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DIFFERENCES IN SUSTAINABLE NUTRITION BEHAVIOUR OF DIFFERENT GENERATIONS OF CZECH CONSUMERS *

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Received 8 August 2023; accepted 10 October 2023; published 30 December 2023

Abstract. Sustainable behaviour in everyday life is a key aspect of sustainable development. Consumers can be the initiators of sustainability in their purchases, consumption behaviour and long-term investment decisions. This article focuses not only on the area of nutrition, which plays an essential role in increasing the impact of consumption behaviour on sustainable development. Nutrition and its sustainability are perceived differently by different generations. The article presents the results of a questionnaire survey of Czech consumers. The sample of 1000 respondents provides relevant answers to the research questions, namely, which generation buys more sustainable products and whether there is a significant difference between generations in the sustainability of nutrition. The results show that younger generations tend to purchase sustainable products to a greater extent. They are also more likely to be vegan or vegetarian than older generations, although still, the proportion of vegans and vegetarians in the Czech Republic is negligible. In contrast to this trend towards sustainability in nutrition among the younger generation is the reduction in meat consumption, which is most pronounced among those aged 55-64.

Keywords: consumer behavior; sustainable nutrition; generations; buying behavior; consumer

Reference to this paper should be made as follows: Jaderná, E., Srbová, A. 2023. Differences in sustainable nutrition behaviour of different generations of Czech consumers. *Entrepreneurship and Sustainability Issues*, 11(2), 23-36. [http://doi.org/10.9770/jesi.2023.11.2\(2\)](http://doi.org/10.9770/jesi.2023.11.2(2))

JEL Classifications: D10, M31

* This paper is one of the outcomes of the research grant SGS/2021/01 Jaderná, Department of Marketing and Management at ŠKODA AUTO University, Mladá Boleslav. This research was funded by the Institute of Technology and Business in České Budějovice, grant number IVSUPS2305.

1. Introduction

According to the World Commission on Environment and Development, sustainable development can be understood as the ability of the present generation to meet its own needs without compromising future generations in meeting their own consumption (World Commission on Environment and Development, 1987).

The idea of sustainable development was developed by John Elkington in his book 'Cannibals with forks: Triple Bottom Line of the 21st Century Business'. The essence of sustainable development encompasses three pillars (Triple Bottom Line): social, economic and environmental (Elkington, 1997; Androniceanu & Sabie, 2022).

The economic domain is associated with the production and sale of output. Here, in conjunction with the environmental pillar, one can mention the area of, e.g., circular economy and the associated amount of waste produced by each sector (Petrariu et al. 2022; Šimková et al., 2023; Bednářová et al. 2023) or bioeconomy, which is discussed in the article by Oláh et al. (2023).

In the case of consumers themselves, the environmental area can be supported, for example, by not wasting food or by sustainable energy consumption, which can provide many benefits for energy saving, renewable energy use and greenhouse gas reduction (Streimikiene et al., 2022; Oláh et al. 2022). On the other hand, it is also possible to use renewable energy sources for electricity generation, such as the wave energy of the sea (Kostikova et al., 2022; Androniceanu & Sabie, 2022).

The social pillar is supported, for example, by the idea of fair trade, which aims to improve the livelihoods of producers in developing countries and promote social change (Ribeiro-Duthie et al., 2021; Androniceanu et al., 2023a; Androniceanu et al., 2023b).

Related to sustainable development is corporate social responsibility (CSR) as a concept that is based on the idea of balancing the economic, social and environmental objectives of firms and that can improve various financial and market performances of the firm (Belas et al., 2022; Gavurova et al., 2022). It is also interesting to observe whether a relationship between CSR and corporate reputation exists. The latter is considered one of companies' most important assets and greatly influences business success. Research results by Berber et al. (2022) showed that CSR as a higher-order construct is positively related to corporate reputation and all dimensions of CSR (responsibility to employees, customers, local community, environment, suppliers).

Five factors significantly impact the creation of corporate reputation, namely innovation, ethical responsibility, authenticity of communication, environmental and philanthropic responsibility and economic responsibility of firms (Kelemen et al. 2022). Furthermore, that reputation positively influences consumers' perceptions and behavioral intentions (recommendation intention, reuse intention, and cross-purchase intention) and is essential to resolve uncertainty in consumers' decision-making process (Yi, 2023; Gavurova et al. 2023). Moreover, CSR and ethics are related to product innovation, brand equity and customer trust (Genga et al., 2022; Gavurova et al. 2018; Skare et al. 2023).

