

## A reusable product from the point of view of a young generation: How companies can increase their competitiveness

*Michal Pšurný, Stanislav Mokrý, Alexandr Langr, Jana Stávková*

### Abstract

This paper offers companies a young generation's perspective on a product that aligns with the current understanding of sustainability - reusable water bottles. With this perspective, companies can increase their competitiveness. A questionnaire survey gathered opinions on sustainability from 639 respondents, addressing both sustainable consumption and related sustainable production. The questions asked were organized in three blocks: on the issue of environmental preferences, the motivation to buy reusable bottles, and the importance of bottle characteristics. The survey results showed that 85% of the respondents support such a product. The results provide detailed information on preferred product characteristics such as bottle weight, bottle volume, material used, bottle design. According to the views expressed on sustainability issues and the evaluation of the features of the product offered, and using k-means cluster analysis, four segments of young generation consumers in the reusable bottle market were created: "environmental enthusiasts", "sustainability sceptics", "responsible for the future" and "environmental and quality protectors." This arrangement makes it easier for manufacturers to target effectively. For all segments, there is only a slight concern about current technological developments, which may be a sign of confidence in the development of scientific and technological knowledge and an impetus for strategic decisions by manufacturers. The findings highlight the importance of educating consumers on sustainable consumption and production. Effectively communicating the product to consumers can create a competitive advantage in the marketplace.

**Keywords:** *reusable product, competitive advantage, sustainable consumption, sustainable product*

**JEL Classification:** M21, M3, M31, O44

Article history: Received: June 2024; Accepted: November 2024; Published: December 2024

### 1 INTRODUCTION

Using the example of one of the many reusable everyday products, reusable drinking bottles, we illustrate the complex process of sustainable development of a society determined by both sustainable production and sustainable consumption. Caring for the environment and the pursuit of sustainability are of interest to many scientific disciplines today (Pezzullo, 2024; Sumitro & Fatchur, 2023). This is expected, as the journey from a product's conception, through its development and production, to its consumption and disposal, is energy, material, and financially intensive. The behavior of responsible individuals - both producers and consumers - is crucial for sustainable development; producers because of the supply of products on the market, and consumers because of demand. For both groups, it is important whether individuals exhibit environmental awareness and environmentally friendly behavior (Lubowiecki-Vikuk et al., 2021).

Achieving sustainability on Earth requires changes in human behavior. Human behavior and human perceptions of the current problems of sustainability are crucial. Whether the well-being of the individual is linked to the well-being of society as a whole is also decisive. Sustainable development, a corresponding lifestyle that takes the future into account, is not new to human thinking. It is to a certain extent a self-evident approach, yet the subject has become a global issue. With each instance of overexploitation of natural resources in an era of developed and economically successful societies, we are robbing our future generations (Shannon et al., 2020). The basis of sustainable development and environmental policy is the knowledge that the environment is everything that creates the natural conditions for the existence of organisms, including humans, not only in the present but also in the future. Its components are mainly air, water, rocks, soil, organisms, ecosystems, and energy. The importance of water for life, and its connection to the origin of life on Earth, and not only on Earth, is discussed by Westall and Brack (2018). The first significant impulse to reflect on human behavior towards life on Earth, and the impetus for the emergence of various environmental movements, was the 1973 publication of *The Limits to Growth*. This book became both an impulse and an opportunity for a certain rethinking of industrialization and technological control of nature. The book's publication initiated a process that has matured into today's quest for sustainable societal development (Robinson, 1973).

Sustainable consumption is based on a decision-making process during which the consumer takes into account social responsibility in addition to individual needs. This can be observed predominantly in consumers of the younger generation (Francis & Sarangi, 2022; Kiliç et al., 2021; Orea-Giner & Fusté-Forné, 2023). Therefore, it is important to know what characteristics products should have to align with sustainability for the young generation. It is essential not only to offer such a product on the market but also to provide sufficient information about it. It can be assumed that having such a product on the market, especially for the young generation, brings more interest from the consumer and a competitive advantage for the producer. Understanding consumption behavior is also important for both groups in the market so that effective interventions can be made toward sustainable development or the education process can be directed towards sustainability through appropriate methods (Patumtaewapibal & Boonyasiriwat, 2020; Veselá et al., 2023). Sustainability has become part of the corporate economy and is a tool to streamline corporate strategies to make the company more competitive (Barraco, 2024).

Recognizing the importance of sustainability, this paper will first explore the individual's sustainable behavior, environmental preferences, current technological advances, and more. Then, the focus will turn towards the consumer's behavior in offering a sustainable product, specifically a reusable water bottle. This will involve identifying the features of the product offered, especially those that are important to the consumer and that will most significantly influence their decision to purchase and use. The expressed attractiveness and recognized characteristics are useful for the manufacturer, as the product may be of interest not only because of its desired characteristics but also because the product is perceived by the consumer as a sustainable product. This fact may give the producer a competitive advantage. For this reason, we segment consumers according to environmental preferences, motivation to purchase reusable bottles, and preferences regarding their properties. The segments generated using k-means cluster analysis then allow manufacturers to better target their offerings and thus increase their competitiveness.

## 2 THEORETICAL BACKGROUND

There is a growing urgency in society to intervene in the current consumerist lifestyle and patterns of consumption behavior. There is a call for a responsible and balanced lifestyle for both the individual and for society as a whole. How consumers behave and take responsibility for themselves and others, and whether this responsibility is part of their lifestyle, is crucial. Consumers' lifestyles influence their attitudes toward the environment and responsible consumption (Aschemann-Witzel et al., 2021). By adopting such a lifestyle, consumers can become part of the so-called green economy (Binder & Blankenberg, 2017). Consumer preferences have given rise to so-called green marketing, which involves marketing tools and activities designed to address environmental issues and promote sustainable consumption and green purchasing behavior. It has become an important marketing tool for communicating green product and service innovations, ultimately creating consumer confidence in green products (Prieto-Sandoval et al., 2022). Thus, green marketing is an essential tool to build corporate image, positively influencing consumers' purchasing decisions and thus making companies more competitive (Barraco, 2024).

Lifestyle and sustainable consumption are positively related to life satisfaction, subjective psychological well-being, and individual health. Increased awareness of health, the need to build immunity, and mental well-being, lead to a greater focus on nutrition. Many consumers are switching to healthier eating habits both at home and in restaurants. Springmann et al. (2020) suggest that promoting sustainable and healthy eating behaviors such as sustainable and healthy eating patterns or consumer food purchasing and disposal can reduce health and environmental burdens. The shift towards healthier lifestyles should continue as people realize its importance (Puttaiah et al., 2020). In terms of sustainable consumer behavior, their sustainable and healthy eating habits such as food selection, consumption and disposal, food preparation and the packaging used to store food are essential. Food and its production, consumption, and disposal are the main causes of large amounts of freshwater consumption, land use, and greenhouse gas emissions (Kawasaki et al., 2023). The most important role in the process of sustainable development is given to the consumer's behavior. Closely related to this is the importance of the value hierarchy and interpersonal relationships in society. Howell (2013) identifies the link between the current lifestyle change and the culture of consumption. Especially in countries with developed economies, consumption is not perceived as the satisfaction of a need or lack but is increasingly coming to be seen as a factor that reflects moral motives, personal attitudes, and values. Research by Binder and Blankenberg (2017) has shown that lifestyle and sustainable consumption are positively related to personal satisfaction and subjective well-being. Increases in life satisfaction tend to be caused by self-assessment, i.e., one's evaluation of how one treats one's health, one's environment, one's relationships with other people, society, and the environment. Thus, there may be a difference between self-image and actual behavior, and a difference between intentions and actual actions. Puntiroli et al. (2022) looked at the temporal consistency of sustainable consumer behavior, and whether current sustainable consumer behavior will encourage the same behavior in the future.

Consumers should change their behavioral patterns towards increased use of reusable containers (Ertz et al., 2017). The decision to use reusable bottles depends not only on external but also on internal factors. The consumption of bottled water is still high, costing more energy and burdening the environment (Doria, 2006; Qian, 2018). This trend persists even in countries where water quality is good. According to Doria (2006), taste and water quality concerns are the main barriers.

