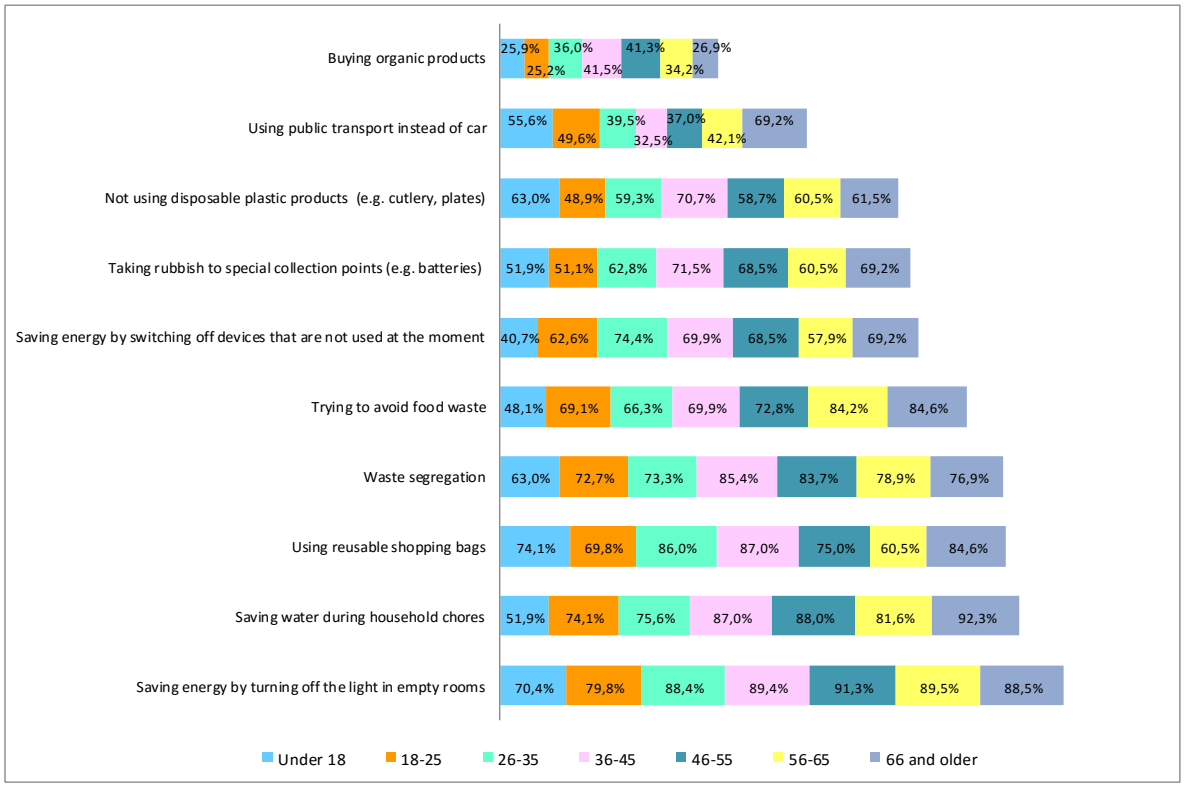
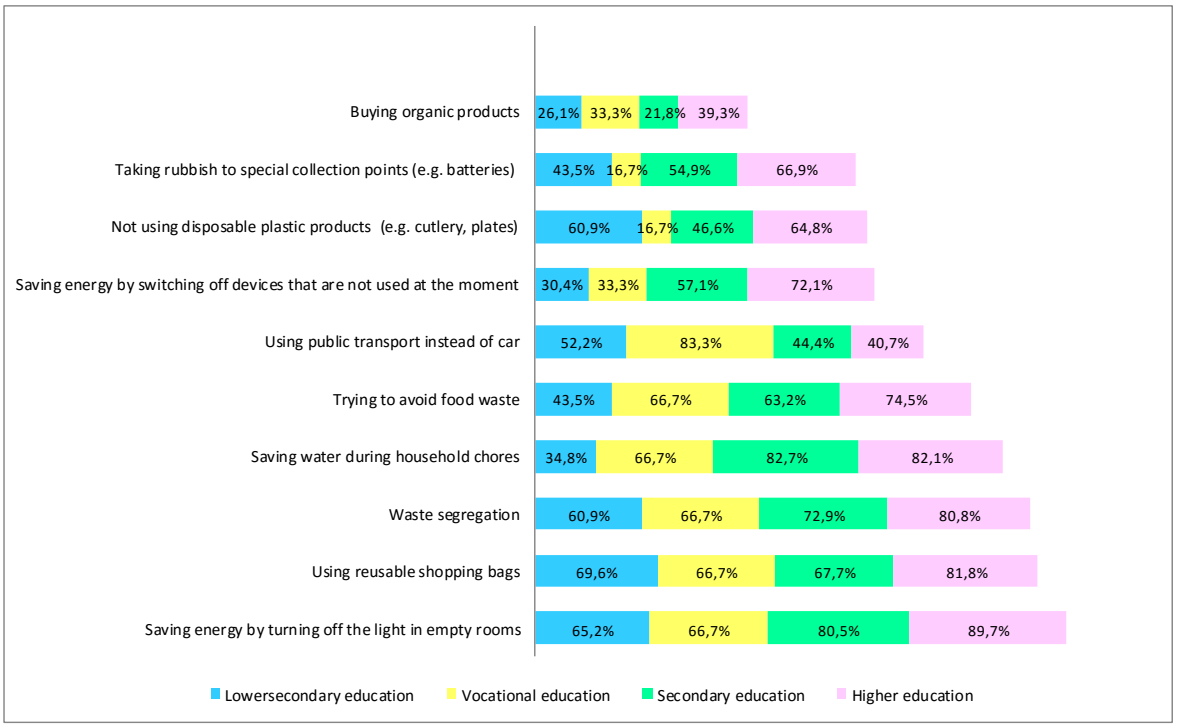


