

The expression of ecological awareness in the consumption behavior of older adolescents

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Abstract. Ecological friendliness and ecological consumption are closely linked to an ecological awareness. Ecological consumption is often seen as ethical, sustainable, and responsible consumption, which is linked to environmental preservation, consumer awareness and responsibility, and consumption reduction. A similar view is expressed by various authors, who link green consumption to consumer behavioral factors, i.e., the consumer's willingness to purchase and consume green products, the ecological benefits of green consumption and ecological concerns. There is a tendency in the scientific literature that there is no consensus on the relationship between attitudes and behavior, and that ecologically aware consumers' positive attitudes towards ecology may not always be attributable to their intention to purchase or their purchasing behavior. The analysis presented in this paper suggests that the attitudes of the ecologically aware are shaped by personal and functional factors, while the attitudes of ecologically aware older adolescents have an impact on purchase intention, which may have a direct influence on consumption behavior.

1 Introduction

Modern society, assessing the ecological threats facing it and influencing the future of our planet, sets itself the task of improving the processes of interaction between humanity and nature, educating the younger generation in the direction of conservation and preservation of nature and its resources, increasing nature conservation, natural science and health literacy, and changing human behavior. Current ecological crisis, including global climate change, is caused by a dysfunctional relationship between man and non-human nature. This is the worldview of the state, industry, based on a pair of false imperatives harmful to the environment and human health: endless economic growth and human domination of nature [1-2].

The implementation of ecological education in childhood is associated with the strengthening of the child's health, the realization of a healthy lifestyle and the education of the child's health, forming health-friendly ecological attitudes and ecological behavior. In order to achieve ecological awareness, it is necessary to change people's attitudes and behavior towards nature and the environment gradually - purposefully form them already in the preschool education process [3]. A child's knowledge of the world begins with the immediate environment - family, self-awareness, kindergarten, observing nature [4]. According to Onel [5] the experience of observing, exploring, caring for and managing nature acquired by preschool children in childhood will motivate adults' respectful interaction with nature when they grow up.

Ecological education in schools is perceived as an integral component of natural science education [6]. Ecological education is a long process, not only the education of values, but the determination to act and the actions themselves [7]. The goal of ecological education is to foster the ecological ethics and culture of the students, because ecological education is the protection of nature and people, learning to live in a natural and cultural environment as a whole. Ecologically educated person is mature person who has knowledge, skills, and values of ecology and technology, who is able to independently choose the appropriate behavior strategy, predict the effects of their activities on the environment, and who has healthy lifestyle habits. Ecological education has become a way of life, a long-term strategy [8]. In order to achieve ecological awareness, human attitudes, behavior towards nature and the environment, it is necessary to change gradually - purposefully start forming them already in the pre-school education process [9]. Therefore, education is the most suitable basis for the formation of the ecological culture of modern society at the current stage of development [10]. When analyzing the ecological crisis, it is understood that ethical, psychological and cultural problems are more important than the technological problem of progress. It is important to realize that the creation of a new way of life and usage should be based on a new approach to human, his/her behavior and the environment.

In a narrow sense, the environment can be understood as a space where people constantly live, work and rest, in a broad sense - as the sphere of human

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existence, which consists of nature, society, and anthropogenic objects. The environment is the external elements with which a specific organism directly or indirectly interacts. The term environment is understood not only as a set of components of the biosphere, which ensures the biological existence of life on Earth, but also as a spatial complex of the territory, consisting of natural nature and its construction - the results of anthropogenic activity [1].

Ecological environment in the broadest sense is a harmonious way of life of a global citizen in a healthy environment and taking care to pass on the gifts of the environment as a legacy to the next generation. When the environment provides more health, joy, less care and negative emotions. The use of a questionnaire in the study is an effective way to assess the views and awareness of older adolescents on environmental awareness [11-14]. The goal of this article is to explore how ecological awareness is reflected in consumption behavior. The novelty of this article is that the concept of ecological awareness is a relatively new phenomenon in the context of consumption.

