CASE STUDY

Attitudes towards green advertising in Hungary

Barbara Török[1*] – Marietta Kiss[2] – Virág Ágnes Kiss[3]

[1] *University of Debrecen, Debrecen, Hungary, torok.barbara@econ,unideb.hu*
[2] *University of Debrecen, Debrecen, Hungary, kiss.marietta@econ.unideb.hu*
[3] *University of Debrecen, Debrecen, Hungary, kiss.virag.agnes@econ.unideb.hu*
Corresponding author's email: torok.barbara@econ.unideb.hu

Abstract – Today, a significant number of academic studies analyze the changes in sustainable development and consumer attitudes that accompany it. Advertising research remains very popular, but few results have been published in the international literature on the attractiveness of green advertising, including in Hungary. The present study aimed to assess the purchasing patterns and product preferences influenced by green advertising strategies, highlighting aspects of trend following and environmentally friendly behaviors. A survey on green advertising with 306 answers was conducted in Hungary. Out of 22 statements, 4 factors, and based on them five significantly distinguished clusters were identified, with different attitudes toward green advertising, revealing which groups can be effectively reached by them. Out of the five clusters, the "Subjective Environmentalists" and "Objective Environmentalists" believed the purchase of green products to be more important than the average, so they can be considered to be the main target group for sustainable communication. Our results also show that there are still a significant number of passive individuals (the "Rejecters" cluster), those who focus on trends rather than sustainability (the "Trend-following Neutrals"), and those who like advertisements but do not purchase green products (the "Advertising Lovers"). Overall, however, it can be concluded that the acceptance of green advertising is higher than for traditional advertising, so the outlook for the spread and popularity of green advertising is likely to be optimistic.

Keywords – green advertising; sustainability; attitude; LOHAS; cluster analysis

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1. INTRODUCTION

Global issues in our environment such as climate change, have brought to the surface the need to seek solutions. The modernization of the 20th century has played a major role in shaping the concept of environmental challenges, as innovation in science and technology has brought along with the depletion of natural resources (Fleischer, 2014). The idea of sustainability was introduced in the Brundtland Commission's 1987 report "Our Common Future," which painted a picture of economic growth that incorporated social and environmental considerations (Commission on Environment and Development, 1987).

Consumers' motivation toward purchasing environmentally friendly products greatly benefit the environment, thus, it is essential to support responsible consumption behaviors within society (Zeynalova – Namazova, 2022). Green communication has a crucial role in informing and motivating consumers, as socially responsible activities

have positive effect on the public's perception of, willingness to pay for, purchasing intention of, and engagement toward green products (Galbreth – Ghosh, 2012). Green advertising is an effective tool for informing consumers about the environmentally-friendly features of products, and – while communicating it transparently – can reduce consumer skepticism towards firms' green communication (Li, 2025). Still, a very limited amount of research has been conducted to analyze influencing factors and results of green advertising. Therefore, this study aims to fill in this gap, examining the purchasing patterns and product preferences influenced by green advertising, highlighting aspects of trend following and environmentally friendly behaviors in Hungarian consumers.

1.1. Literature review
1.1.1. Sustainable consumption habits
The continuing spread of sustainability as a topic and the growing sensitivity of the population to environmental issues are becoming increasingly linked every day. Along

with this sensitivity, consumers have also become more aware of environmental information (Krstić et al., 2021); therefore, it has become increasingly important to them to change their previous habits and to buy environmentally friendly alternatives instead of conventional products (Hazaea et al., 2022). Values seem to be changing, but it is questionable whether this change is reflected in everyday actions of consumers. Several studies have shown that survey respondents have the willingness to buy sustainable products, but only one-fifth of them reach the checkout and buy products that support environmental protection (Darnall et al., 2018). This phenomenon is called an „ethic purchase gap" (Park – Lin, 2020), or a "green gap" (Vincz – Tóvölgyi, 2025).

There are several possible explanations for the difference between willingness and action. One of these is the "dual identity" of customers, i.e. people value products as both consumers and citizens when making purchases. Hence, when individuals are shopping, they may evaluate the environmental and other moral benefits of a product as a citizen, while as a consumer they might consider other product attributes, such as price (Kees et al., 2017). This contradictory situation can ultimately lead to the decision to leave a product in the shop. The lower impact of environmental attributes in the decision-making process is influenced by many different factors, such as brand strength, culture, demographics, habits, lack of information, lifestyle, personality, and ethical factors (Young et al., 2010).

1.1.2. The LOHAS segment
As mentioned earlier, lifestyle also plays a crucial role in whether consumers choose green products when shopping. The literature refers to health and environmentally conscious consumers as the LOHAS (Lifestyle of Health and Sustainability) segment, and their appearance is due to the development and interaction of several megatrends (Törőcsik, 2007).