The best chance to achieve sustainable development is through a change in value orientation. This includes not only shifts in consumer behavior but also fundamental transformations in business strategies. Companies increasingly recognize sustainability as a critical source of competitive advantage, embedding it into their core processes to align economic success with social and environmental goals. Such strategies often involve collaborations across industries, emphasizing cooperative over competitive advantage to address global challenges effectively (Tarnovskaya, 2023). In the product offer to satisfy the needs of the individual, it is necessary to focus on nature-friendly products. Each product has certain characteristics which are typical, and which are decisive for satisfying human needs.

The materials used to manufacture the product predetermine the product's characteristics that are decisive for the consumer and their purchase. Several other non-utilitarian properties such as ease of maintenance, price, durability, lightweight, pleasant to the touch, etc., are derived from the material used in the product, which is crucial for the customer including their attitude towards sustainable development (Patumtaewapibal & Boonyasiriwat, 2020). Closely related to this attitude is the consumer perception of reusable products (Ertz et al., 2017). Reusable products are not at the end of the life cycle but at the beginning (Numata & Managi, 2012). This makes them a critical strategy for reducing waste, conserving natural resources, and maintaining quality of life. Moreover, this method is more efficient than recycling (Ertz et al., 2017; Meherishi et al., 2019). Just as the need to protect the environment has recently come into focus, research has also focused on the phenomenon of reuse as a socially desirable product feature and consumer trend (Cochrane, 2018). This raises the research question of whether the use of reusable bottles reduces the volume of disposable bottle consumption by an individual, and thus, whether the use of reusable bottles reduces the amount of waste.

Corporate social responsibility can be reinforced through consumer social responsibility. Economic issues and product quality still tend to drive consumer choice, and therefore it is important to convince consumers of environmental aspects (Vitell, 2015). Consumers may also have a different view of sustainable products than conventional ones. They perceive certain stereotypes about them, and therefore it is important to increase education and awareness. Moreover, providing explicit information counteracts the reliance on lay theories and opinions (Lin & Chang, 2012). Barriers then may include not only lack of awareness, negative perceptions, mistrust, high cost, and low availability. Manufacturers or marketers should label and promote the effectiveness and sustainability of such products (Lin & Chang, 2012). Therefore, from the perspective of the company and its competitiveness, it is important to communicate these aspects. Moreover, consumer competence regarding sustainability can stimulate sustainable consumption (Kiełczewski et al., 2017). Furthermore, sustainability reporting leads to higher brand equity (Loh & Tan, 2020), but this effect only becomes apparent after a few years. This may be the reason why companies do not focus so much on sustainability (Loh & Tan, 2020).

A number of studies have addressed the issue of reusable products (Ertz et al., 2017; Qian, 2018). Some studies suggest gender differences in behavior. According to a study by Saylor et al. (2011), women drink more bottled water than men. In a study by Qian (2018), women drink more bottled water than men in some regions. Women in this study give the most importance to taste and personal and family habits when evaluating their choice of drinking water. Safety, hygiene, convenience and availability were identified as important factors for the preference of a particular type of water, while price, taste, and personal and family habits were also ranked highly (Qian, 2018). In terms of consumption behavior, family habits and attitudes appear to be important (Veselá et al., 2023). Patumtaewapibal and Boonyasiriwat (2020) found that

attitudes, subjective norms, and perceived control influence purchase intention whether to consume bottled or tap water. Health consciousness had no effect.

The essence of the reusable bottle product is the packaging. The product, as well as its packaging, must reflect not only the environmental but also the social and economic dimensions of sustainable development (Purvis et al., 2019). The essence of the packaging concept is to ensure the protection of the product and easy and safe handling of the product, but it must also provide information understandably and credibly, reduce resource consumption and waste generation, extend the life cycle of the product by reusing it, or ensure the recyclability of packaging waste at the end of its life cycle. The problem of recyclability starts with the consumer and their decision about whether the material is included in the recycling process or is discarded and ends up in landfills or incinerators. A step towards more recycling is increased consumer awareness of marine litter and the state of ecosystems (Genovese et al., 2023; Olatayo et al., 2021). Last but not least, packaging must respect design and affordability. These defining characteristics for the packaging manufacturer are complemented by the special characteristics of the product: the material used to contain the natural product, its volume, weight, design, price and a range of other characteristics that create a level of satisfaction and suitability for the consumer.

Manufacturers respect such requirements and may differ in other special features. Using the example of a reusable water bottle, the packaging is made of materials that can be divided into 4 groups: metal, polymer, glass, and silicone (Transparency Market Research, 2017). Metal bottles are mostly made of stainless steel, while polymers known as plastics can be divided into hard plastics - Tritan™ and soft types of plastics - non- Tritan™. The materials used are evaluated according to how they meet the requirements to create a sterile environment, guaranteeing the quality of the goods and health safety throughout the marketability period, while complying with the established conditions for storage and transport. Glass is one such packaging that meets these characteristics. Glass is a food and beverage packaging material that is not subject to registration under REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). This E.U. regulation requires manufacturers to register all other materials and substances that may have harmful effects on human health. A commonly used material is plastic - the PET bottle, which offers some more convenient properties for consumers but falls short in terms of quality and health. A special characteristic of plastic water packaging is the monitoring of the release or non-release of the substance BPA (Bisphenol A). This is a chemical the use of which is widespread in many consumer product packaging materials (Brenz et al., 2020; Holmes et al., 2021). However, this substance has harmful effects on the hormonal system and human development (Cooper et al., 2011). Each packaging material should be evaluated this way. Currently, the most widely used packaging material for liquids is Tritan™, a new-generation copolyester obtained by modifying polyester itself, which has a number of advantages. It is BPA-free and retains its clear appearance, strength, mechanical resistance, chemical stability, no aftertaste, freshness, and heat resistance. Therefore, Tritan™ products can be found in healthcare, household goods, baby supplies, and packaging, and also in outdoor, hiking, or military equipment (Holmes et al., 2021; Cavalcanti et al., 2020).

### 3 RESEARCH OBJECTIVE, METHODOLOGY AND DATA

Sustainability is a concept that is of interest to society as a whole. Sustainability has two parts - consumption and production. It is this interplay between the two parts of sustainability that has become our focus. Therefore, this paper deals with the consumption habits that influence

the preference to use a reusable bottle product, and what features of a reusable bottle are important for younger consumers.

To do so, it is necessary to find out whether the consumer of the young generation approaches the issue of sustainable consumption responsibly already when forming the intention to purchase or just satisfies their needs in the most convenient way possible. Does the use of such a product lead to a more sustainable consumption and therefore to a decrease in the use of disposable bottles? To answer this, we set a research question:

*RQ1: Is there a relationship between the frequency of reusable bottle use and the amount of disposable bottles consumed? That is: the more frequently consumers use a reusable bottle, the more the consumption of disposable bottles decreases.*

When studying the reusable bottle market, the consumer’s gender should also be taken into account. Is there a difference in consumption behavior between the sexes? To answer this, we set a research question:

*RQ2: Is there a gender difference in ownership and frequency of reusable bottle use?*

Furthermore, which product features of the reusable bottle are preferred by the young consumer when purchasing? What role does design play in terms of attractiveness and interest in purchase? What relevant information for the perception of the sustainability process do they expect from the manufacturer? These questions can help manufacturers achieve a competitive advantage in the market if a product respecting sustainability meets these expectations. Manufacturers and retailers can also find a competitive advantage in better targeting their offer. Knowing the market segments can help. Therefore, we further segment consumers according to environmental preferences, purchase motivations, and preferences for reusable bottles.

Primary data on the opinions and behavior of the young generation respondents regarding the reusable bottle, what properties of the bottle consumers prefer and what attitude they have towards environmental issues are obtained through a questionnaire survey. The sample consists of 639 respondents, and its socio-demographic structure (i.e., age, education, economic activity, and size of the municipality of residence) is presented in Table 1. Respondents are selected by random sampling. The questionnaire was distributed online using the umbrella application (<https://umbrella.mendelu.cz/>), the questionnaire system of Mendel University in Brno.

Tab. 1: Characteristics of the research sample. Source: Umbrella, own processing.