1.1 Ecological relation in society

Sustainable development is a long-term development path of society, states and the world, which is based on: economic, social development and environmental protection. 25 years ago, the first step was taken to establish sustainable development around the world. Declaration adopted in Rio de Janeiro, followed by the adoption of the international Johannesburg implementation plan Rio+20, the agreements of states to achieve a more harmonious world were established. encourages to constantly remember and implement the principles of sustainable development [15]. Researchers in the field of education distinguish the childhood age as special, because in this receptive period of human development in childhood, character traits that determine a quality human life are developed, life behavior models that a person follows throughout his life [16]. We mistakenly think that values can be cultural, social, religious, personal, that they are created only by humans - it is impossible not to see the values of nature [17]. Today, the United States, with the help of scientific research, innovations, provides the world with knowledge and information on how to organize the planet's local and global processes harmoniously, provide well-being for humanity, the biotic and abiotic environment, and leave an ecological niche, a sense of natural nature, for future generations. The Anthropocene movement and the grasping of its concept as a whole opens up avenues for the development of thought where non-human temporality can determine the present by creating different connections – even if those connections are not relevant [18].

Environmentalist Barry Commoner [19] studied natural cycles and proposed four ecological laws related to the relationship between ecology:

1. Everything is related to someone. Our planet is made up of eco-systems, networks consisting of a

multitude of interrelationships between organisms. Every ecosystem has living and non-living components. The non-living component includes factors such as sun, wind, heat, rain, chemicals. Living things are divided into food producers (plants) and food consumers. Food consumers are divided into macroconsumers (animals) and microconsumers (bacteria and fungi). Natural ecosystems are so complex that people usually do not see or understand the relationships that exist. This describes the complexity of ecosystems and the emerging problems for human health and the environment. Marine plankton affect cloud formation by exhaling chemicals. Carbon dioxide, together with other greenhouse gases, forms a "shroud" that traps all energy at the earth's surface, thus causing global warming. The greenhouse effect is one of the greatest environmental hazards identified. A rise in average temperature of a few degrees turns fertile fields into deserts, and swamps - breadbasket, rising sea levels may flood cities and some islands. The key is to begin to see ecosystems as a whole, taking into account the ability of different types of ecosystems to connect and the impact of our personal and communal lifestyles on each one.

2. Nothing goes anywhere. We need to ask ourselves where our waste ends up and what impact it has on our environment.

3. Nature knows best. There is no waste in nature, the waste of one organism serves another. When a person interferes with these cycles, problems arise.

4. There is no such thing as a free lunch. Every technological achievement leads to ecological losses. We must start with ourselves, ask if it is worth it.

Based on natural science education, children are instilled with values that direct them to solve the problems of everyday life, develop self-confidence, feel responsibility and be able to adapt to a changing environment [20].

1.2 Ecological awareness

Ecological awareness is determined by the motivation to be interested in various aspects of the environment, to accumulate knowledge about it and to acquire the abilities to actually contribute to its preservation personally, professionally and in one's community [9]. The value of a modern man should always be linked to his attitude towards nature. Nature itself is not only a source of material goods, but also helps to develop and ennoble human feelings, ethics and aesthetics [21].

Public ecological awareness affects different spheres of public life; therefore three target groups are distinguished in the field of public information and education:

1. the general public, which is usually a passive receiver of information;

2. specialists in various fields who are motivated to actively search for environmental information in order to make optimal decisions in their professional activities;

3. politicians and active citizens for whom it is important to argue their proposals when considering and making decisions [21].

Environmental issues are becoming an increasingly important part of professional activity and public awareness. There are more and more opportunities to act towards sustainable development in personal and private life. At this environmental level, the need for information about changes in the environment and ecosystems arises both locally and globally. There is an awareness that positive decisions regarding the environment are interrelated when making decisions in personal life, at work and participating in politics. Ecological awareness is inseparable part of society because it is associated with responsible environmental behavior [22]. Therefore, ecological relation in sustainable development aspect includes ecological - environmental relations, the human relationship with nature based on ecological principles is formed. Society finally understand that they are responsible for preserving nature.

2 Methodology

In conducting a theoretical analysis of the effect of the attitude of ecologically aware older adolescents on the intention to buy behavior, the methods of comparative analysis and systematization of scientific literature were used. In order to determine the effect of the attitude of ecologically conscious older adolescents on the intention to purchase behavior, a quantitative method is applied in the course of an empirical study - a questionnaire survey, during which the results obtained are processed, systematized and summarized in the analysis with the statistical program "SPSS Statistics 23.0". Descriptive statistics, factor analysis is used, and correlation and linear and multiple regression analysis methods are used to determine the relationships between more detailed variables.