The main values that define the attitudes of this segment, according to research by the Natural Marketing Institute, are environmental awareness, social commitment, and the expectation of socially responsible business. LOHAS consumers embrace novelty, are less price-sensitive, are typically brand loyal, and value sophistication and aesthetics. While they do not reject hedonism, they seek sustainable solutions and are highly profitable to build on from an economic point of view, as they usually can be seen as opinion leaders, therefore, they can influence the purchasing decisions of others in their environment (Lehota et al., 2013). The group takes into account all three pillars of sustainability (social, economic, ecological), but the values associated with them are often contradictory (e.g. naturalness and innovation), and can therefore be considered a hybrid lifestyle (Kiss et al., 2016).

Some experts have questioned whether this group is the main representative of sustainable consumption due to their hedonic values, and they suggest another but significantly smaller segment (i.e. voluntary simplifiers) being the segment most committed to sustainability (Balsa-Budai and Szakály, 2018; Balsa-Budai et al., 2019). Nevertheless, it is worth studying the LOHAS segment due to its size, and because it is likely to represent the part of the population most easily reached and motivated to act by green advertising (Sözer et al., 2024).

1.1.3. Green advertising nowadays
The concept of green marketing was first introduced in the 1970s but did not receive much attention until the 1980s when consumers began to adopt green considerations in their purchasing decisions. In the last 20 years, the concept of environmentally conscious marketing has evolved into green marketing and then sustainable marketing (Sander et al., 2021). These concepts are now often used synonymously, as there is no specific, distinguishable definition of their meaning. Overall, based on previous definitions, green advertising addresses consumers' needs and wants in environmental terms and is part of companies' overall ecological marketing strategy to provide them with a sustainable competitive advantage (Kao – Du, 2020).

Although green advertising aims to encourage green purchasing behavior, consumers do not usually buy immediately as a result of the advertisement, and there are two ways in which advertising can be interpreted. In the positive approach, the individual is aiming to achieve the desired goal (e.g. to consume more green products), while the negative approach is to avoid an undesirable consequence (e.g. to pollute less). It is therefore worth being prepared for both scenarios and understanding how consumers respond to these advertisements (Sun et al., 2020). In addition, it is worth considering that in many cases individuals may perceive the problem as distant in time or location (e.g. in the case of a climate disaster) and may not feel it as serious as it is, therefore the message may not lead to the desired behavior (McDonald et al., 2015). Furthermore, consumer perceptions of advertising may also be affected by antipathy: previous research has found that the public perceives active environmental organizations as the most trustworthy source of ecological communication, while green advertising by large companies is considered the least credible (Iyer – Banerjee, 1993).

The structure of green advertising has several common features. In terms of terminology, the keywords "eco-friendly," "green," "natural," "organic," "recycled," and "sustainable" are commonly used, as they are the most likely to be associated with environmentalism by consumers (Castro Santa – Drews, 2023). Advertising appeal can also be grouped into two types: the abstract appeal refers to describing the features of green products in a more vague way, while the concrete appeal describes the green products in the advertisement in a more specific way. The benefits of green consumption can also be communicated to society and the consumer. While the former focuses on the main beneficiary of green consumption being another individual or society, the latter highlights the consumer as the main beneficiary. However, previous research has highlighted the

fact that socially responsible consumption is never self-centered, as it is concerned with the environment and society. For this reason, it makes sense to highlight the benefits for society in the consumer-targeting communication (Yang et al., 2015).

1.1.4. Green advertising research gap

Despite the importance of promoting and communicating sustainability to consumers, a limited amount of research has been conducted to analyze factors influencing the attitude towards, acceptance of, and purchase results of green advertising. The analysis of consumer behavior related to traditional advertising has been more common, but the specific issue of sustainability (green) advertising has not been studied by many researchers before.

One exception is the research by Kim and Cha (2021), whose aim was to investigate the relationship between attributes of green advertising and purchase intention considering consumer innovativeness. For this reason, they conducted a survey with 200 participants in South Korea, and structural equation modeling (SEM) with confirmatory factor analysis was performed on the data. They distinguished five factors based on 23 statements, which are as follows: reliability, attractiveness, informativity, consumer innovativeness, and purchase intention. Their conclusions included that the first three components have a positive effect on purchase intention, while consumer innovativeness had a moderating effect on it. The results of the research are highly relevant to the impact of green advertising, but do not address the issue of segmenting consumers according to different attitudes.

In the literature, we found only two studies using Kim and Cha's (2021) set of statements. Borah et al. (2024) investigated the green purchasing behavior of Generation Z influenced by green advertising in a Chinese sample of 559 people. The factor analysis resulted in a factor, called "Green advertising" that corresponds to Kim and Cha's (2021) "Attractiveness" factor. The other study by Zhang and Yang (2023) measured the impact of green advertising on green branding and green consumer behavior in a Chinese sample of 516 people. The researchers also conducted a confirmatory factor analysis for green advertising, where their reliability, attractiveness, and informativeness factors included the majority of Kim and Cha's (2021) statements with a little modification. It can be seen that Zhang and Yang (2023) focused specifically on the attributes of green advertising and therefore did not work with the Kim and Cha's (2021) statements related to purchase intention and consumer innovativeness.