Znak		$n_i$	$p_i$
Gender	Female	376	58.84
	Male	263	41.16
Age	18 - 24	521	81.53
	25 - 34	118	18.47
Education	Primary	11	1.72
	Secondary	468	73.24
	Higher	160	25.04
Size of municipality	to 1,999 inhabitants	151	23.63
	from 2,000 to 19,999 inhabitants	159	24.88
	from 20,000 to 99,999 inhabitants	124	19.41

	100,000 and more inhabitants	205	32.08
Economic activity	Employee	134	20.97
	Business	25	3.91
	Student	473	74.02
	Unemployed	7	1.10

In the survey, the content questions are divided into 4 sections: a) consumer behavior issues (motives for using reusable bottles, importance of individual properties); b) sustainability and environmental preferences; c) evaluation of the attractiveness of specific bottles; and d) socio-demographic issues. The questions in section (a) concern the frequency of use of reusable bottles, whether they own them, the negatives of using them, and questions on preferences for particular properties of the packaging of reusable bottles. The properties that are evaluated and that are desired for a reusable bottle are good quality, affordable price, design, brand, ease of cleaning, resistance to liquid leakage, BPA free, dishwasher safe, water filter, liquid quantity indicator, lightweight, and eco-friendly material.

Descriptive statistics are used to process the results of the survey, and Pearson's  $\chi^2$  test is used to test the hypotheses. Cluster analysis is applied to create segments of individuals with similar behaviors and similar views on water bottle reuse. Cluster analysis classifies objects, in this case, respondents (consumers), based on their opinions on content variables in order to organize them into a certain number of clusters (segments). The segments serve for better targeting for producers and marketers. In the investigation carried out, 31 variables from 3 areas entered the cluster analysis: (1) environmental preferences; (2) motivation to buy reusable bottles; and (3) importance of the characteristics of reusable bottles. Area (1) of environmental preferences is assessed using a 4-point Likert scale for the following 15 statements (variables): (a) Current technological developments and related changes worry me. (b) I prefer to invest my money in experiences rather than material things. (c) Humans are the most important objects in the universe. (d) Humans should only obey rational laws. (e) I have no problem adapting to new situations. (f) Scientific and technological progress will solve our environmental problems. (g) I believe that the importance of the family is declining in today's society. (h) I feel a responsibility to protect the environment for future generations. (i) I believe that my behavior does not affect the environment. (j) I believe that the eco-friendly products I purchase are indeed environmentally friendly. (k) When buying a new product, the price is more important to me than the eco-friendly properties of the product. (l) When buying a new product, quality is more important to me than the eco-friendly properties of the product. (m) I admire people who use eco-friendly products. (n) Buying eco-friendly products is a sign of higher social class. (o) I am proud when other people see that I use eco-friendly products.

Area (2) of motives to buy is assessed using a 10-point scale for the following 4 variables: These bottles are trendy and look good; These bottles help reduce plastic waste; These bottles are practical, as I can use them on different occasions (sport, work, school, ...); These bottles save me money. Area (3) on the importance of the characteristics of reusable bottles is rated on a 10-point scale and refers to the following 12 variables: good quality, affordable price, design, brand, ease of cleaning, resistance to liquid leakage, BPA free, dishwasher safe, water filter, liquid quantity indicator, lightweight, eco-friendly material. The cluster analysis enters the data in the original variables, however, for clarity and comparability, the resulting table is converted to the same 10-point scale. The question on purchase motivation is not mandatory, so only 581 responses enter the final analysis. The k-means clustering algorithm is used. This is suitable for data sets of hundreds of objects and larger. First, initial clusters are created and for each one,

the centroid, or vector of average values of each variable, is calculated. The objects are then assigned to the cluster whose centroid is closest to their values. The k-means algorithm minimizes the following function (Greene, 2018):

$$f_{KP} = \sum_{h=1}^k \sum_{i=1}^n u_{ih} \|x_i - \bar{x}_h\|^2, \quad (1)$$

where elements  $u_{ih} \in \{0, 1\}$  indicate whether the  $i$ -th object is (value 1) or not (value 0) assigned to the  $h$ -th cluster, and  $\bar{x}_h$  is a vector of average values of the  $h$ -th cluster. The following must be satisfied:

$$\sum_{h=1}^k u_{ih} = 1 \text{ for } i = 1, 2, \dots, n \text{ and } \sum_{i=1}^n u_{ih} > 0 \text{ for } h = 1, 2, \dots, k. \quad (2)$$

The questions on the attractiveness rating of individual bottles answer the question of the importance of individual bottle characteristics, including design properties, which are important not only for the young generation consumer but also for the producer, as the attractiveness shown is also associated with the purchase decision. For this reason, 2 versions of the questionnaire are distributed. 335 respondents rate the attractiveness and purchase interest on a 5-point scale of the bottle based on the visual properties of the bottle including price. A further 335 respondents rate the attractiveness of the bottle based on the visuals only and are asked how much they are willing to pay for the bottle in addition to the attractiveness rating. The ranges are up to 99 CZK; 100-249 CZK; 250-499 CZK; 500-749 CZK; 750 CZK or more. Attractiveness and purchase interest are then transformed into averages. The willingness to pay for a bottle is then tabulated in intervals in the table in the relative frequency of responses. The visuals of each bottle are shown in Fig. 1.





Fig. 1: Design and visualization of bottles.

## 4 RESULTS

### 4.1 Consumer behavior to reusable water bottles

From the questionnaire survey of  $n = 639$  respondents, 541 respondents (84.66%) answered yes to the basic question of whether they own and prefer a reusable water bottle, and only 98

(15.34%) either do not own or do not use a reusable water bottle. Those who do use a bottle prefer a 500 ml or 750 ml bottle. When asked how often they use the bottle, 70% of the respondents said they use it several times a week, with over 30% even using it daily; see Fig. 2. This is therefore a product with frequent use, which can be used as an example of a reusable product suitable for understanding consumer behavior about the environment.

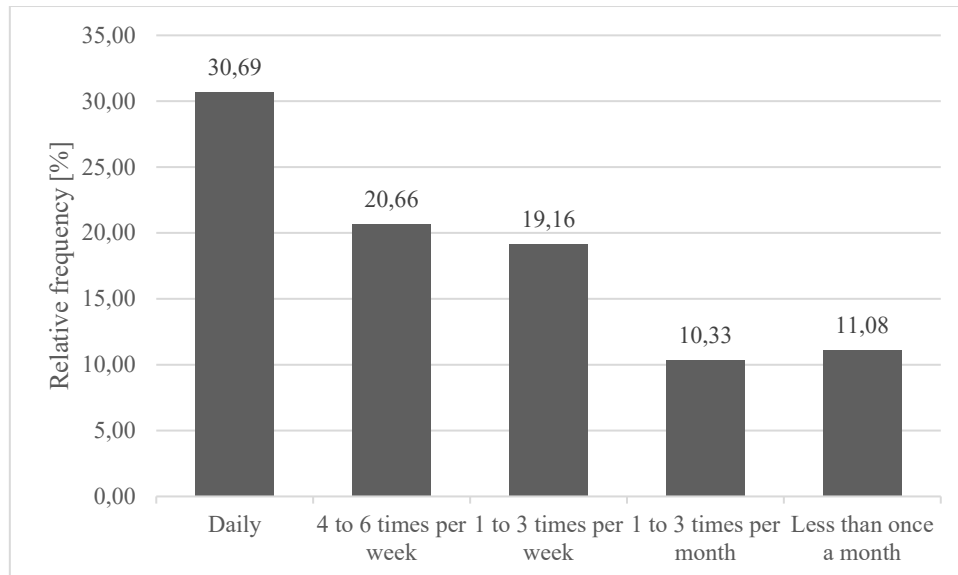


Fig. 2: Frequency of use of reusable bottles (n=614, optional question).

Source: Umbrella, own processing.

Another important finding that emerged from the survey was the change in the amount of disposable bottles consumed when purchasing a reusable bottle. The purchase of a reusable bottle shows a positive trend, as 61% of respondents (n=593) answered that the consumption of disposable bottles decreased after the purchase of a reusable bottle. 25% of respondents said that their consumption of disposable bottles remained the same, and 2.39% answered that it increased.