Research Objectives

1. Older adolescents' ecological awareness in consumption behavior.
2. The factors affecting the ecological awareness in consumption behavior.
3. The impact of the factors on ecological awareness in consumption behavior of older adolescents.

Hypothesis of the research

H1- Personal factors that contribute to ecological awareness have a positive impact on adolescents' attitudes.

H2 - Functional factors that contribute to ecological awareness have a positive impact on adolescents' attitudes.

H3 - The attitudes of older adolescents have a positive impact on purchase intentions.

H4 - The attitudes of older adolescents have a positive impact on sustainable purchasing behavior.

3 Data analysis and results

The Cronbach Alpha measures the reliability and consistency of a Likert scale of the questionnaire. Table 1 illustrates the reliability statistics of the factors affecting the ecological awareness of older adolescents.

The Cronbach's Alpha is 0.925 which indicates that the questions or factors are 92.5% reliable. This shows that the data are reliable and can be used.

Table 1. Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,925	,923	26

The survey method was chosen as the most widely used research method, which is more structured compared to the qualitative research method and has stricter sample calculation requirements that can ensure more accurate results. In the survey has participated 418 respondents – older adolescents. Based on Paniotto formula in order to obtain reliable data, the confidence level is set at 95% and the margin of error is 5%. Based on the formula, the resulting sample size is 384 respondents. With a larger margin of error (6%), the sample size is reduced to 267 respondents. After the collection of data from the questionnaires, the data are run into a Statistical software.

Table 2. Kayser-Mayer-Olkin (KMO) determination of the sampling adequacy measure

Block of questions	Kayser-Mayer-Olkin (KMO) measure of sample adequacy
Personal factors	0,920
Ecological concerns	0,724
Ecological awareness	0,874
Social norms	0,718
Personality traits	0,651
Personal values	0,682
Personal norms	0,682
Functional factors	0,849
Influence of the social group	0,559
Price of organic products	0,693
Packaging of organic products	0,646
Ecological knowledge	0,724

Based on the questionnaire and the data, we see that the highest measure of KMO sample adequacy is found for personal factors - 0.920. In this group of factors, the KMO for all variables is above 0.5, although the KMOs for personality traits and personal values are relatively low compared to the adequacy measures for the other variables. The KMO adequacy measure for the functional factors in the sample is 0.849, which is likely to be slightly reduced by the low KMO for the price of organic products. However, it can be argued that these data are suitable for further analysis as the overall KMO sample adequacy measure is above 0.5.

Table 3. Multiple regression

Independent variable	Dependent variable	R2	ANOVA		Standardized coefficients	p
			F	P		
Personal factors	Attitudes of ecological awareness	0,275	68,542	0,000	0,156	0,043
Functional factors					0,392	0,000

A multiple regression was carried out between the personal and functional factors formed in the factor analysis and the attitudes of ecological awareness.

Statistically significant relationships were found both between the personal factors and the ecological awareness and between the functional factors and the attitudes of ecological awareness. It is important to note that the beta coefficient for personal factors is 0.156 and the p-value is 0.043, $p < 0.05$, for which reason it was decided to consider the influence of personal factors on the dependent variable ecological awareness attitudes as statistically significant. The effect of functional factors on the attitude of ecological awareness is significant (beta coefficient - 0.392) and statistically significant. Both the correlation analysis and the regression analysis show that the effect of functional factors on the attitudes of ecological awareness is significantly stronger than that of personal factors. Personal and functional factors together explain 27.5% ($R^2 = 0.275$) of the variance in the attitudes of ecological awareness.