Based on an extensive literature search in Crossref, Scopus and Web of Science databases, we haven't found any paper that conducts cluster analysis from Kim and Cha's (2021) set of statements. The papers that mentioned Kim and Cha's (2021) statements, mainly focused on systematic review (Fatema, 2025), SEM-PLS investigation (Kim – Son, 2021; Borah et al., 2024; Hasanah – Anjaningrum, 2023; Tampubolon et al., 2025), and stimulus-organism-response

(SOR) theory (Zhang – Yang, 2023). Because of that, we searched the previously mentioned data bases with a purpose to find studies which might have conducted cluster analysis connected to green advertising. We added "green advertising" and "cluster analysis" to the keywords, and we found one single article from Italy, which conducted a cluster analysis based on Italian newspapers' green advertising content between 2007 and 2008 (Francesco et al., 2011), but this research did not analyze consumer groups. By expanding the search criteria (green and cluster were mandatory keywords, while communication and advertising could serve as alternatives to each other), one publication was found. The study (Rueda et al., 2024) processed green purchasing behavior, but the researchers did not focus on statements related to green advertising. The search results, therefore, have confirmed that consumer segmentation by green advertising attitudes is not yet examined in international literature to the best of our knowledge.

Based on the research gap identified above, this study aims to identify different consumer segments based on their attitudes towards green advertising in Hungary, with the purpose of supporting the development of personalized green marketing strategies for them. In our primary research, we conducted a questionnaire survey, which included the set of 23 statements developed by Kim and Cha (2021). What provides the novelty value of our research is that instead of SEM, we used factor and then cluster analysis of the above-mentioned series of statements with Hungarian nationality respondents in a sample larger (N=306) than that of Kim and Cha (2021). In addition, as a result of our analysis, it is possible to compare how factor analysis can result in different values for an Asian and a European society on a global topic, such as green advertising, where the goal (to increase environmental protection) is identical regardless of culture and nationality.

2. RESEARCH METHODS

The set of 23 statements based on the work of Kim and Cha (2021) was part of an online questionnaire survey in summer of 2024 that also included questions on general advertising attitudes and demography. The questions on general advertising attitudes were used in previous studies (Nagyné Paksi, 2013; Márkus et al., 2014) but have been slightly adapted in this research (see Annex 1).

The questionnaire was answered by 306 respondents in Hungary using convenience sampling, where 20.3% of the respondents were male and 79.4% were female. The distribution of respondents by age group was the following: under 25 years old accounted for 40%, 25–34 years old for 27%, 35–44 years old for 9%, 45–55 years old for 15%, and 54 years old and above for 9%. In terms of education, the proportion of respondents with primary education is very low (2%), 34% have intermediate education, and 64% have higher education. Majority of respondents (36.6%) live in county seats, but significant proportion live in other cities (30.4%), villages (20.3%), and in the capital (14.7%). In

terms of income, 5.5% did not wish to answer, 3% live in poor financial circumstances, 21% are just managing to live on their income, 58% live well, and 18% report excellent financial circumstances. Due to convenience sampling and over-represented demographic characteristics, the survey is not representative. However, it provides a good overview of the differences in attitudes toward green advertising, especially among the LOHAS consumers, due to the dominance of the segment's typical members (women, those with higher education and income, and younger generations as described by Szakály et al., 2015 in case of Hungary).

Beside basic descriptive statistics (frequencies, modes, means and standard deviations), cross-tabs with Chi-square were used to examine any differences along demographic variables. To reveal the structure of attitudes towards green advertising and to identify distinct segments based on those attitudes, factor (principal component analysis with Varimax Kaiser Normalization) and then K-means cluster analyses were used. Inter-cluster differences were examined with the use of ANOVA with Tukey post-hoc tests. Principal component analysis was suitable for generating a smaller number of factors independent of the large amount of initial data. This avoids redundancy or multicollinearity, which would distort the results of the cluster analysis. The reason for this is that in the case of multicollinearity, the individual factors would be weighted unevenly, which would have a negative impact on the results of the analysis (Sambandam, 2003; Simon, 2006).

3. RESULTS AND DISCUSSION

3.1. General attitudes towards advertising

The first part of the questionnaire assessed attitudes towards advertising in general, with the goal of comparison with green advertising. The respondents' advertising viewing habits were as follows: 41.2% of respondents always switch off or ignore advertising immediately, 56.5% occasionally view advertisements but mostly skip them, while 2.3% stated that they usually watch the advertisement break and sometimes click on Internet ads. Based on these proportions, it is not surprising that many respondents (36.6%) dislike advertising, but there are also high proportions (29.4% and 33.0%) who are indifferent to advertising and who do like some of it, respectively (Table 1).