Figure 3. Pro-ecological activities undertaken by respondents – by age
(Only respondents who undertake particular pro-ecological actions in the analysis were included)
Source: Own research

What's interesting, people aged 36-45, despite the largest pro-ecological activity, using public transport instead of car least often among all respondents. This may probably be the result of their greatest professional activity, and thus the need for high mobility and independence from public transport.

The level of education has statistically the most significant impact on the pro-ecological activity of respondents. These types of activities are most often undertaken by respondents with higher education and least often by respondents with lowersecondary education (figure 4). This may probably be the result of a greater awareness of respondents with higher education of the environmental problems.

Respondents with higher education significantly more often than other respondents saving energy by switching off devices that are not used at the moment, taking rubbish to special collection points, using reusable shopping bags and trying to avoid food waste. In turn, people with vocational education significantly less often than other respondents taking rubbish to special collection points and not using disposable plastic products.



(Only respondents who undertake particular pro-ecological actions in the analysis were included)
Source: Own research

What's interesting, people with higher education least often among the respondents using public transport instead of car. This is probably the result of their greater work-related mobility ((similar to age criterion). In turn, respondents with vocational education most often among all respondents using public transport instead of car.

The result of the Chi-squared test shows that there is a statstically significant association between pro-ecological behaviours of Polish consumers and their analized demographic factors (table 3). The strongest relation is in case of their level of education. In 7 of 10 variables the statistical significance level was lower than 0,0005 and the values of Chi-squared test were between 47,073 (saving energy) and 24,279 (taking rubish to special colection points). Only in case of using public transport instead of a car, differences between people representing various levels of education were independent. This variable was also independent of gender and age.

Table 3. Results of Chi squared test analisys

pro-ecological behaviours	Gender		Age		Education level	
	Chi-squared test value	Statistical significance	Chi-squared test value	Statistical significance	Chi-squared test value	Statistical significance
Buying organic products	16,312	0	19,739	0,072	16,635	0,011
Using reusable shopping bags	38,77	0	24	0,02	19,435	0,003
Not using disposable plastic products (e.g. cutlery, plates)	25,695	0	21,612	0,042	30,933	0
Saving water during household chores	7,9	0,019	42,361	0	41,093	0
Saving energy by switching off devices that are not used at the moment	18,129	0	23,306	0,025	47,073	0
Saving energy by turning off the light in empty rooms	9,904	0,007	22,838	0,029	40,837	0
Waste segregation	3,817	0,148	18,404	0,104	30,236	0
Taking rubbish to special collection points (e.g. batteries)	13,363	0,001	38,144	0	24,279	0
Trying to avoid food waste	13,447	0,001	19,649	0,074	26,672	0
Using public transport instead of car	2,291	0,318	23,11	0,27	7,831	0,251

Source*: Own work*

The second strongest relations are between pro-ecological behaviours and gender of consumers. The highest value of Chi-squard test (25,695) we can observe in case of using disposable plastic products. Here we can find also second independent variable, which is waste segregation. The least important demographic factor is age. The strongest relation we can observe between age and saving water during the households chores (Chi-squared test value is 42,361). Instead of using public transportation, there are three independent variables. Those are trying to avoid food waste, waste segregation and buying organic products.

