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THE IMPACT OF ENVIRONMENTAL RESPONSIBILITY ON CHANGING CONSUMER BEHAVIOUR – SUSTAINABLE MARKET IN SLOVAKIA

Mária Holotová

Center for Research and
Educational Projects, Slovak
University of Agriculture,
Nitra, Slovakia
E-mail: maria.holotova@uniag.sk
ORCID 0000-0002-2350-1284

Ludmila Nagyová

Department of Marketing and
Trade, Slovak University of
Agriculture,
Nitra, Slovakia
E-mail: ludmila.nagyova@uniag.sk
ORCID 0000-0002-5220-2857

Tomáš Holota

Department of Building Equipment
and Technology Safety, Slovak
University of Agriculture,
Nitra, Slovakia
E-mail: tomas.holota@uniag.sk
ORCID 0000-0002-3086-7030

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ABSTRACT. Our planet is faced with numerous social and ecological challenges that we have to resolve as soon as possible through a combination of innovative ideas implemented under local conditions. One of the biggest challenges for many startups, retail chains and consumers themselves is packaging waste reduction that involves activities mainly aimed at waste prevention. The targeted impact of sustainability information on consumers' purchase intentions plays a key role in shaping their future decision-making, and Slovak market is no exception in this regard. A relatively new concept of "zero waste" in relation to packaging waste prevention directly during shopping has been given the green light thanks to behavioural changes among many Slovak eco-conscious consumers. The main aim of presented paper is to determine the level of environmental awareness among Slovak consumers basing on the results of marketing research on their shopping habits. The present paper also focuses on the current situation with zero-waste stores as a newly developing concept for Slovak market. In order to meet the objectives of this paper, own marketing research has been conducted (covering 783 respondents from Slovak Republic). For statistical processing of the results, we have used Levene's test, Bartlett's test, Kolmogorov-Smirnov test and Chi-Square test of independence. The research findings confirm that consumers' experiences, awareness and sustainable shopping habits are at a good level but there are significant differences in attitudes across generations, genders and places of living.

Keywords: environmental responsibility, questionnaire survey, Slovak Republic, sustainability, zerowaste, shopping habits.

Introduction

At present, the “zero waste” concept is becoming more actual thanks to numerous attempts made to reduce the volumes of disposed wastes (Burlakovs et al., 2018). The zero-waste management represents a holistic concept of waste management. This concept understands waste as a resource which is produced during the interim period of the resource consumption process. Examples of good practice focusing on zero waste do not show a high number, it could be said that there are very few practical approaches in today's world. Zero waste can be characterized as a very complex system, which still requires a lot of work to achieve the required quality and functioning structures in the future (Hamid, Skinder & Bhat, 2020). First thoughts and reflections on zero waste were developed in the 70s thanks to the “green pioneer” whose efforts were aimed at recycling. Their initial efforts have not yielded any concrete solutions for a more sustainable life (Khattab & El-Hagggar, 2016). One way to effectively achieve null waste is to follow the cradle-to-cradle approach. (El-Hagggar, 2010).

Growing population, expanding economy, rapid urban expansion and increasing demands on life have dramatically accelerated the solid waste generation worldwide. One of the approaches that has been suggested for addressing these concerns is the concept of zero waste. The big challenge at present is the gradual transformation of all overconsuming activities, which should eventually move closer to zero waste. (Song, Li & Zeng, 2015).

The goal of our research is to find out, through a questionnaire survey, the level of environmental awareness among Slovak consumers according to their shopping habits. By mapping the market of zero-waste stores we could also define the possibilities for the expansion of environmentally friendly practices. Our vision is to predict the chances of success based on people's opinions and their current sustainable behavior.

1. Literature review

Environmentally friendly approaches have become a major objective in various industries. Corporations have most often concentrated on one or two aspects, e.g. low weight of packaging per unit product or non-use of materials considered environmentally harmful. Such an understanding of environmental responsibility is not sufficient, but on the contrary, the environmental performance of products needs to be assessed much more comprehensively in a broader context. In recently years we are witnessing a holistic approach to the sustainability of products and their components. (Svanes et al., 2010). The European Commission has set a number of goals in the area of waste management (*Table 1*). The Directive has been revised to incorporate innovated and more forward-looking targets: 55% of municipal waste being prepared for re-use/recycling - target to be achieved by 2025, 60% by 2030 and finally 65% by 2035. The revised Packaging and Packaging Waste Directive has introduced revised recycling targets to be achieved by 2030 (European Commission, 2018b).