Table 1 Respondents' attitudes towards advertising (N=306)

Attitudes	Frequency	Percentage (%)
Negative, I don't like advertising.	112	36.6
Indifferent, I don't care about advertising	90	29.4
There are some ads I like	101	33.0
Positive, I like advertising	3	1.0

Source: author's own compilation, 2025

proportions, it is not surprising that many respondents (36.6%) dislike advertising, but there are also high proportions (29.4% and 33.0%) who are indifferent to advertising and who do like some of it, respectively (Table 1). Next, respondents were asked to rate on a Likert scale of 1 to 5 (where 1 = I don't agree at all and 5 = I totally agree) how much they consider certain attributes to be characteristic of advertising. The results are presented in Table 2.

Table 2 Certain characteristics of advertising according to the respondents (N=306)

How much do you find advertising…	Mean	Standard deviation	Mode
…annoying?	3.90	1.073	5
…harmful?	3.31	1.190	3
…useful?	2.70	1.083	3
…fun?	2.36	1.051	3
… credible?	2.08	0.934	2

Source: author's own compilation, 2025

The results show that respondents mostly find advertising annoying and harmful, which explains the negative attitudes seen in Table 1. Cross-table analyses revealed that respondents between 45–54 years of age were the only group who most frequently (40%) marked a 3 on the Likert scale in the case of the "annoying" characteristic, while the other age groups rather found advertising completely annoying (p<0.01). Participants were least likely to describe ads as "credible."

Table 3 illustrates the advertising elements that respondents find most interesting when viewing an advertisement. As the table shows, funny, musical, and spectacular advertisements are the most popular with respondents, while sporty men, pretty ladies, and children are the least attractive elements of advertisements.

Table 3 Most interesting advertising elements according to respondents (N=306)

Advertising element	Frequency	Percentage (%)
Funny	211	68.95
Having good music	172	56.21
Extraordinarily spectacular	151	49.35
Set in beautiful landscapes	140	45.75
Featuring animals	105	34.31
Based on extreme, surprising situations	59	19.28
Featuring famous people	56	18.30
Featuring sporty, charming men	34	11.11
Featuring children	23	7.52
Featuring pretty ladies	23	7.52

Source: author's own compilation, 2025

The subconscious influence of advertising was acknowledged by almost all respondents: 83% thought that advertising influences our subconscious, 13% chose the "maybe" option, and 4% thought that advertising has no such influence. Lastly, respondents were asked if they had ever looked for further information about a product/service after being exposed to an advertisement online. 9.2% of the respondents avoided clicking through to an advertisement on purpose, 14.4% had not looked for such opportunities, 12.1% had clicked through once, and 50.7% said they had looked for further information few times, while 13.7% said they had looked for additional information several times.

3.2. Attitudes towards green advertising
Prior to the presentation of the set of statements on green advertising, respondents were asked to answer the question of whether they were familiar with the concept of green advertising. 31.7% of the respondents had never heard of the term, 19% had heard of it but did not know the exact meaning, 37.9% were more or less familiar with the

concept, while 11.4% said they were fully aware of its meaning. In the next question, we introduced the concept of green advertising to clarify the definition in Fowler and Close's (2012) interpretation ("Green advertising is an advertising that explicitly or implicitly promotes an awareness of environmental issues and/or suggests behaviors useful in minimizing or correcting these environmental issues.") and asked respondents how well this explanation matched what they had in mind. 17% still had never heard of the term, 2.3% thought it was completely different, 35.9% thought it was a similar term, and 44.8% fully matched the term we showed.

Table 4 includes Kim and Cha's (2021) statement set in descending order of their means in our sample. According to the results, statements related to green purchase intention and trend-following were marked as the least typical for respondents, while they think that green advertising is generally reliable, easy to understand, provides information, and is novel.

Table 4 Green advertising attitude, sustainable behavior, and innovativeness statements (N=306)

Statements	Mean	Standard deviation	Mode
I think green advertising is novel.	3.76	1.154	4
I think green advertising provides information on eco-friendliness.	3.74	1.116	4
I think green advertising is easy to understand.	3.46	1.128	3
I think green advertising is generally reliable.	3.41	1.090	4
I am willing to recommend eco-friendly products to others.	3.37	1.282	4
I think green advertising is interesting.	3.33	1.148	3
I trust the information on green advertising.	3.30	1.151	4
I think green advertising is attractive.	3.28	1.128	3
Green advertisements catch my attention.	3.22	1.207	3
Using eco-friendly products relieves the guilt of environmental destruction.	3.22	1.317	4
I think green advertising is sincere.	3.21	1.113	3
I use eco-friendly products to help the environment.	3.18	1.134	3
I think green advertising expresses the true nature of the product.	3.11	1.072	3
I think green advertisements give me the information I need.	3.10	1.143	3
I can make a substantial contribution to the environment by using eco-friendly products.	3.08	1.223	3
I like green advertisements.	3.01	1.158	3
I am likely to purchase products shown in green advertisements.	2.85	1.215	3
I tend to pursue new trends more than others.	2.58	1.299	1
I tend to watch with interest how other people use new products.	2.47	1.304	1
I tend to buy new products before others.	2.42	1.339	1
I will definitely buy the product shown in the green advertisement.	2.01	1.076	1
I tend to buy the latest trendy products.	1.85	1.141	1
I often go to the store to see if a new product is out.	1.77	1.156	1

Source: author's own compilation, 2025

Out of the 23 statements, 22 were retained in principal component analysis in order to reliably separate the factors from each other. We had to eliminate the statement "I think green advertising provides information on eco-friendliness," because it was connected to two of the factors

("Green advertising appeal" and "Green advertising informativeness"). The results are significant and meet the criteria for factor analysis, as confirmed by the KMO value and Bartlett's test. The results are illustrated in Table 5.