Respondents' answers also provided information on barriers to reusable bottle use. Fig. 3 shows that the biggest disadvantages of the bottle are the difficulty of cleaning, high weight for some respondents, and the facts associated with handling (not leaking, not forgetting it, etc.). This information is particularly valuable to reusable bottle manufacturers when making decisions on bottle properties and design, the implementation of which can be essential for market success.

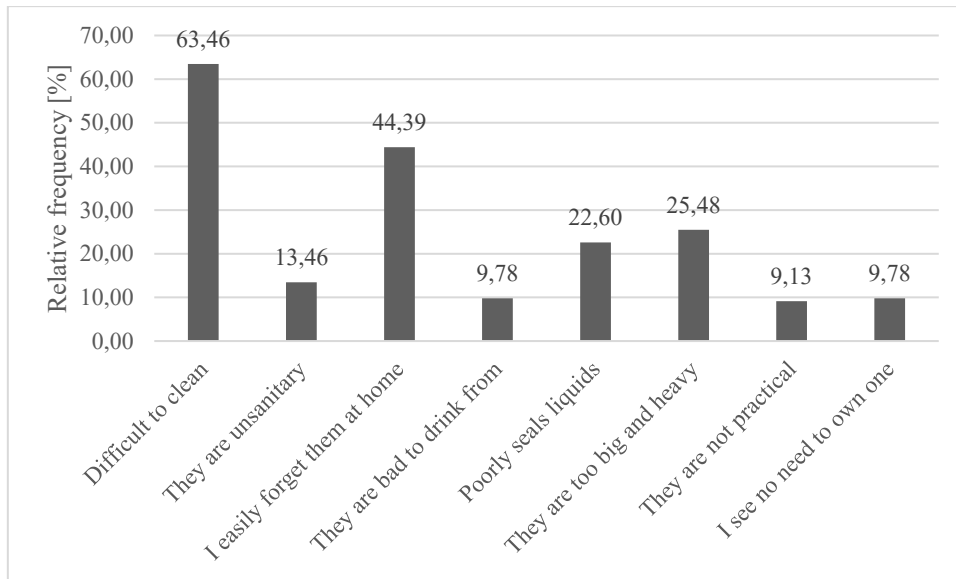


Fig. 3: Barriers to using reusable bottles (n=639). Source: Umbrella, own processing.

Based on the research questions RQ1 and RQ2, the following hypotheses were established:

H01: *The frequency of reusable bottle use does not affect the consumption of disposable bottles.*

H02: *There is no gender difference in the ownership of reusable bottles.*

H03: *There is no gender difference in the frequency of reusable bottle use.*

Based on the Pearson  $\chi^2$  test results, we reject the null hypothesis in all cases and accept the alternative hypothesis. The results of all Pearson  $\chi^2$  tests are shown in Tab. 2.

Tab. 2: Results of established hypotheses. Source: Statistica software, own processing.

Hypothesis	Pearson $\chi^2$	df	p-value	Coefficient
H01	115,453	df=8	< 0,001	Kendall. tau c = 0,294
H02	19,245	df=1	< 0,001	Phi = 0,173
H03	17,088	df=4	0,002	Cramér's V = 0,171

Tab. 3: Contingency table of frequency of use of reusable bottles dependent on change in consumption of disposable bottles. Source: Statistica software, own processing.

Frequency of use of reusable bottles	Change in consumption of disposable bottles			Sum
	I use less	Stayed the same	I use more	
Daily	161	26	5	192
4x to 6x per week	107	23	2	132
1x to 3x per week	85	32	3	120
1x to 3x per month	25	37	2	64

less than once a month	14	42	3	59
Sum	392	160	15	567

Tab. 2 shows that H01 was rejected, and the frequency of use of reusable bottles affects the consumption of disposable bottles. The contingency table (Tab. 3) also shows that the frequency of use of reusable bottles reduces the consumption of disposable bottles, i.e., buying a reusable bottle and using it significantly reduces the consumption of disposable bottles. This is a sufficient argument to support a change in the distribution and handling of PET bottles. Furthermore, in Tab. 2, there was a significant gender difference in ownership and frequency of use of the reusable bottle. Despite the verified significance between the variables, the value of the correlation coefficients indicates only a low level of dependence.

#### 4.2 Properties of reusable bottles and consumer preferences

For manufacturers, it is also important to know how respondents who use the bottle rated and expressed their opinions on the importance of the different characteristics of the reusable bottle (Fig. 4).

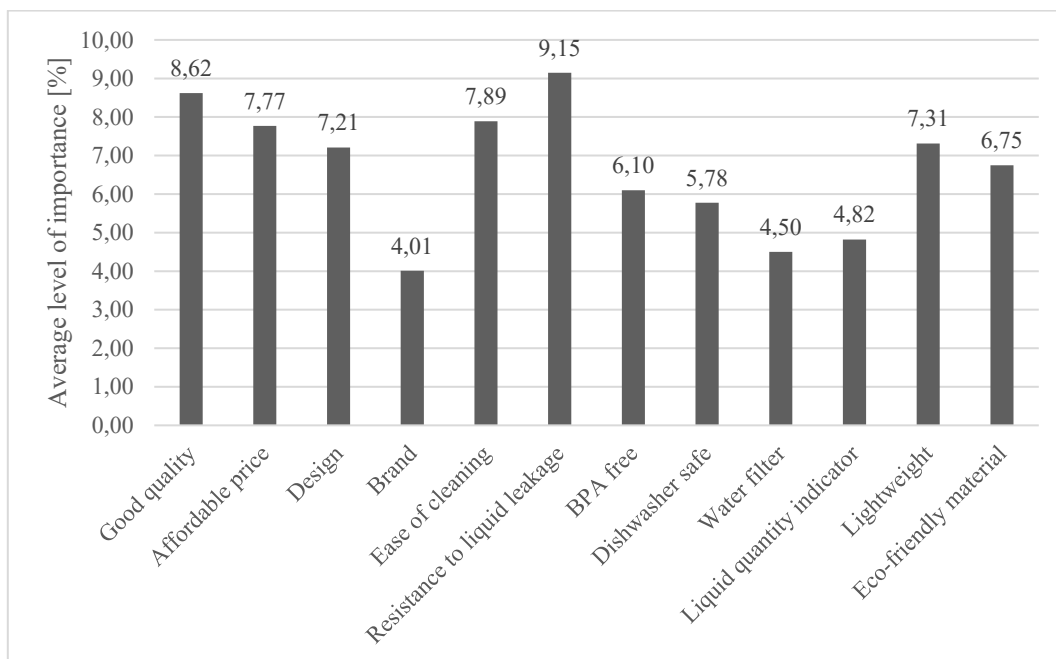


Fig. 4: Perceived importance of individual properties of reusable bottles (n = 639). Source: Umbrela, own processing.

The respondents' answers and their experience with using the bottles show that the most important characteristic is resistance to liquid leakage, followed by good quality, ease of cleaning, affordable price, and lightweight; only then, in order of importance, do properties related to health or sustainability appear (the use of eco-friendly material for its production and BPA-free material).

Considering the aim of the paper and the understanding of how the two main components, i.e., sustainability and healthy lifestyle, affect purchasing behavior, it was important to know how the consumer perceives the material used to make the bottle. The characteristics that the bottle should fulfill were specified in the methodology of the paper. In the investigation, the most

preferred material used is Tritan™ hard plastic, followed by glass. These two materials, with an overall preference of about 70% of the respondents, show a general awareness of the suitability of Tritan™, supported by its common use in the healthcare sector. The other three materials - stainless steel, aluminum and polypropylene plastic - are preferred by smaller percentages. See Fig. 5.

This information is a sufficient argument for bottled mineral water producers to change their bottling strategy, e.g., the already discussed and forthcoming use of returnable bottles or the use of other materials.