The previous information relates to an indication of what sustainability and sustainability in general are. But where do Czech consumers stand when purchasing sustainable products, and how do they relate to a critical human need, namely sustainable food, and are there differences between generations?

2. Theoretical background

Young people's approaches to sustainability can take different forms. For example, a study by Pink et al. (2020) with more than 480 students aged 18-26 from three universities in Kraków revealed that these respondents are socially and environmentally aware of the impacts of unsustainable consumption and production. Still, their actions do not correlate with this awareness because they avoid taking responsibility for their own actions as consumers. One reason for this may be the belief that consumers can only afford sustainable food in a better financial position, but at the same time, this does not correspond to the level of food waste. The problem may lie in a lack of ethical sensitivity and indifference to the impact of unsustainable farming when its effect does not directly affect the respondent. A 'wait and see' attitude to life may also be a significant problem. For example, in the case of so-called enforced sustainable behaviour, respondents have to adapt, which they eventually accept and are satisfied with.

For example, research on the population's consumption patterns was carried out with 1 053 Romanian consumers, without distinction between generations. Analysis of the questionnaire data revealed an overconsumption of animal products, starchy vegetables and bread and confectionery products. This dietary pattern with a high animal protein intake, correlated with a lack of diversification, is highly unsustainable and harms human health and the environment (Balan, 2022).

For example, beef production has a major impact on the environment. In the EU countries, this has been slightly downward over the last five years (2018-2022). However, more than 6 500 000 tonnes of beef carcass weight are still produced yearly (European Commission: Directorate-General for Agriculture and Rural Development, 2023a). In contrast, cereal production has both an increasing and a decreasing trend over the five years (2018-2022), with more than 267 000 thousand tonnes produced in 2022, which is more than 25 000 thousand tonnes higher than in 2021 (European Commission: Directorate-General for Agriculture and Rural Development, 2023b).

Research carried out by Di Novi and Marenzi (2022) analyzed the consumption behaviour of four generations, namely the Silent Generation (born 1926-1945), the Baby Boomer 1 Generation (1946-1955), the Baby Boomer 2 Generation (1956-1965), and Generation X (1966-1980), showed that increases in disposable income, changes in the role of women in society, and urbanization and globalization had a significant impact on consumption patterns for red and industrially processed meat among Italian consumers. Older generations have changed their diets more in favour of meat consumption than later generations, with more significant changes in the relatively affluent north of Italy compared to the south. In comparison, younger generations are likelier to adopt healthier and more environmentally sustainable eating habits.

Research by Arslan and Alataş (2023), conducted with Turkish university students aged 19-45, shows that most students believe it is important to eat sustainably. It was confirmed that as people's education and knowledge about sustainable nutrition increases, their healthy eating habits also increase. In addition, it was suggested that education on sustainable nutrition should be expanded.

This idea was also mentioned in the article by Leyva-Hernández et al. (2023), that sustainable food consumption is based on food education, the purpose of which is to develop healthy eating habits, which is achieved through an appropriate focus of education that encourages the consumption of local and seasonal food, the establishment of urban gardens and the promotion of creativity in the preparation of healthy dishes from local ingredients - shortening value chains, and the creation of distribution channels without intermediaries between consumers and producers, where producers and marketers play a crucial role.

Awareness and efforts to ensure sufficient knowledge on sustainable healthy diets are also based on research by AlBlooshi et al. (2022), which involved more than 1 000 students from Zayed University in the United Arab Emirates.

Not only food education within the education system but also so-called intergenerational transmissions are important in shaping (unsustainable) consumption across the life course, and these transmissions of behaviours and values offer opportunities for lifelong sustainable change and rethinking of food consumption in everyday life (Carrigan et al., 2023).

Sustainable healthy diets seek to support all dimensions of individual health and well-being and have a low environmental impact. It should be accessible, affordable, safe, transparent, etc (Androniceanu, 2021). Sustainable healthy diets aim to achieve optimal growth and development for all individuals and promote functioning and physical, mental and social well-being at all life stages for current and future generations. They should contribute to preventing all forms of malnutrition (i.e., undernutrition, micronutrient deficiencies), overweight, and obesity (FAO and WHO, 2019).