Table 5 Green advertising factors (N=306)

Statements	Factor loadings			
	Green advertising appeal	Green advertising informativeness	Trendy product liking	Green product liking
I think green advertising is attractive.	0.822			
Green advertisements catch my attention.	0.760			
I think green advertising is interesting.	0.720			
I like green advertisements.	0.717			
I think green advertising is novel.	0.688			
I think green advertising is easy to understand.	0.561			
I trust the information on green advertising.		0.831		
I think green advertising is sincere.		0.828		
I think green advertising is generally reliable.		0.808		
I think green advertising expresses the true nature of the product.		0.793		
I think green advertisements give me the information I need.		0.550		
I tend to buy the latest trendy products.			0.869	
I often go to the store to see if a new product is out.			0.850	
I tend to buy new products before others.			0.799	
I tend to watch with interest how other people use new products.			0.650	
I tend to pursue new trends more than others.			0.600	
I will definitely buy the product shown in the green advertisement.			0.519	
I use eco-friendly products to help the environment.				0.787
I am willing to recommend eco-friendly products to others.				0.771
I am likely to purchase products shown in green advertisements.				0.728
Using eco-friendly products relieves the guilt of environmental destruction.				0.709
I can make a substantial contribution to the environment by using eco-friendly products.				0.538

Source: author's own compilation, 2025

Notes: Method: principal component analysis with Varimax rotation and Kaiser normalization. KMO = 0.933. Bartlett's test: Chi2=5016.8, df=231, p<0.01. Explained variance = 69%. Communalities: 0.519–0.869.

The factors clearly distinguish the values associated with green advertising. The "Green advertising appeal" factor focuses mainly on the attractiveness, attention-grabbing nature, clarity and likeability of green advertising, while the "Green advertising informativeness" factor focuses on honesty, reliability and informativeness of those advertisements. The factor "Trendy product liking" differs slightly from the general characteristics of green advertising, as it contradicts green consumer behavior. It mainly includes claims related to the seeking, buying, and recommending of new and trendy products. Finally, the factor "Green product liking" aggregates the willingness to buy and recommend green products and the general motivation to use them.

3.3. Clusters based on the green advertising attitude factors

A total of five clusters with K-means clustering method were identified based on the four green advertising attitude factors, as illustrated in Figure 1, with the aim of finding segments that could serve as a target market for green advertising and promoting sustainability.
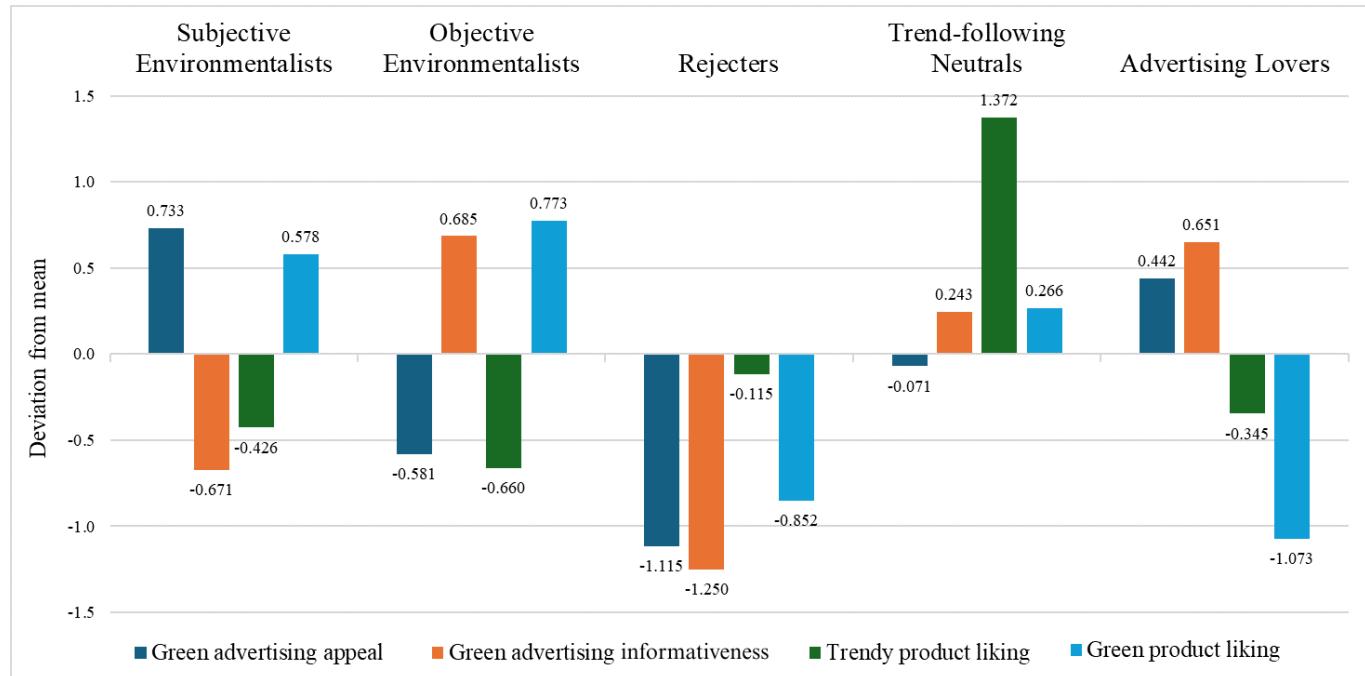
Figure 1 Clusters based on green advertising attitude factors with deviations from sample means (N=306)
Source: Authors' own compilation, 2025