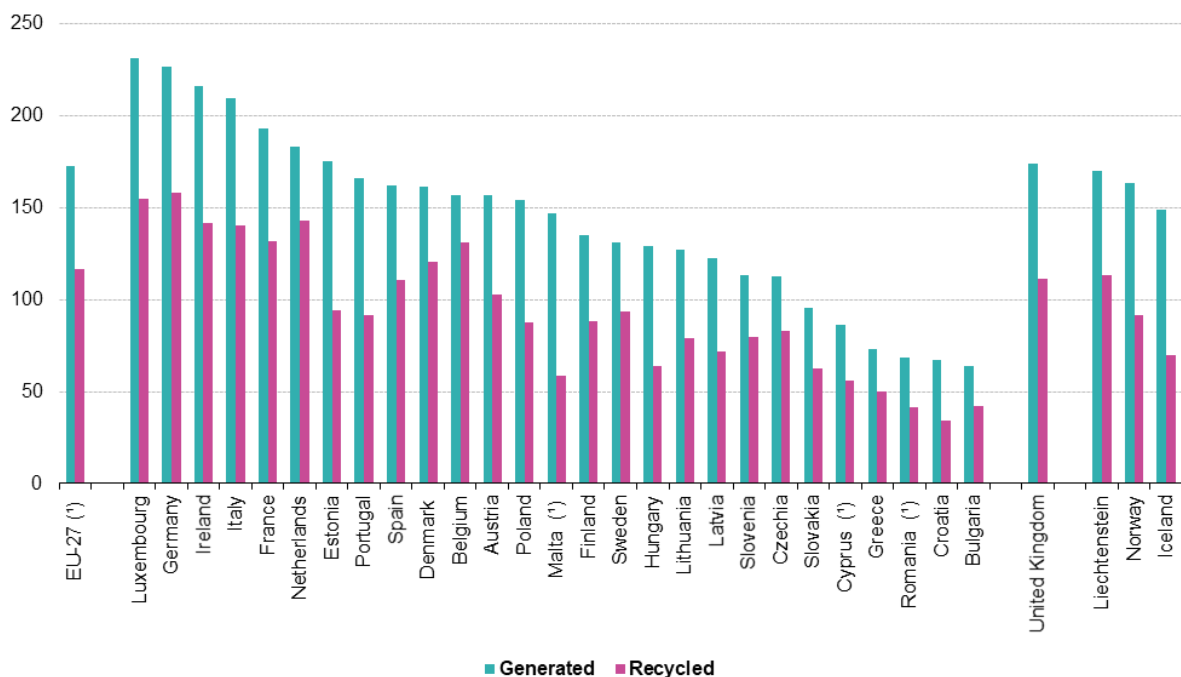
Table 1. Newly formulated recycling targets for different waste streams

	By 2025	By 2030
All packaging	65%	70%
Plastic	50%	55%
Wood	25%	30%
Ferrous metals	70%	80%
Aluminium	50%	60%
Glass	70%	75%
Paper and cardboard	75%	85%

Source: *European Commission, (2018)*

According to statistics compiled by the European Commission for the Environment, in 2010, the citizens of the European Union consumed on average 198 plastic bags per person. It is estimated that up to 90% of those were discarded after the first use. In case the whole European Union banned the use of plastics, it would save about 899.5 billion euros (Guarany, 2018).

Figure 1 provides an overview of the latest statistics reported by the EU member states in 2017 on production and recycling of packaging per inhabitant. The volume of packaging waste generated per inhabitant was more than 150 kg in 13 European countries. In 2017, Slovakia noted the 6th lowest amount of produced packaging waste from the EU 27 countries, showing generation of 95 kg per inhabitant. Luxembourg (230.8 kg/inhabitant), Germany (226.6 kg/inhabitant), Ireland (216.2 kg/inhabitant) and Italy (209.6 kg/inhabitant) recorded the highest amounts of packaging waste generated in 2017.