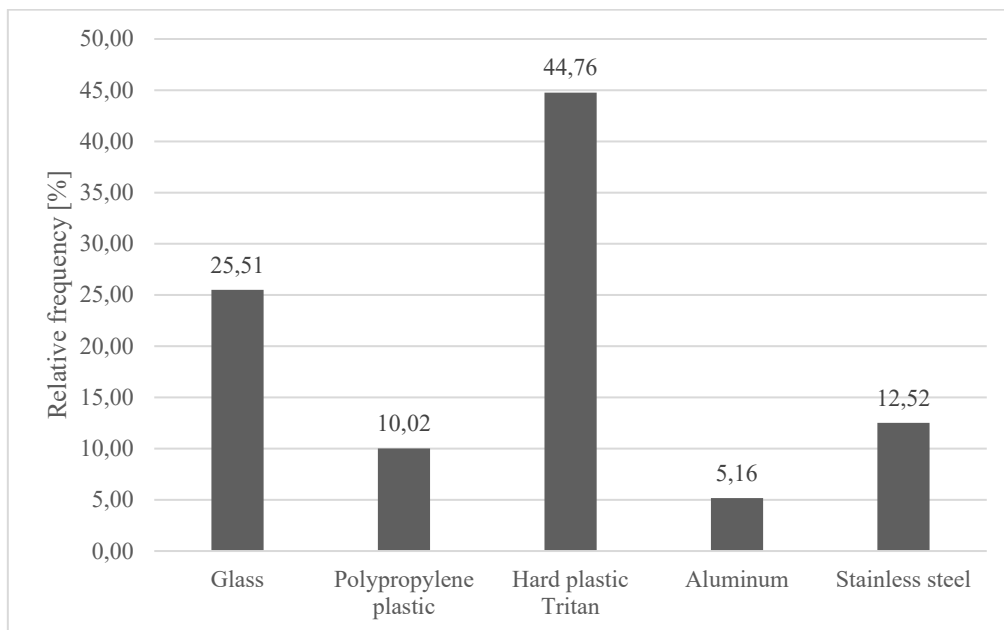


Fig. 5: Preferred material (n=639). Source: Umbrella, own processing.

### 4.3 Design of reusable bottles

We took note of the fact that rational decision-making about buying a product is sometimes accompanied by an emotional influence, and therefore the respondents were offered visualizations of individual bottle brands to evaluate their aesthetics, design, and provide comments. How they rated the attractiveness of the bottles when visualized, along with the associated interest in purchasing them, is shown in Tab. 3. In the table, all values greater than 4 for attractiveness, greater than 3 for interest in buying, and all relative frequencies for price greater than 40 % are in bold. For better orientation, the relative frequency is further colored by conditional formatting (the higher the value, the lighter).

The visualization therefore provided further insights for evaluating the different bottle brands and how they compete with each other. The evaluation included finding out for which brand attractiveness is a decisive factor for purchase. An example of this is the Equa Plain Grey brand, which demonstrated the highest attractiveness rating and also the highest purchase interest. How attractiveness is associated with bottle price can be seen in Tab. 3, and it shows that the attractive brand is the brand that consumers are both willing to buy and most willing to pay for. It is also evident from Fig. 6 that the attractiveness of the bottle coincides with the evaluation of all other attributes. The only exceptions were 2 brands where the influence of other attributes significantly outweighed attractiveness (CIKCAK and Naigene Wide Mouth) and 1 brand

where attractiveness strongly outweighed the importance of other attributes, namely, Nalgene Oasis. For the producers, these results showed that one of the observed attributes - design - plays an important role and holds a certain position for the attractiveness of the brand, the associated interest in buying it, and a certain willingness to pay a higher price. It appears that consumers are willing to pay a maximum of 500 CZK. The more attractive the bottle is, the more interest in buying it, albeit to a certain limit.

Tab. 4: The attractiveness of individual bottles. Source: Umbrella, own processing.

Bottle	With properties				No properties						
	Attractiveness		Interested in buying		Attractiveness		Price (ni)				
	$\bar{x}$	SD	x	SD	$\bar{x}$	SD	to 99	100-249	250-499	500-749	> 750
Drinkit CIKCAK	<b>4.56</b>	1.59	<b>3.20</b>	1.65	3.71	1.63	20.88	<b>46.76</b>	25.59	4.71	0.29
Baagl Bio bottle	2.31	1.37	2.10	1.45	2.33	1.39	<b>64.71</b>	27.65	5.29	0.59	0.00
DM Profissimo	<b>4.20</b>	1.58	<b>3.88</b>	1.74	3.96	1.46	21.76	<b>54.71</b>	19.12	1.76	0.88
Crivit	2.33	1.56	1.78	1.26	2.54	1.62	<b>50.29</b>	38.82	7.35	1.18	0.59
Equa Active Mint	<b>4.75</b>	1.60	3.77	1.75	<b>4.53</b>	1.69	10.29	36.47	42.35	8.24	0.88
Equa Plain Grey	<b>4.90</b>	1.44	<b>4.31</b>	1.67	<b>4.79</b>	1.43	11.47	<b>40.88</b>	36.76	7.06	2.06
GSI Infinity Dukjug	2.48	1.60	2.22	1.63	2.38	1.53	<b>49.41</b>	35.59	11.47	1.76	0.00
IKEA 365+	3.07	1.62	2.97	1.75	2.92	1.54	<b>61.47</b>	30.88	5.00	0.88	0.00
Ikea SOMMAR 2019	2.99	1.65	2.35	1.59	2.87	1.55	<b>50.00</b>	35.88	9.41	2.35	0.59
Ikea FJARMA	2.72	1.48	2.30	1.49	2.80	1.38	<b>45.59</b>	<b>40.59</b>	11.76	0.29	0.00
Ikea UPPLADDA	2.83	1.61	2.48	1.62	3.04	1.56	31.76	<b>42.94</b>	20.29	2.65	0.59
Lifefactory	3.68	1.58	2.91	1.53	3.34	1.46	28.53	<b>49.12</b>	18.82	1.76	0.00
LifeStraw GO	3.83	1.67	2.91	1.71	<b>4.07</b>	1.52	15.59	<b>41.47</b>	33.82	6.47	0.88
Tritan Bottle	3.30	1.53	2.83	1.52	3.45	1.57	34.12	<b>42.35</b>	18.53	2.65	0.59
Knight	<b>4.87</b>	1.55	<b>3.99</b>	1.74	<b>4.67</b>	1.66	19.41	<b>35.29</b>	32.06	10.29	1.18
Mepal Ellipse	<b>4.10</b>	1.56	<b>3.34</b>	1.62	3.71	1.40	25.00	<b>49.12</b>	22.65	1.47	0.00
Monbento Positive M black	<b>4.35</b>	1.72	<b>3.52</b>	1.79	<b>4.28</b>	1.78	18.53	<b>35.29</b>	<b>35.29</b>	7.06	2.06
Nalgene Oasis	1.73	1.28	1.55	1.16	2.17	1.34	<b>61.76</b>	26.76	9.12	0.59	0.00
Retap 05	3.55	1.74	<b>3.04</b>	1.85	3.20	1.63	37.94	<b>42.35</b>	15.29	2.06	0.59
Nalgene N-Gen	2.99	1.51	2.73	1.56	2.57	1.23	<b>49.41</b>	40.29	7.65	0.88	0.00
Bopp Sport	3.21	1.90	2.36	1.59	2.92	1.78	37.94	37.94	17.94	3.53	0.88
Nalgene Wide Mouth	2.39	1.56	2.09	1.48	1.78	1.26	<b>78.24</b>	17.06	2.65	0.29	0.00
Logovka	2.19	1.32	2.01	1.39	2.33	1.35	<b>65.00</b>	26.18	5.88	0.88	0.29
Sigg Viva	3.53	1.63	2.83	1.61	3.47	1.53	25.88	<b>50.00</b>	19.71	1.76	0.88