The first cluster, "Subjective Environmentalists," accounts for 23.9% of the sample. Its members are characterized by values related to the factors "Green advertising appeal" and "Green product liking." This group finds green advertising attractive and is likely to buy green products as a result. However, they do not consider green advertising informative, and they do not perform trendy purchases. A very similar group to the previous one is "Objective Environmentalists," who account for 18.6% of the sample. This cluster is characterized by high values for the factors "Green advertising informativeness" and "Green product liking." Presumably, they are the ones who are attracted by the objective benefits of green products in advertisements and therefore buy and recommend them. Similarly to the previous cluster, they do not tend to purchase trendy products. The third cluster is made up of "Rejecters," who represent 13.1% of the sample. They do not tend to agree with the values of any of the factors, rejecting both the characteristics associated with green advertising and products, and those associated with trend-following and trendy products. The fourth cluster is formed by the "Trend-following Neutrals," who account for 22.9% of the sample. They slightly agree with the set of values associated with the factors "Green advertising informativeness" and "Green product liking," but most strongly agree with the statements associated with the factor "Trendy product liking." Therefore, they are likely the ones who are open to sustainable products because of their novelty value and tend to buy new, trendy products. The last cluster is the "Advertising Lovers" group, which represents 21.6% of the total sample. Members of this cluster are only high on values related to the factors "Green advertising appeal" and

"Green advertising informativeness." Its members are probably open to green advertising, but this is not reflected in their purchasing behavior.

The ANOVA verified that the clusters were significantly different from each other ($p < 0.001$), thus, they were well separated along the factors (F1=42.168, F2=85.203, F3=194.598, F4=31.003). To examine the differences between the clusters pairwise, we run Tukey post-hoc tests. The results that are shown in Annex 1 are significant in most cases, with some exceptions. In the case of the "Green advertising appeal" factor, for example, no significant difference can be established between the Subjective Environmentalist and Advertising Lovers clusters, which is probably due to the fact that this value was higher than average for both clusters. We didn't find, however, any significant differences among the clusters based on their demographic characteristics.

4. DISCUSSION

The previous studies (Nagyné Paksi, 2013; Márkus et al., 2014) we used to compile the questions on traditional advertising in our research – although were carried out in Hungary, similarly to the current study – used limited sample sizes for the questionnaire survey (up to 100 respondents), therefore no reliable conclusions can be drawn from comparing the results. However, it is interesting to note that in Nagyné Paksi's (2013) survey, 55% of the respondents declared that they like some types of advertising, while in our case, this proportion was significantly lower, i.e. 33%. Moreover, 7% of the respondents of the previous survey stated that they don't

like advertisements, while in our study, this proportion was considerably higher, 36,6%. In both studies, however, the most interesting advertisement element was the advertisement's funny nature. Based on Márkus et al.'s (2014) results on attitudes towards 3 attributes of general advertisements, we can note that the averages measured on a 5-point scale were 3.86 for the annoying attribute, 3.02 for the harmful attribute, and 2.58 for the useful attribute of advertising. These averages in our study follow the same broad pattern: 3.90, 3.31, and 2.70, respectively, indicating that there has been no significant change in the public's opinion about advertising during the last 10 years. The slight increase is probably due to the fact that advertising noise is increasing in both offline and online spaces, making it more problematic for the public to avoid it. However, we can conclude that negative attitudes towards traditional advertising remain high. Green advertising, on the other hand, is perceived as more reliable than traditional advertising (as traditional advertising scored a mean of 2.08 on a 5-point scale, while green advertising scored 3.41) and therefore may have a greater influence on consumer behavior.