(1) Estimate: Italy, Cyprus, Malta, Romania (2016 data)

Figure 1. Volume of packaging waste generated and recycled per inhabitant, 2017

Source: Eurostat

The wide range of products requires an immense diversity of packaging and materials. A part of them is used and recycled with different efficiency depending on degradability of the components and efficiency of the recycling chain (Heberlein, 2006). Households are also responsible for the growing share of packaging waste, both in terms of total quantity and weight. The reason is the comfort of people, increasing living standards and increased demands on ready-made meals. However, this situation is also caused by increased food hygiene standards. The cause of excessive use of packaging is also the constant expansion of international trade, for which packaging is an essential element. (Tallentire & Steubing, 2020; Ferreira, Figueiredo & Oliveira, 2017). All kinds of packaging are problematic if we produce too much. In some areas, packaging has its merits, e.g. due to hygienic regulations etc. However, in most cases, their use is related to marketing as “packaging sells”. The environmental aspect is exceptionally taken into account, and the awareness in society has to be changed. Everyone should start from themselves and as consumers, people should think

about how to contribute to improvement (Svanes et al., 2010). At the time of purchase, the consumer decides about the nature and quantity of the waste generated, whether the waste can be recycled or must be disposed of (Pado, 2011). Every consumer can contribute to reducing the amount of waste from consumer packaging if they prefer mainly purchasing of packaging-free products (Čermák, 2018).

What role has communication about the environmental issues got, and how can scientists, media and others stakeholders achieve better results in communication aimed at bridging the gap between a high degree of public awareness and a low degree of interest (Angelou, 2011). The issue of the environment is an increasingly discussed topic, and that is why the media plays an important role in sharing messages and meaningful solutions. The importance of communication and informing the public in solving various environmental problems comes to the fore (Narula, Rai & Sharma, 2018). Ecological or zero waste lifestyle is becoming a modern trend. Especially young people belonging to the Generation Z are sufficiently aware and try to contribute to a cleaner environment through small actions, even without radical changes in the usual lifestyle. One of the ways to solve existing environmental problems is to improve and innovate environmentally friendly technologies. The goal of the local authorities and anti-consumer initiatives is to produce as little waste as possible, use raw materials to the last piece, use as few things as possible, avoid plastic and reduce ecological footprint (Roger, 2019).

2. Methodological approach

In this paper, the examples and locations of small specialized shops or retail chains with packaging-free products and draft products are presented. In our research we want to find out to what extent the zero waste concept is only a “fad” of nowadays and what consumers' willingness to live more eco-friendly is both in order to predict the extent to which people are likely to change their purchase habits.

In order to achieve formulated objectives, various sources of information were collected and applied. For the purpose of processing the particular primary data and to formulate conclusions of the study, the explanatory methods were applied. Marketing research was conducted in the period from September 2019 to February 2020.

The questionnaire data was collected and analyzed in MS Excel by using contingency tables. Illustrations display was generated subsequently. Statistical data processing was performed via XLStat. We used Kolmogorov-Smirnov test, Levene's test, Bartlett's test, and Chi-Square test of independence. For the scientific purpose of our study, we formulated the following assumptions:

- Assumption 1: There is a dependency between the frequency of shopping and particular age generations.
- Assumption 2: There is a dependency between opinions on success of zero-waste stores and the place of residence.
- Assumption 3: There are certain preferences for a specific shopping bag, and these preferences vary by gender.

We used a survey administration app (Google Forms) for the questionnaire processing where respondents participated and answered in online environment by using social networks and e-mails. Certain number of questionnaires were completed in a printed form and sent by using the postal system. Final number of respondents from the Slovak Republic was 783, as it can be seen in *Table 2* where sociodemographic characteristics of respondents are listed. Our

research includes only people of two age generations, particularly Generation X (people born in years 1965-1980) and Generation Y (people born in years 1981-1996). We chose these groups deliberately because they represent the greatest purchasing power of the population.

Table 2. Sociodemographic characteristics of respondents

	Categories	Absolute frequency	Relative frequency
Gender	Female	415	53.0%
	Male	368	47.0%
Age group	Generation X	329	42.0%
	Generation Y	454	58.0%
Residence	City	462	59.0%
	Countryside	321	41.0%
Economic activity	Employed	429	54.8%
	Unemployed	16	2.0%
	Student	267	34.1%
	Maternity leave	71	9.1%

Source: *own processing*

3. Conducting research and results

Our research is focused on the characteristics and the current situation of zero-waste stores in Slovakia, as their number increases every year. Although the Slovak market is not very large, many consumers have changed the way they buy and consume products, especially regarding product packaging due to societal challenges and individual responsibility. Consumers are becoming increasingly aware of the impact they have on the environment and therefore they want to reduce environmental pollution and reduce waste by smart eco-friendly shopping.