Table 4. Correlation coefficient

Variables	Indicators	Personal factors	Functional factors	Attitudes towards ecological consumption	Intention to buy ecological products	Consumption behavior for organic products
Attitudes towards ecological consumption	Spearman correlation coefficient	0,477	0,524	1,000	0,429	0,344
	p	0,000	0,000	-	0,000	0,000
Intention to buy ecological products	Spearman correlation coefficient			0,479	1,000	0,622
	p			0,000	-	0,000
Consumption behavior for organic products	Spearman correlation coefficient			0,374	0,622	1,000
	p			0,000	0,000	-

Table 3 shows the correlations between ecological awareness and consumption behavior. The correlation between personal factors and the attitudes of ecological awareness among older adolescents was found to be statistically significant, positive, and of moderate strength (Spearman's correlation coefficient of 0.477). It can be concluded that personal factors (ecological concerns, ecological awareness, personal norms) have a significant influence on the ecological awareness of older adolescents' preference to buy organic food. Nevertheless, it is important to note that functional factors have a greater influence on the attitudes of ecological awareness among older adolescents than personal factors. The Spearman correlation coefficient of the functional factors is 0.524, suggesting that the prevalence of factors such as the price of organic products, the packaging of organic products, the influence of organic knowledge or the influence of the social group is responsible for the attitude of the ecologically aware older adolescents. The correlation analysis showed that the attitudes of ecological aware older adolescents towards organic products are determined by functional factors. Respondents' attitudes towards organic products, personal values, ecological concerns, personal norms do not determine positive consumer attitudes, as organic knowledge, the price of organic products and other functional factors are more relevant aspects when choosing organic products.

The correlation analysis between the attitudes of ecologically aware older adolescents, intention to buy and purchase behavior shows that all the relationships between the variables are statistically significant and

positive, only the strength of the relationship differs. The effect of the attitudes of ecologically aware older adolescents on purchase behavior is rather weak (Spearman's correlation coefficient of 0.374). It can be argued that the attitude of ecologically aware older adolescents is not a key and determining factor in explaining the consumption behavior of organic food. It is possible for ecologically aware older adolescents to have positive attitudes towards organic food products, but not to purchase and consume them. Attitudes of ecologically aware older adolescents have a stronger effect on intention to buy, but the relationship remains weak, as the Spearman correlation coefficient is 0.479. It can be assumed that a positive attitude of ecologically aware older adolescents is conducive to the intention to buy organic food. The results showed that the consumption behavior of ecologically aware older adolescents is most strongly influenced by purchase intention (Spearman correlation coefficient 0.622). There is a statistically significant, positive, moderate relationship between intention to buy and purchase behavior, indicating that the decision or intention to buy organic food is a factor in the consumption behavior of ecologically aware older adolescents.

Table 5. Linear regression analysis

Independent variable	Dependent variable	R2	ANOVA		Standardized coefficients Beta	p
			F	P		
Attitudes of ecologically aware older adolescents	Intend to purchase	0,23	83,745	0,000	0,400	0,000
Attitudes of ecologically aware older adolescents	Consumption behavior	0,069	31,649	0,000	0,244	0,000
Intention to purchase	Consumption behavior	0,793	323,517	0,000	0,548	0,000

The linear regression analysis showed a statistically significant relationship between all the variables analyzed, $p < 0.05$. Intention to buy was found to explain as much as 79.3% ($R^2 = 0.793$) of the variance in consumption behavior, while the attitudes of ecologically aware older adolescents explained only 6.9% ($R^2 = 0.069$) of the variance. It can be argued that intention to buy organic food has a greater impact on consumption behavior. The ecologically aware older adolescents have a greater effect on purchase intention and explain 23% ($R^2 = 0.23$) of the variance in purchase intention.

The consumption behavior of ecologically aware older adolescents is influenced by the intention to buy organic food (beta coefficient - 0.548). The effect of purchase intention on consumption behavior is significantly stronger than that of the attitude of ecologically aware conscious older adolescents (beta coefficient - 0.244). However, the attitudes of ecologically aware older adolescents have an impact on purchase intention and can be said to shape the need for purchase intention (beta coefficient - 0.400). The linear regression showed that the attitudes of ecologically aware older adolescents are shaped by functional factors, the attitudes of ecologically aware older adolescents influence the intention to buy, and the intention to

consume determines the consumption behavior of ecologically aware older adolescents.