Based on Kim and Cha's (2021) propositional framework, the values associated with green advertising and consumer innovativeness have been separated in Hungary by factor analysis by the current study. Compared with the results of factor analysis from South Korea (Kim and Cha, 2021), it can be seen that in our case fewer factors, i.e. four, were identified, instead of five. This difference is due to the fusion of the reliability and informativity factors identified by Kim and Cha (2021) into "Green advertising informativeness" factor in our research, which is a logical change considering that transparent information is the basis of consumers' trust. In our study, the factor "Trendy product liking" basically is identical to Kim and Cha's (2021) "Consumer innovativeness" factor – the only difference is that in the Hungarian case, the statement about buying a product shown in green advertisement was also included in this factor. This phenomenon could probably be explained by the fact that, as shown in Table 4, a significant proportion of Hungarian respondents consider green advertising to be novel (with a mean of 3.76 on a 5-point scale), so in their case the consumption of sustainable advertising and the purchase of sustainable products could be considered as a trendy behavior.

Kim and Cha (2021) selected the trend-following-related statements for their research to measure the impact of consumer innovativeness on green purchasing behavior. However, we retained them for two reasons: first, to compare the resulting factors accurately and second, to examine whether the group representing trend-following values in Hungary is significantly distinct from the groups representing values related to green advertising and green product purchase. Our results show that, despite the novelty value of green advertising being highlighted by our respondents, they are able to distinguish the values associated with it from traditional trend following values in a notable way. For this reason, in the future, it may be

worthwhile to treat consumer innovativeness and trend following separately from the analysis of green advertising, as was the case in the research of Zhang and Yang (2023), who only considered green advertising reliability, attractiveness and informativeness. When comparing with the factors identified in our research, it can be observed that while in our case the Reliability and Informativity factors were merged, in Zhang and Yang's (2023) research they were completely separated, and in our research the statement "I think the green animation advertising is easy to understand." was allocated to the "Green advertising appeal factor," while Zhang and Yang (2023) grouped it in the Informativity factor.

As it was mentioned previously, the number of empirical studies on sustainable (green) advertising is very limited, moreover, to the best of our knowledge, the current research is the first that clusters consumers based on green advertising attitudes, which highlights the novelty of our study, but makes it impossible to make comparisons with previous research findings. Based on four factors related to the attractive and informative nature of green advertising and the popularity of trendy and green products, we identified five different clusters. One of the five clusters was characterized by below-average interest in the values examined, while the others showed above-average scores for at least two values. Although the clusters did not differ in terms of demographic characteristics, they differed significantly in their green advertising attitudes.

5. CONCLUSION

The aim of our research was to assess the attitudes of the Hungarian population towards green advertising and to segment them based on those attitudes. The results show that generally, consumers have negative attitudes towards traditional advertising, but green advertising is perceived as more reliable and therefore may have a greater influence on consumer behavior.

Principal component analysis and cluster analyses have firmly separated the values associated with green advertising and the clusters along these values, respectively. Although the research is not representative, these values and segments may be found in the broader population, and the research may allow easier selection of the right target group for green advertising and the development of an appropriate marketing communication strategy for them. In terms of clusters, it is advisable to focus on and target the group of "Subjective Environmentalists" and "Objective Environmentalists" with green advertising, as members of these clusters are the ones who have expressed liking of, and willingness to buy and recommend green products. They are, however, still different in terms of preference for emotional or rational appeal of green advertising, respectively; requiring different advertising messages.

As a future research direction, it is recommended to conduct the research in Hungary on a representative sample. In addition, it is advisable to carry out factor and cluster analyses for other nationalities for comparison purposes,

including other post-socialist, emerging countries, thereby revealing the cultural differences in the case of a uniformly important global issue such as sustainability. Overall, further and extensive research on the subject is definitely recommended in order to explore the field of green advertising in depth.

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Appendix

Appendix 1: Questions on general advertising attitudes

Question	Source
Do you normally watch advertisements if you see them?	Nagyné Paksi, 2013
What do you think about advertisements in general?	Nagyné Paksi, 2013
How much do you find advertising annoying/harmful/useful/fun/credible?	Márkus et al., 2014
Which advertisements attract your interest and attention the most?	Nagyné Paksi, 2013
Do you think advertisements have subconscious influence on you?	Márkus et al., 2014
Has an advertisement ever influenced you to search for a particular product?	Nagyné Paksi, 2013

Appendix 2: Tukey post hoc test results (N=306)

Dependent Variable	I	J	Mean Difference (I-J)	Std. Error	Sig.
Green advertising appeal	Subjective Environmentalists	Objective Environmentalists	1.314***	0.138	<0.001
		Rejecters	1.848***	0.154	<0.001
		Trend-following Neutrals	0.803***	0.131	<0.001
		Advertising Lovers	0.292	0.133	0.183
	Objective Environmentalists	Subjective Environmentalists	-1.314***	0.138	<0.001
		Rejecters	0.533**	0.161	0.009
		Trend-following Neutrals	-0.510**	0.139	0.003
		Advertising Lovers	-1.023***	0.141	<0.001
	Rejecters	Subjective Environmentalists	-1.848***	0.154	<0.001
		Objective Environmentalists	-0.533**	0.161	0.009
		Trend-following Neutrals	-1.044***	0.155	<0.001
		Advertising Lovers	-1.556***	0.156	<0.001