The basic concept is not new. The first zero waste store, Unpackaged (in Slovak Bezobalovo), was established in London in 2007. Nowadays, there are more than 160 packaging-free shops all over the world. Majority of them is situated in Europe, but there are as well markets in the Canada, South Korea, Taiwan and United States. This relatively new niche retail concept increases its numbers worldwide. There were opened 27 new zero-waste stores in 2015 (Guarany, 2018). Zero-waste stores are becoming increasingly popular around the world and Slovakia is no exception.

3.1. Zero-waste market in Slovakia – the current situation

For the past 4 years, packaging-free shops have been ranked among the new concepts in the Slovak market that now exist across the whole country and are operated in various cities. Most of them are located in larger cities and cities with higher living standards. Their number is sufficient in terms of current demand, as the consumers' environmental awareness is growing at a slower pace. Through the gradual awareness, good marketing and consumer education, it is expected that the demand for such a sales format will grow and reach more and more consumers. The situation with the location and the number of stores is illustrated in *Figure 2*.



Figure 2. Location of zero-waste grocery shops

Source: Adapted from ECO HERO (2019)

Bezobalovo, as the first store with zero waste and self-service concept in Bratislava was opened in 2017. Bezobalovo, as well as other stores, provides space for local producers to present and sell their products (Figure 3). This concept is also suitable for those consumers who seek traditional and especially high-quality ingredients and groceries that served as a typical diet for our ancestors. These products come mainly from small producers using traditional production methods. The principle of buying lies in the fact that customers bring from home their own reusable cloth bags or glass bottles to carry the goods. If consumers do not bring their own containers, they can buy reusable containers, paper bags and bags that are environmentally friendly and recyclable directly in the shop.



Figure 3. Bezobalovo, the first zero-waste store in Slovakia

Source: Adapted from Bezobalovo (2020)

Since this zero-waste trend has becoming increasingly popular and attractive to consumers, producers and suppliers are constantly striving to expand their product range with many products that can be shipped without packaging. Packaging-free stores promote and support a responsible form of shopping, because consumers buy only what they really need, and they do not waste food and drugstore products. This approach provides the opportunity for shopping in a sustainable way for those who want to contribute to the health of our planet.




In addition to zero waste groceries, there are also small combined or specialized zero-waste stores where consumers can also buy draft drugstore products, such as shampoos, shower gels, soaps, washing powders, washing gels and many others. Within cosmetics department, mostly Slovak brands which can deliver products without packaging, in porters or compostable packaging, can be found. Bamboo brushes and organic household products have also become popular and consumers can also buy them online via e-shops (Vaitkevičius et al., 2019; Naumova et al., 2019).

While Figure 2 depicts stores with a predominant offer of food, *Figure 4* shows exclusively zero waste drugstores or chain drugstores, offering mainly draft products (except dm drogeriemarkt). People supporting zero waste initiatives are used to visiting new places offering ecological refilling stations for detergents and cleaners.



Figure 4. Location of draft drugstores
Source: Adapted from *Nula odpadu* (2020)

Legend:

-  Draft drugstores
-  DELIZIA - the retail chain of draft drugstores
-  Ecoterra - the retail chain of eco-drugstores

From the last year, May 2019, the German retail chain dm drogeriemarkt has started with transformation its branches into draft drugstores in 10 Slovak cities. The main aim is testing the concept of a draft drugstore of the biggest retain chain in conditions of Slovak market. By redesigning these drugstores into draft ones, the company also aims to reduce plastic waste by 12 to 20 percent compared to drugstores selling just bottled products.

On top of that, all above-mentioned units offer a selection of environmentally friendly and local assortments what also create a great opportunity to support the regional economy. Customers who decide to support the zero waste concept, not only will leave the store with a bunch of new sustainable products but will also leave with a good feeling of the positive contribution to the environment and planet.

3.2. Results of the authors research

Marketing research, as a part of our study, was conducted regarding the identification the level of environmental awareness of Slovak consumers as well as to find out consumers' experiences with zero-waste stores. In the beginning, it was necessary to explain the concept of zero-waste for correct filling of questionnaire items.