2.3 Discussion and limittions

Pro-ecological consumer behavior is increasingly a research subject undertaken by scientists and research agencies also in Poland. Knowledge of these behaviors is very important, so that the government and other organizations can take more active steps to improve the state of the environment. One of them is consumer education and creating eco-friendly attitudes.

The nationwide survey conducted in 2019 by the Coca-Cola Foundation and the Our Earth Foundation entitled "Are Poles eco?" (an online survey on a sample of 14613 respondents) showed that the majority of respondents undertake pro-ecological actions (https://swiatbezodpadow.pl/czy-polacy-sa-eko-zobacz-wyniki-naszej-ankiety, 2019). The most common form of these activities is reducing water consumption (82% of answers). The second most frequently indicated form of pro-ecological actions is the use of reusable

shopping bags (77%), and the third segregation of garbage (70%). These results largely coincide with the overall results of the Authors' research although they had a regional dimension.

The overall results of another survey, i.e. entitled 'Poles and ecology' conducted in 2019 at the request of Gumtree Poland (CAWI method on a sample of 1036 Poles aged 18-65) were similar (https://blog.gumtree.pl/polacy-zyja-ekologicznie-jesli-stac/, 2019). They also proved that almost 90% of Poles would like to be more *eco*-friendly, but finances are an obstacle (about 60% of answers). The financial factors were also indicated by the ARC Market and Opinion survey results (from 2019) regarding the purchase of organic food and cosmetics (https://arc.com.pl/-Nie-ekologiczne-zakupy-Polakow-blog-pol-1568893745.html, 2019). These results suggests that future studies should consider consumer income because they are an important determinant of pro-ecological behavior.

Another factor that would be worth considering in future research is the level of consumers' knowledge about various pro-ecological activities. According to the Gumtree Poland study, most Polish consumers don't understand the more complex aspects of ecology. For example they don't know what sustainable agriculture is or what the zero waste philosophy is; what is the impact of hybrid cars on the environment; what climate change is about. This means that the level of Polish consumer knowledge on many ecological aspects is rather low. This can have a significant impact on their resignation from some pro-ecological activities. Therefore, it would be worth recognizing consumers' knowledge of particular aspects of ecology. This would allow for more effective consumer education.

The another limitation of this study is the lack of consideration of place of residence (and more specifically city size) as a factor that determines the pro-ecological behavior of consumers. According to the results of the above-mentioned studies, the place of residence may also affect the undertaking of particular pro-ecological activities.

The regional dimension of the researches is a limitation for the results. The study also includes only three basic determinants of pro-ecological behavior. Due to the initial stage of research, other determinants (i.e. consumer income, place of residence) and complex forms of pro-ecological behavior were not taken into account (Stern et al., 1993; Whitmarsh and O'Neill, 2010); Dono et al., 2010; Hornsey et al.; 2016; Hartmann et al.; 2017). Identifying the implementation of such activities is an important direction for future researches. For example:

- Political behavior (e.g. signing of (online) petitions, write to politicians about an environmental issue, support and/or voting for proenvironmental candidates),
- Environmental citizen behavior (e.g. talk to children about how food is grown, discuss environmental topics, either in person or with online posts - Facebook, Twitter, etc.),
- Long term PEB decisions (e.g. installed a more e- cient heating system, bought/built an energyecient home),
- Intention – willingness to-pay (e.g. willing to pay much higher taxes in order to protect the environment, willing to pay much higher prices in order to protect the environment)

3. Conclusion

Individuals can contribute strongly to achieving long-term environmental sustainability by accept and by the use of pro-environmentalbehaviour patterns. Pro-ecological consumer behaviours has these components: purchase and use of products with lower environmental impacts, such as biodegradable products, recycled or reduced packaging, and low energy usage. The understanding the cognitive, motivational and structural factorsand processes that threaten environmental sustainability is of central importance. The knowledge of pro-environmental behaviours and they determinants is very important. Shaped attitudes influence environmental behavior, including purchasing decisions.

The results of the study have shown that there is a statistically significant association between pro-ecological behaviors of Polish consumers and analized demographic factors. The strongest relation occurs in case of level of respondents‘ education. Pro-ecological activities are most often undertaken by respondents with higher education. Also, women statistically more often than men take pro-ecological actions. In turn, age has the least impact on ecological activities of respondents. The surveyed consumers saving energy, segregating garbage, reducing waste most often. They are also increasingly looking for healthy food grown organically.

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