Summarizing the results of the linear regression, the personal and functional determinants of organic consumption have a statistically significant effect on the attitudes of ecologically aware older adolescents. The attitudes of ecologically aware older adolescents also have a statistically significant effect on the intention to purchase organic products and on the consumption behavior of organic products. Multivariate linear regression analysis showed that the effect of personal factors on the attitudes of ecologically aware older adolescents towards organic food is statistically significant but is not a significant determinant of the attitudes of ecologically aware older adolescents. Functional factors also have a statistically significant effect on the attitudes of ecologically aware older adolescents, and it is worth noting that the effect of these factors on the attitudes of older adolescents is stronger than that of personal factors. The personal and functional determinants of organic consumption have a statistically significant effect on the attitudes of ecologically conscious adolescents and the attitudes of ecologically aware consumers have a statistically significant effect on the intention to buy organic products and on the purchasing behavior of organic products. The analysis shows that the effect of personal factors on the attitude of ecologically conscious adolescents towards food products bearing the EU Ecolabel is statistically significant, but is not a significant determinant of the attitude of ecologically aware adolescents. Functional factors also have a statistically significant effect on the attitudes of ecologically conscious adolescents, it is worth noting that the effect of these factors on consumer attitudes is stronger than that of personal factors. Further summarizing the impact of the attitude of environmentally conscious consumers on purchase intention and purchase behavior, it can be argued that the attitude of environmentally conscious consumers has a stronger impact on purchase intention than on purchase behavior. Further summarizing the effects of the attitudes of ecologically aware older adolescents on purchase intention and consumption behavior, it can be argued that the attitudes of ecologically aware older adolescents have a stronger impact on purchase intention than on consumption behavior. Of all the relationships found, the strongest is between the attitude of ecologically aware older adolescents and purchase behavior. This proves that an ecologically aware older adolescent with positive attitudes towards organic products will have a purchase intention which will then develop into a consumption behavior.

4 Conclusions

Summarizing the results of the researchers' empirical research, it has been found that the attitudes, purchase intention and consumption behavior of ecologically aware older adolescents are interrelated and that the attitudes of ecologically aware older adolescents have an impact on their purchase intention. However, the

researchers emphasize that the attitudes of ecologically aware older adolescents have varying degrees of influence on purchase intention and purchase behavior. It is also difficult to assess, based on the researchers' interpretations of the studies, at what point ecologically aware older adolescents lose interest in organic products, even though the attitude of ecologically aware older adolescents is positive. The scientific literature pays little attention to the factors underlying the attitudes of ecologically aware older adolescents, and does not highlight which group of factors, personal or functional, has a greater impact on the attitudes of ecologically aware older adolescents. Based on the insights gained, it is concluded that the topic is relevant, and it is appropriate to theoretically substantiate and empirically test the impact of the attitudes of ecologically aware older adolescents on purchase intention and consumption behavior.

The scientific analysis of the determinants of the consumption of organic products has shown that the factors can be grouped into personal and functional factors in terms of their impact on the attitudes of ecologically aware older adolescents. Personal factors include personal experiences, inner qualities, personality traits. In this group of factors, the following factors have been classified as influencing the attitudes of ecologically aware older adolescents: ecological concern, ecological awareness, social norms, personal norms, personality traits, personal values. Another aspect is functional factors - habits, cost of products, calculated value of products. This group of factors included the following factors, identified as the most important in the literature analysis: social group influence, price of organic products, packaging of organic products, organic knowledge. Personal and functional factors are the most important determinants of the consumption of organic products and of the positive attitudes of ecologically aware older adolescents.

Based on the results of empirical research, it is found that the attitudes of ecologically aware conscious older adolescents have an impact on purchase intention and consumption behavior. The analysis of the empirical studies reviewed showed that the attitudes of ecologically aware older adolescents have an impact on purchase intention and consumption behavior, while purchase intention has an impact on consumption behavior. The correlation analysis between the attitudes of ecologically aware older adolescents, intention to buy and purchase behavior shows that all the relationships between the variables are statistically significant and positive, only the strength of the relationship differs. All four research hypotheses were confirmed after testing the research design. Personal and functional factors were found to influence the attitudes of ecologically aware older adolescents, the attitudes of ecologically aware older adolescents influenced purchase intention and consumption behavior, and purchase intention influenced consumption behavior. Based on the results of the empirical study, it is concluded that the conceptual model developed is valid - the attitudes of ecologically aware older adolescents have an impact on purchase intention and consumption behavior.

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