In the introductory part of the survey, the interviewees were asked whether they had ever shopped in a zero-waste store (*Figure 5*). If we evaluate the frequency of shopping from the particular consumer generations' perspective, it will be possible to determine the obvious preference and to recognize different attitudes between generations. We found out that more than a half of the respondents from Generation X (54%) had never visited this kind of shop, but they plan to make a purchase in near future. The second biggest group of these respondents also claimed that they had never shopped in packaging-free shops and they did not even plan. Only 10% of them are used to shopping in zero-waste stores very often. The question is whether the respondents who have already shopped in these shops will return again (7%). When we compare the responses with Generation Y, it is obvious that the target group of zero-waste stores are people of Generation Y. A positive finding is that 39% of the respondents from this generation do their shopping in zero-waste stores very often and even 22% of the respondents have one shopping experience because they have already bought in a zero-waste store. Only 6% of the respondents do not plan to shop and live in the zero-waste way.

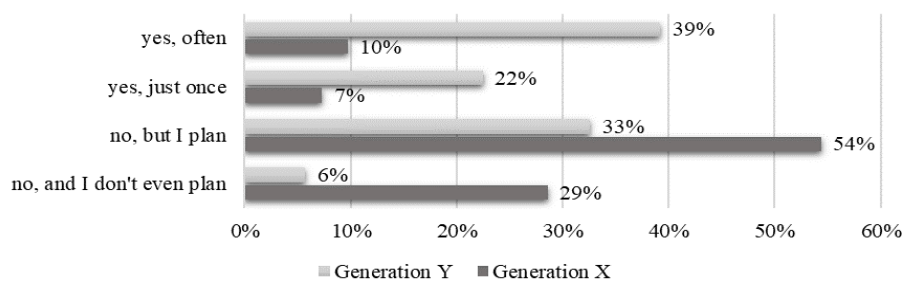


Figure 5. Frequency of shopping in zero-waste stores

Source: *own processing*

In relation to the assessment of mentioned question, we wanted to determine whether the frequency of shopping is different for the particular age generations (*Assumption 1*). Subsequently, we created these hypotheses:

H0: There does not exist a dependence between the frequency of shopping the particular age generations.

H1: There exists dependence between the frequency of shopping and the particular age generations.

Statistical analysis of the dependence was performed by using Levene's test (*Table 3*) and Bartlett's test (*Table 4*), providing the relevance and objectivity of the obtained results.

Table 3. Levene's test

Levene's test / Two-tailed test	
F (Observed value)	6.160
F (Critical value)	3.490
DF1	3
DF2	12
p-value (one-tailed)	0.009
alpha	0.05

Source: *own processing, XLStat*

Table 4. Bartlett's test

Bartlett's test	
Chi-square (Observed value)	55.498
Chi-square (Critical value)	7.815
DF	3
p-value (one-tailed)	< 0.0001
alpha	0.05

Source: own processing, XLStat

Based on the results shown in Table 3 and Table 4, it is declared that the null hypothesis must be reject (p-value is less than the alpha level = 0.05), it signifies statistically significant dependence between the frequency of shopping and the particular age generations. At the same time, we can say that most experiences with packaging-free shopping, as well as the positive prospects for the future, showed a group of the respondents belonging to Generation Y. We can deduce that above mentioned Assumption 1 stating a dependence between the frequency of shopping and the particular age generations was confirmed.

The next question was aimed at respondents' opinions on the current and future success of zero-waste stores in Slovakia. We wanted to find out the differences in the opinions of people living in cities and countrysides, since such types of business are operated only in cities. To make a better interpretation, we offer a graphical visualization of the acquired survey data (Figure 6). From the total number of individual responses, the best ranking was achieved by the response "it is modern and trendy in the world" (29%), followed by "it is ecological" (28%). According to the bar chart, we can say that many people believe in the success of the zero-waste concept only because it is modern more than beneficial to our environment and the planet.

Certain differences can be found when comparing the opinions provided by each residence's representatives. Based on data, up to 31.4% of the urban interviewees believe in the success because it is ecological, whereas only 23.4% of the rural interviewees marked this option. What can be described as positive is that only 15.3% of the rural respondents and 17.5% of the urban respondents think that people are not interested in this kind of shopping and therefore do not believe in the future development of such stores in Slovakia. Due to the fact that this concept is relatively new in Slovakia, a large part of the respondents could not express clearly on this issue.