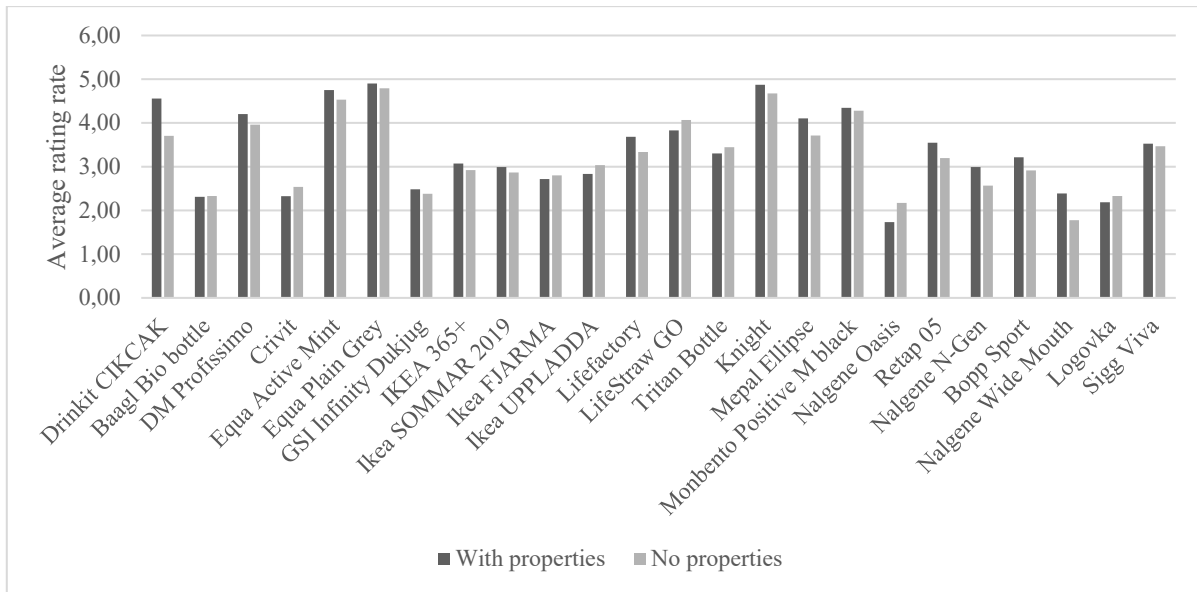


Fig. 6: Rating of attractiveness with and without properties. Source: Umbrella, own processing.

#### 4.4 Segments of young consumers in the reusable bottle market

The application of cluster analysis has contributed to a deeper understanding of the sustainability behaviors of the younger generation of consumers, helping to identify consumer segments with similar behavior and consensus in the reusable bottle market.

Tab. 5: Characteristics of individual clusters (n = 581). Source: Statistica software, own processing.

	Cluster 1 (n=156)	Cluster 2 (n=112)	Cluster 3 (n=149)	Cluster 4 (n=164)
<b>Environmental preference</b>				
(1)(a) Current technological developments are of concern to me.	5.82	5.60	6.21	6.45
(1)(b) I invest in experiences rather than material things.	<b>7.60</b>	6.56	<b>7.50</b>	<b>7.24</b>
(1)(c) Humans are the most important objects in the universe.	5.42	5.78	5.07	5.90
(1)(d) Humans should follow only rational laws.	6.27	5.80	6.29	6.43
(1)(e) I have no problem adapting to new situations.	<b>7.29</b>	6.96	<b>7.55</b>	<b>7.35</b>
(1)(f) Science and technological progress will solve our environmental problems.	6.12	6.09	6.19	6.37
(1)(g) I believe that the importance of the family is declining.	6.75	6.61	<b>7.01</b>	6.60
(1)(h) I feel a responsibility to protect the environment for future generations.	<b>8.13</b>	6.74	<b>8.36</b>	<b>7.99</b>
(1)(i) I believe that my behavior does not affect the environment.	4.01	5.22	4.11	4.68
(1)(j) Eco-friendly products, are environmentally friendly.	<b>7.34</b>	6.38	<b>7.53</b>	<b>7.38</b>
(1)(k) Price is more important than the eco-friendly properties of the product.	6.54	6.94	5.84	6.43
(1)(l) Quality is more important than the eco-friendly properties of the product.	6.79	<b>7.32</b>	6.86	<b>7.07</b>
(1)(m) Admiration of using environmentally friendly products.	<b>8.30</b>	6.67	<b>8.36</b>	<b>7.76</b>
(1)(n) Environmentally friendly products = higher social class.	5.42	5.40	5.54	5.73
(1)(o) Use of environmentally friendly products.	6.52	5.07	6.76	6.65
<b>Motivation to use</b>				
(2) They are trendy and good looking.	5.51	3.61	4.93	6.20
(2) They help reduce plastic waste.	<b>9.04</b>	5.75	<b>8.97</b>	<b>8.68</b>
(2) They are practical.	<b>9.09</b>	6.14	<b>8.85</b>	<b>8.60</b>

(2) They save money.	<b>8.34</b>	4.53	<b>7.59</b>	<b>7.35</b>
<b>The importance of the characteristics of reusable bottles</b>				
(3) Good quality	<b>8.67</b>	<b>7.22</b>	<b>8.95</b>	<b>9.13</b>
(3) Affordable price	<b>7.98</b>	6.23	<b>8.15</b>	<b>8.31</b>
(3) Design	<b>7.42</b>	5.54	<b>7.21</b>	<b>8.10</b>
(3) Brand	3.54	3.38	2.74	5.88
(3) Ease of cleaning	<b>7.58</b>	6.98	<b>7.97</b>	<b>8.59</b>
(3) Resistance to liquid leakage	<b>9.37</b>	<b>7.97</b>	<b>9.64</b>	<b>9.31</b>
(3) BPA free	4.92	4.35	<b>7.64</b>	<b>7.06</b>
(3) Dishwasher safe	2.48	5.07	<b>7.17</b>	<b>8.04</b>
(3) Water filter	2.90	3.29	4.34	6.55
(3) Liquid quantity indicator	4.03	3.97	3.37	<b>7.34</b>
(3) Lightweight	<b>7.37</b>	5.73	<b>7.36</b>	<b>8.32</b>
(3) Eco-friendly material	6.37	4.63	<b>7.77</b>	<b>7.74</b>

In terms of thematic focus, 581 respondents entered into the processing and answered questions expressing the strength of their relationship to and importance of sustainable development issues. 31 variables were divided into 3 thematic clusters (1) environmental preferences, (2) motivation to use reusable bottles, and (3) importance of reusable bottle characteristics. All variables entering the cluster analysis are included in Tab. 4. The columns in Tab. 4 represent each cluster (segment) and the importance of each variable. Due to the difference in the scoring scale used for the question on environmental preferences (scoring scale 1-4), a recalculation was made for comparability. Values greater than 7 are in bold.

A deeper look at the respondents assigned to each cluster and the differences in their views shows that some views are common to multiple segments. On the positive side, we find that, except for one segment, the other three consumer segments have significant preferences for sustainability. The majority of respondents own a reusable bottle, most prefer a 500ml bottle, the material used for the bottle is predominantly Tritan™ hard plastic for most respondents, and they use water from the public tap, mostly daily. Given that this reflects the behavior of respondents, who are mostly representatives of the younger generation, the result of the survey can be considered positive. Moreover, for all segments, there is only a slight concern about current technological developments, which may be a sign of confidence in the development of scientific and technological knowledge and an impetus for strategic decisions by producers. For all segments, motivation to use appeared to be related to environment, practicality, and quality. Conversely, trendiness and looking good proved to be less important.

Segment 1, “environmental enthusiasts,” n=156 (26.85%). This segment is two-thirds women (67.31%) with a strong connection to environmental protection. The main motivation is not only the practicality of reusable bottles but the fact that use helps reduce plastic waste. They are aware of the importance of life on Earth, and the position of human beings as the most important creatures. Therefore, they also feel a strong responsibility to leave a good condition to future generations, preferring sustainably produced products. They do not forget the social aspect and the importance of the family for the future.

Segment 2, “sustainability skeptics,” n=112 (19.28%). For consumers in this segment, the relationship with environmental protection is the least strong. They are not interested in environmental issues, they do not have strong opinions on the characteristics of the bottle, and they are not motivated to behave by following sustainable living. This segment is predominantly



male (63.39%), even though the vast majority of consumers in this segment own a reusable bottle (86.61%). This may be explained by the fact that they belong to a group of respondents - sportsmen who use water bottles during training and matches.

Segment 3, “responsible for the future,” n = 149 (25.64%). They also show this view in society, supporting the conservation of water and other products. Women are more represented. This segment most closely matches the behavior in segment (1) but with more emphasis on price and practicality. Like the previous segments, they prefer online shopping (55.70%).