	Trend-following Neutrals	Subjective Environmentalists	-0.803***	0.131	<0.001
		Objective Environmentalists	0.510**	0.139	0.003
		Rejecters	1.044***	0.155	<0.001
		Advertising Lovers	-0.512**	0.134	0.001
	Advertising Lovers	Subjective Environmentalists	-0.292	0.133	0.183
		Objective Environmentalists	1.023***	0.141	<0.001
		Rejecters	1.556***	0.156	<0.001
		Trend-following Neutrals	0.512**	0.134	0.001
Green advertising informativeness	Subjective Environmentalists	Objective Environmentalists	-1.356***	0.125	<0.001
		Rejecters	0.579***	0.139	<0.001
		Trend-following Neutrals	-0.913***	0.118	<0.001
		Advertising Lovers	-1.322***	0.120	<0.001
	Objective Environmentalists	Subjective Environmentalists	1.356***	0.125	<0.001
		Rejecters	1.935***	0.146	<0.001
		Trend-following Neutrals	0.442**	0.126	0.005
		Advertising Lovers	0.034	0.128	0.999
	Rejecters	Subjective Environmentalists	-0.579***	0.139	<0.001
		Objective Environmentalists	-1.935***	0.146	<0.001
		Trend-following Neutrals	-1.493***	0.140	<0.001
		Advertising Lovers	-1.901***	0.142	<0.001
	Trend-following Neutrals	Subjective Environmentalists	0.913***	0.118	<0.001
		Objective Environmentalists	-0.442**	0.126	0.005
		Rejecters	1.493***	0.140	<0.001
		Advertising Lovers	-0.408*	0.121	0.008
	Advertising Lovers	Subjective Environmentalists	1.322***	0.120	<0.001
		Objective Environmentalists	-0.034	0.128	0.999
		Rejecters	1.901***	0.142	<0.001

		Trend-following Neutrals	0.408**	0.121	0.008
Trendy product liking	Subjective Environmentalists	Objective Environmentalists	0.234	0.115	0.250
		Rejecters	-0.311	0.128	0.108
		Trend-following Neutrals	-1.798***	0.109	<0.001
		Advertising Lovers	-0.081	0.110	0.948
	Objective Environmentalists	Subjective Environmentalists	-0.234	0.115	0.250
		Rejecters	-0.545**	0.134	0.001
		Trend-following Neutrals	-2.032***	0.116	<0.001
		Advertising Lovers	-0.315	0.117	0.058
	Rejecters	Subjective Environmentalists	0.311	0.128	0.108
		Objective Environmentalists	0.545**	0.134	0.001
		Trend-following Neutrals	-1.487***	0.129	<0.001
		Advertising Lovers	0.230	0.130	0.393
	Trend-following Neutrals	Subjective Environmentalists	1.798***	0.109	<0.001
		Objective Environmentalists	2.032***	0.116	<0.001
		Rejecters	1.487***	0.129	<0.001
		Advertising Lovers	1.717***	0.111	<0.001
	Advertising Lovers	Subjective Environmentalists	0.081	0.110	0.948
		Objective Environmentalists	0.315	0.117	0.058
		Rejecters	-0.230	0.130	0.393
		Trend-following Neutrals	-1.717***	0.111	<0.001
Green product liking	Subjective Environmentalists	Objective Environmentalists	-0.195	0.119	0.474
		Rejecters	1.429***	0.133	<0.001
		Trend-following Neutrals	0.311*	0.113	0.048
		Advertising Lovers	1.651***	0.114	<0.001
	Objective Environmentalists	Subjective Environmentalists	0.195	0.119	0.474
		Rejecters	1.624***	0.139	<0.001
		Trend-following Neutrals	0.506***	0.120	<0.001

		Advertising Lovers	1.845***	0.122	<0.001
	Rejecters	Subjective Environmentalists	-1.429***	0.133	<0.001
		Objective Environmentalists	-1.624***	0.139	<0.001
		Trend-following Neutrals	-1.118***	0.134	<0.001
		Advertising Lovers	0.221	0.135	0.474
	Trend-following Neutrals	Subjective Environmentalists	-0.311*	0.113	0.048
		Objective Environmentalists	-0.506***	0.120	<0.001
		Rejecters	1.118***	0.134	<0.001
		Advertising Lovers	1.339***	0.116	<0.001
	Advertising Lovers	Subjective Environmentalists	-1.650***	0.114	<0.001
		Objective Environmentalists	-1.845***	0.122	<0.001
		Rejecters	-0.221	0.135	0.474
		Trend-following Neutrals	-1.339***	0.116	<0.001

Source: Authors' own compilation, 2025
*Notes: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.*