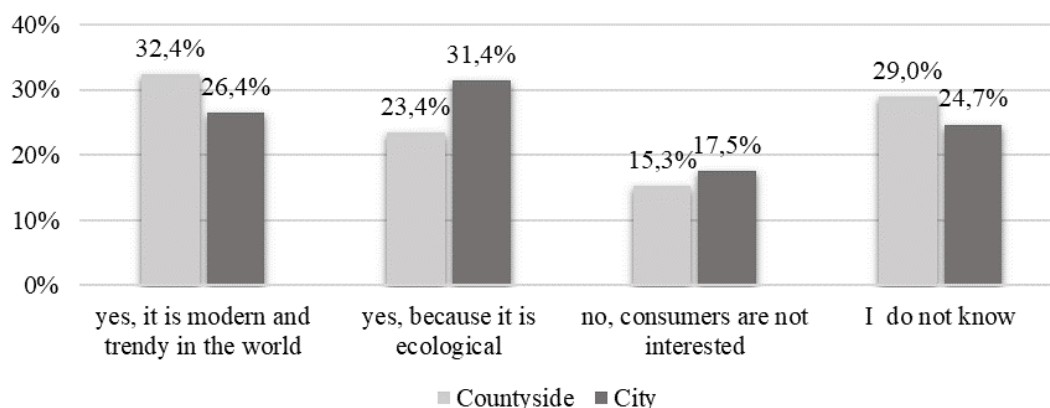


Figure 6. Respondents' opinions on success of zero-waste stores in Slovakia

Source: own processing

With regard to the data obtained through this question and answers provided by the interviewees, *Assumption 2*, where we suppose a dependency between opinions on success of zero-waste stores and place of residence, was statistically tested.

H₀: The place of residence and opinions on success are independent.

H₁: The place of residence and opinions on success are not independent.

We used the Chi-Square test of independence to define whether there exists a relationship between two categorical variables (*Table 5*). The null hypothesis must be rejected because p-value (0.035) is lower than alpha level (0.05). Accordingly to these results, we deduce that there is a relationship between the place of residence and opinions on success.

Table 5. Results of Chi-Square test of independence

χ^2 test	
Chi-square (Observed value)	8.602
Chi-square (Critical value)	7.816
DF	3
p-value	0.035
alpha	0.05

Source: *own processing*

In the next question, the interviewees had the option to choose the most preferred shopping bag when purchasing their products (*Figure 7*). We wanted to find out whether the respondents care about the environmental aspect and if they do not use plastic bags unnecessarily, as such initiatives are also promoted by retailers themselves. We also wanted to observe the differences in environmental awareness between men and women. The result could also bring interesting information for retailers as they can get a clear signal of what type of bags to offer at the market.

The most attractive shopping bag with the highest percentage share is a cloth bag preferred by 366 respondents (46.7%). This type of bag is preferred mostly by women as this option was marked by 68% of them. It is rather complicated to unambiguously identify the order in popularity among men because up to 33% do not use any bag or simply it is not important to them which bag to use. The percentage differences in responses for other types of bags are negligible as the cloth bag was marked by 22% of male respondents, paper bag (17%) and plastic (27%). If we assess preferences from the women's position, it will be possible to determine a obvious preference and recognize differences between men and women. The second most preferred shopping bag for women is the plastic bag (12%) followed by the paper bag (10%). A mesh bag was marked by 5% of women and 2% of men.

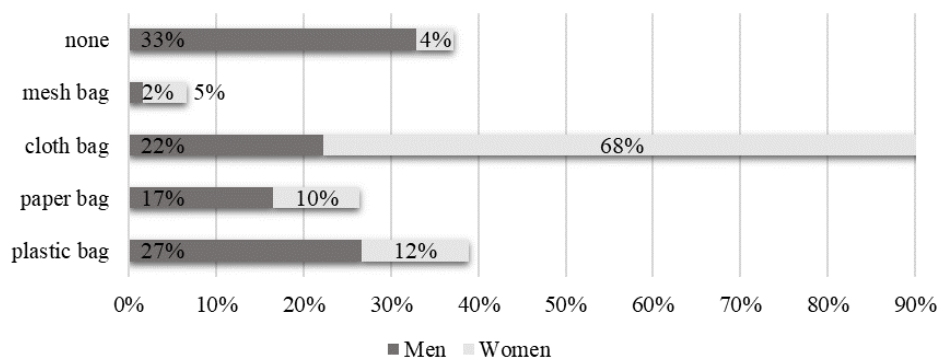


Figure 7. Preference of shopping bag

Source: *own processing*

Finally, we evaluated *Assumption 3* representing the certain preferences for a particular shopping bag. We supposed that these preferences differ by gender, so statistical testing was done.