Segment 4, “environmental and quality protectors,” n=164 (28.23%). Women are predominant here (64.63%). They respect their responsibility for environmental protection, and at the same time they value quality and design. Respondents of this segment slightly prefer to buy in brick-and-mortar stores (50.61%). The social aspect of the issue is reflected in them, as they prefer more experiential sensations than material things.

## 5 DISCUSSION AND CONCLUSION

The results show a relationship to sustainability not only in terms of consumption but also in terms of the associated production. The characteristics of a reusable bottle that this product should fulfill to be attractive to the young generation, to be used by consumers, and to be successful in a competitive market are presented. Preferred volumes include 500 and 750 ml. The most important properties are good quality, ease of cleaning, resistance to liquid leakage, design, price, and light weight. Although the BPA free property does not come out among the most important properties, the most preferred material is Tritan™ plastic, which has the property BPA free, which is important from a human health point of view because BPA according to has harmful effects on the hormonal system and human development (Cooper et al., 2011). The second most preferred material is glass. The materials are in line with sustainable production, because according to Meherishi et al. (2019), what materials are used to produce a product is important from a sustainability perspective, including the possibility of recycling.

The preference for ease of cleaning was also reflected in the question about barriers to use, with the answer that it is difficult to clean being the biggest barrier. A detailed definition of the desired characteristics of a reusable bottle by the consumer is the best recommendation for the manufacturer and its success in the market.

The visualization of the different bottle brands and the opportunity for respondents to view these bottles provides additional insights that should be considered. The design of the bottle plays an important role, as it contributes to the attractiveness of the bottle and thus to the interest in buying it. The results show that the more attractive the bottle is, the more interest in buying it increases and the more consumers are willing to pay a higher price. However, most respondents are not willing to pay more than 500 CZK for a bottle. These results support Purvis et al. (2019), who state that environmental sustainability is related to economic and social sustainability.

The results show a relationship between the frequency of reusable bottle use and the volume of disposable bottle consumption, verified by Pearson's  $\chi^2$  test at the 0.001 and 0.002 significance levels. Therefore, the use of reusable bottles leads to a reduction in the volume of disposable bottle consumption and thus to a reduction in the volume of waste produced.

K-means cluster analysis has been used to determine the consumer segments in the reusable bottle market and the targeting of these segments. As more than 80% of the respondents own a

reusable bottle, we confirm the trend towards reusable products (Cochrane, 2018). The cluster analysis divided the young generation consumers into 4 segments. For all segments, the motivation to use bottles was found to be related to the environment and practicality - they help reduce plastic waste, are practical, and are of high quality at the same time. Conversely, trendiness and looking good proved to be the least important. The three segments show a positive relationship with sustainability, differing in their relationship with price and less important variables such as preference for experiential sensations, social aspect, and importance of family.

Manufacturers of reusable bottles can use the results of this study in the development of new products or innovation of existing products, as well as in the planning of effective interventions and education to promote the use of reusable products. According to Barraco (2024), the promotion of low environmental impact products is gaining importance. However, as stated by Vitell (2015), corporate social responsibility can only be achieved through consumer social responsibility. Therefore, from a firm's perspective, the firm must convey relevant information about sustainability. In terms of communication, the results show that there is a need to communicate practicality, environmental aspects as well as price benefits, as suggested by Saylor et al. (2011). Moreover, Kielczewski et al. (2017) state that consumer awareness increases their competence about sustainability, which in turn stimulates sustainable consumption. This may be directly related to firms' competitiveness. Information should be conveyed in the highest possible quality because, as Loh and Tan (2020) state, higher quality sustainability messages additionally lead to higher brand equity.

In conclusion, from the conducted research, it is possible to draw a positive attitude towards reusable products, their use to reduce the volume of waste produced, the identified desirable characteristics of such a product as a recommendation for producers, their success in the market, the need for education on sustainability, and finally, as Ertz et al. (2017) suggest, the need for communication between the retailer and the customer about the nature of the product. Corporate marketers may use the survey results to develop marketing strategies, government agencies to highlight the benefits of sustainable products and promote them, and consumers to practice environmental stewardship through effective communication.

## References

1. Aschemann-Witzel, J., De Hooge, I. E., & Almlí, V. L. (2021). My style, my food, my waste! Consumer food waste-related lifestyle segments. *Journal of Retailing and Consumer Services*, 59, 102353. <https://doi.org/10.1016/j.jretconser.2020.102353>
2. Binder, M., & Blankenberg, A. (2017). Green lifestyles and subjective well-being: More about self-image than actual behavior? *Journal of Economic Behavior & Organization*, 137, 304–323. <https://doi.org/10.1016/j.jebo.2017.03.009>
3. Brenz, F., Linke, S., & Simat, T. J. (2020). Linear and cyclic oligomers in PET, glycol-modified PET and Tritan™ used for food contact materials. *Food Additives & Contaminants. Part A. Chemistry, Analysis, Control, Exposure & Risk Assessment*, 38(1), 160–179. <https://doi.org/10.1080/19440049.2020.1828626>
4. Cavalcanti, D. K. K., Banea, M. D., & De Queiroz, H. F. M. (2020). Effect of material on the mechanical properties of additive manufactured thermoplastic parts. *Analele Universității "Dunărea De Jos" Din Galați. Fascicula XII, Utilajul Și Tehnologia Sudării/Annals of "Dunărea De Jos" University of Galați. Fascicle XII, Welding Equipment and Technology*, 31, 5–12. <https://doi.org/10.35219/awet.2020.01>

5. Cochrane, Lauren. 2018. How reusable water bottles became the new tote bag. *The Guardian*. from <https://www.theguardian.com/fashion/2017/aug/15/how-reusable-water-bottles-became-the-new-tote-bag>
6. Cooper, Z., Gibbons, S., Jones, S., & McGuire, A. (2011). Does hospital competition save lives? Evidence from the English NHS patient choice reforms. *Economic Journal*, 121(554), F228–F260. <https://doi.org/10.1111/j.1468-0297.2011.02449.x>
7. Doria, M. F. (2006). Bottled water versus tap water: understanding consumers' preferences. *Journal of Water and Health*, 4(2), 271–276. <https://doi.org/10.2166/wh.2006.0023>
8. Ertz, M., et al. (2017). From single-use to multi-use: Study of consumers' behavior toward consumption of reusable containers. *Journal of Environmental Management*, 193, 334–344. <https://doi.org/10.1016/j.jenvman.2017.01.060>
9. Francis, A., & Sarangi, G. K. (2022). Sustainable consumer behaviour of Indian millennials: Some evidence. *Current Research in Environmental Sustainability*, 4, 100109. <https://doi.org/10.1016/j.crsust.2021.100109>
10. Genovese, M., et al. (2023). Local businesses' consumption and perception of single-use plastics: A preliminary assessment for conservation and mitigation plans in the Egadi Islands marine protected area. *Marine Pollution Bulletin*, 194, 115252. <https://doi.org/10.1016/j.marpolbul.2023.115252>
11. Greene, W. H. (2018). *Econometric analysis*. Pearson.
12. Holmes, R., Ma, J., Andra, S. S., & Wang, H. (2021). Effect of common consumer washing methods on bisphenol A release in tritan drinking bottles. *Chemosphere*, 277, 130355. <https://doi.org/10.1016/j.chemosphere.2021.130355>
13. Howell, R. A. (2013). It's not (just) "the environment, stupid!" Values, motivations, and routes to engagement of people adopting lower-carbon lifestyles. *Global Environmental Change*, 23(1), 281–290. <https://doi.org/10.1016/j.gloenvcha.2012.10.015>
14. Kawasaki, Y., Nagao-Sato, S., Yoshii, E., & Akamatsu, R. (2023). Integrated consumers' sustainable and healthy dietary behavior patterns: Associations between demographics, psychological factors, and meal preparation habits among Japanese adults. *Appetite*, 180, 106353. <https://doi.org/10.1016/j.appet.2022.106353>
15. Kielczewski, D., et al. (2017). Consumers' competences as a stimulant of sustainable consumption. *Folia Oeconomica Stetinensia*, 17(2), 97–114. <https://doi.org/10.1515/fofi-2017-0021>
16. Kılıç, B., Bekar, A., & Yozukmaz, N. (2021). The new foodie generation: Gen Z. In N. Stylos et al. (Eds.). *Generation Z marketing and management in tourism and hospitality* (pp. 223–247). Springer. [https://doi.org/10.1007/978-3-030-70695-1\\_9](https://doi.org/10.1007/978-3-030-70695-1_9)
17. Lin, Y., & Chang, C. A. (2012). Double standard: The role of environmental consciousness in green product usage. *Journal of Marketing*, 76(5), 125–134. <https://doi.org/10.1509/jm.11.0264>
18. Loh, L., & Tan, S. (2020). Impact of sustainability reporting on brand value: An examination of 100 leading brands in Singapore. *Sustainability*, 12(18), 7392. <https://doi.org/10.3390/su12187392>
19. Lubowiecki-Vikuk, A., Dąbrowska, A., & Machnik, A. (2021). Responsible consumer and lifestyle: Sustainability insights. *Sustainable Production and Consumption*, 25, 91–101. <https://doi.org/10.1016/j.spc.2020.08.007>
20. Mauroner, F. L. (2019). *An analysis of the customer perception and usage preferences of reusable water bottles in the German market*. [Master's thesis, Universidade Católica Portuguesa, Portugal]. [https://repositorio.ucp.pt/bitstream/10400.14/29014/1/Master\\_Thesis\\_Fiona\\_Mauroner.pdf](https://repositorio.ucp.pt/bitstream/10400.14/29014/1/Master_Thesis_Fiona_Mauroner.pdf)

21. Meherishi, L., Narayana, S. A., & Ranjani, K. (2019). Sustainable packaging for supply chain management in the circular economy: A review. *Journal of Cleaner Production*, 237, 117582. <https://doi.org/10.1016/j.jclepro.2019.07.057>
22. Numata, D., & Managi, S. (2012). Demand for refilled reusable products. *Environmental Economics and Policy Studies*, 14(4), 421–436. <https://doi.org/10.1007/s10018-012-0037-3>
23. Olatayo, K. I., Mativenga, P. T., & Marnewick, A. L. (2021). Life cycle assessment of single-use and reusable plastic bottles in the city of Johannesburg. *South African Journal of Science*, 117(11/12). <https://doi.org/10.17159/sajs.2021/8908>
24. Patumtaewapibal, A., & Boonyasiriwat, W. (2020). The effect of health consciousness on reusable bottle behavior from the theory of planned behavior perspective. *Human Behavior, Development and Society*, 21(4), <https://so01.tci-thaijo.org/index.php/hbds/article/view/243804>
25. Pezzullo, P. C. (2024). On environmental communication as a care discipline. *Environmental Communication*, 18(1–2), 1–7. <https://doi.org/10.1080/17524032.2023.2300361>
26. Prieto-Sandoval, V., Torres-Guevara, L. E., & García-Díaz, C. (2022). Green marketing innovation: Opportunities from an environmental education analysis in young consumers. *Journal of Cleaner Production*, 363, 132509. <https://doi.org/10.1016/j.jclepro.2022.132509>
27. Puntiroli, M., Moussaoui, L. S., & Bezençon, V. (2022). Are consumers consistent in their sustainable behaviours? A longitudinal study on consistency and spillover. *Journal of Business Research*, 144, 322–335. <https://doi.org/10.1016/j.jbusres.2022.01.075>
28. Purvis, B., Mao, Y., & Robinson, D. (2018). Three pillars of sustainability: In search of conceptual origins. *Sustainability Science*, 14(3), 681–695. <https://doi.org/10.1007/s11625-018-0627-5>
29. Puttaiah, M. H., Raverkar, A. K. & Avramakis, E. (2020). *All change: How COVID-19 is transforming consumer behaviour*. Swiss Re Institute. <https://www.swissre.com/institute/research/topics-and-risk-dialogues/health-and-longevity/covid-19-consumer-behaviour.html>
30. Qian, N. (2018). Bottled water or tap water? A comparative study of drinking water choices on university campuses. *Water*, 10(1), 59. <https://doi.org/10.3390/w10010059>
31. Robinson, W. C. (1973). A review of Meadows, D. H., et al. (1972). *The limits to growth: A report for the club of Rome's project on the predicament of mankind*. Universe Books. *Demography*, 10(2), 289–299. <https://doi.org/10.2307/2060819>
32. Saunila, M., Ukko, J., & Kinnunen, J. (2023). Sustainability partnership as a moderator in the relationship between business sustainability and firm competitiveness. *Business Strategy and the Environment*, 33(2), 123–133. <https://doi.org/10.1002/bse.3493>
33. Saylor, A., Prokopy, L. S., & Amberg, S. (2011). What's wrong with the tap? Examining perceptions of tap water and bottled water at Purdue University. *Environmental Management*, 48(3), 588–601. <https://doi.org/10.1007/s00267-011-9692-6>
34. Shannon, R., Mathur, A., & Moschis, G. (2020). Toward achieving sustainable food consumption: Insights from the life course paradigm. *Sustainability*, 12(13), 5359. <https://doi.org/10.3390/su12135359>
35. Springmann, M., et al. (2020). The healthiness and sustainability of national and global food based dietary guidelines: Modelling study. *BMJ*, m2322. <https://doi.org/10.1136/bmj.m2322>
36. Sumitro, S., & Rohman, F. (2023). Environmental care attitude analysis of prospective biology teachers. *Pegem Journal of Education and Instruction*, 13(02). <https://doi.org/10.47750/pegegog.13.02.09>

37. Tarnovskaya, V. (2023). Sustainability as the source of competitive advantage. How sustainable is it? In P. N. Ghauri, U. Elg, and S. M. Hånell (Eds.), *Creating a sustainable competitive position: Ethical challenges for international firms* (pp. 75–89). Emerald. <https://doi.org/10.1108/s1876-066x20230000037005>
38. Transparency Market Research. (2023). *Packaging market research reports, analysis, insights* by TMR. <https://www.transparencymarketresearch.com/industry/packaging/general-packaging>
39. Veselá, L., Králiková, A., & Kubičková, L. (2023). From the shopping basket to the landfill: Drivers of consumer food waste behaviour. *Waste Management*, 169, 157–166. <https://doi.org/10.1016/j.wasman.2023.07.002>
40. Vitell, S. J. (2015). A case for consumer social responsibility (CNSR): Including a selected review of consumer ethics/social responsibility research. *Journal of Business Ethics*, 130(4), 767–774. <https://doi.org/10.1007/s10551-014-2110-2>
41. Westall, F., & Brack, A. (2018). The importance of water for life. *Space Science Reviews*, 214(2). <https://doi.org/10.1007/s11214-018-0476-7>

### Contact information

#### **Ing. Michal Pšurný, Ph.D.**

Mendel University in Brno  
Faculty of Business and Economics  
Department of Marketing and Trade  
Zemědělská 1, 613 00 Brno, Czech Republic  
E-mail: [michal.psurny@mendelu.cz](mailto:michal.psurny@mendelu.cz)  
ORCID: 0000-0001-5368-0714

#### **Ing. Stanislav Mokrý, Ph.D.**

Mendel University in Brno  
Faculty of Business and Economics  
Department of Marketing and Trade  
Zemědělská 1, 613 00 Brno, Czech Republic  
E-mail: [stanislav.mokry@mendelu.cz](mailto:stanislav.mokry@mendelu.cz)  
ORCID: 0000-0001-8868-0060

#### **Bc. Alexandr Langr**

Mendel University in Brno  
Faculty of Business and Economics  
Department of Marketing and Trade  
Zemědělská 1, 613 00 Brno, Czech Republic

#### **prof. Ing. Jana Stávková, CSc.**

Mendel University in Brno  
Faculty of Business and Economics  
Department of Marketing and Trade  
Zemědělská 1, 613 00 Brno, Czech Republic  
E-mail: [stavkova@mendelu.cz](mailto:stavkova@mendelu.cz)  
ORCID: 0000-0002-0889-0218

## **Acknowledgments**

This paper is the result of a research project supported by the grant of the Grant Agency IGA Faculty of Business and Economics, MENDELU No. IGA24-PEF-TP-002. This paper was also supported by the project CZ.02.1.01/0.0/0.0/16\_017/0002334 Research Infrastructure for Young Scientists, co-financed by Operational Programme Research, Development and Education.