H_0 : There do not exist preferences for a specific shopping bag by gender.

H_1 : There exist preferences for a specific shopping bag by gender.

For assessment we applied the non-parametric Kolmogorov-Smirnov test. This test is suitable for use if we need to perform a comparison between an observed sample distribution and theoretical distribution. The findings are displayed in *Table 6*. Based on the calculated value which is higher than the critical value ($0.205 > 0.115$), we accepted the alternative hypothesis and subsequently we confirmed that there exist preferences for a particular shopping bag by gender.

Table 6. Results of Kolmogorov-Smirnov test

Kolmogorov-Smirnov test	
D-stat	0.205
D-crit	0.115
D-stat > D-crit	
The result is significant at $p < 0.05$	

Source: *own processing*

In the last presented question, the respondents were asked to express their opinion on question: "Do you think that for some products packaging too much material is used?" *Figure 8* displays that the majority of the interviewees (56.3%) agree that companies use too much material for packaging, what can be counterproductive to the environment, 19.4% of the respondents took a neutral stance because they had never thought about it. For 25.3% of the respondents is the amount of packaging material functional and useful.

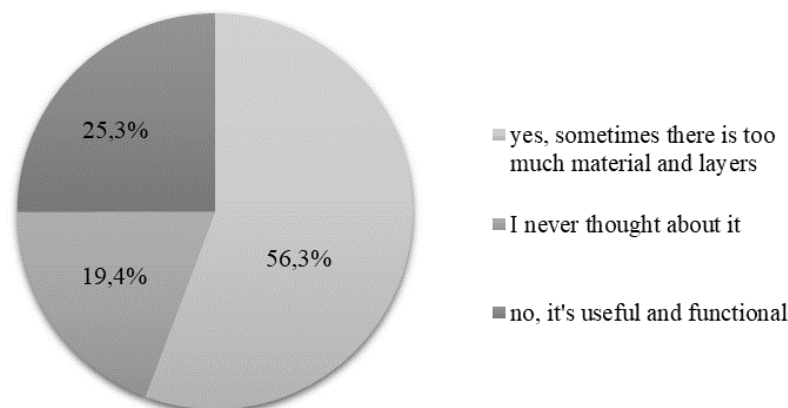


Figure 8. Opinion on the amount of material used in packaging

Source: *own processing*

Conclusion

Innovative style of packaging has simplified people's life in many directions: longer shelf life for products, food preparation, food storage, medicines, frozen foods, processed foodstuff, ready-made foods. This kind of convenience has demanded too high environmental price.

In this paper, the challenges of solid waste (food and packaging waste), examples of good practice approaches regarding the zero-waste concept were debated to explore the challenges and chances to modify conventional waste management toward null waste idea in condition of the Slovak market. One of sophisticated solutions without expensive costs is zero-waste philosophy. It is way how to minimize the increasing packaging waste among consumers. With the intention of minimizing the packaging waste, there are more endeavours need to be done in the coming years. Zero-waste can be understood as a waste-free life, but it is basically an abbreviated term for the path to less waste or the path to reducing its carbon footprint. This concept inspires people all around the world to be more environmentally friendly. It's a trend, it's a modern lifestyle.

The presented paper was focused on the actual situation of zero-waste stores in Slovakia and identified the level of environmental awareness of Slovak consumers according to their shopping habits. According to our results, the eco-consciousness of Slovak consumers is growing stronger. They are becoming increasingly aware of their strong impact they have on the environment and reduce packaging waste by smart eco-friendly shopping. The trend of using sustainable packaging is gaining momentum, and forecasts suggest a consistent rise in the future as well. According to European statistics, Slovakia is achieving very positive results in this area, as mentioned in the introduction.

Behaviour change approaches on the environmental issues should be managed by central and local government initiatives. Everyone should think carefully about how they can reduce the consumption of packaging in everyday life and contribute to the overall sustainability in the world. Future studies should also focus on examples of good practice to be the right guide for those countries where the concepts of sustainable waste management are not sufficiently developed. The Ministry of the Environment should take a control role and be particularly involved in enlightenment and promoting more packaging-free marketing.

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