According to the Director-General of the World Health Organization, in the context of the United Nations Decade of Action on Nutrition (2016-2025), adult obesity, in particular, is set to increase globally, with more than 1.9 billion adults now overweight or obese. On the other hand, up to 222 million people in more than 50 countries are expected to face acute food insecurity, with malnutrition at critical levels (WHO, 2022).

Many studies have shown that a diet rich in plant-based foods and with fewer animal-based foods improves the health of individuals and the environment. Overall, the literature suggests that such a diet is a "win-win" because it benefits both people and the planet (Willett, 2019).

Sustainable diets, are based on trying to change consumer behavior so that their diets are more balanced and include plant-based foods. The vegan diet had the highest Sustainable Development Goals-Food (SDG-Food) index value, according to research by Hoehn et al. (2021). This index determines the level of alignment of any particular national, regional or local context in terms of the five different SDGs in relation to water-climate-food.

Another index that can measure healthy and sustainable diets is the SHED index (Sustainable-HEalthy-Diet Index), developed by Tepper et al. (2021). This index is a simple tool and reflects a sustainable diet's nutritional, environmental and sociocultural aspects.

The concept of a sustainable diet can also sometimes be perceived differently than reported in scientific studies. A study by Polleau and Biermann (2021) found that regional, seasonal foods and organic foods are seen as pillars of a sustainable diet and are considered particularly healthy and environmentally friendly. On the other hand, meatless diets are less associated with sustainable diets and are not perceived as particularly healthy or environmentally friendly.

And it was Radzymińska's (2021) research with 770 Polish respondents showed that local food was perceived by consumers as better than food produced by large-scale producers (so-called mass-produced, conventional food) and also as healthier, tastier and safer. In addition, respondents stressed that their production was environmentally friendly.

A survey of 252 Greek university students aged 18-23 also recorded a similar opinion. This research showed a focus on sustainable food consumption, not only on the purchase of regional foods but also a limitation on the consumption of seasonal fruits and vegetables (Kamenidou et al., 2019).

Authors Lourenco et al. (2022) sought to identify psychological barriers to adopting a sustainable diet. For example, their results showed that the main perceived barrier to adopting a plant-based diet was the enjoyment of eating meat, followed by a lack of information about plant-based diets.

Reducing meat consumption is believed to immediately contribute to combating the climate crisis. Regarding the beliefs of meat consumers to reduce their meat consumption, according to a study by Thurmer et al. (2022), it was found that these consumers reject the views on reducing meat consumption from a vegan than other meat consumers. On the other hand, however, their research highlighted the role of people's general willingness to engage in environmentally friendly behaviours.

One example of a sustainable diet is the Mediterranean diet (recognized as a healthy diet, a role model and a healthy lifestyle), whose main significance lies not in its specific foods and nutrients, but in the methods used to characterize and analyze it and the philosophy of sustainability at its core (Burlingame and Dernini, 2011).

In seafood consumption as a sustainable diet, research by Gibson et al. (2023) has indicated that Generation Z, whose members value sustainability in their purchasing decisions, may have unique views on sustainable seafood due to its sustainability values. The positive attitudes towards seafood among the surveyed sample of university students are intertwined with, for example, family vacations associated with fishing.

The Oslo-based non-profit organization EAT (2020), which focuses on the global food system, introduces the concept of Planetary Health Diet in its study. This diet mainly comprises healthy plant-based foods and can optimize human health while reducing environmental impacts.

Regarding food waste, for example, according to a survey conducted with 90 Turkish housewives aged 25-65, 24% of them reported that they waste food, while 53% reported that they do so only sometimes (Türk and Saleki, 2023).

Another interesting study on food waste reduction, which included the results of a questionnaire survey with 8,000 respondents from 8 countries, was by Iori et al. (2023). The results of this study indicated that among respondents, the most frequently reported use of food products after the expiration date, followed by awareness of the contents of their food supply. In terms of respondents' shopping behaviour, the use of shopping list, which is still quite widespread, was the least frequently adopted behaviour.

In the context of the fight against food waste, retailers started selling perishable food just before the use-by date at discounted prices. In this context, digital platforms were developed to connect local retail outlets and their consumers by sharing information about these discounts (Androniceanu & Georgescu, 2023). For this activity, it is important to ensure that both consumers and retail outlets remain active (Mullick et al., 2021).

Food waste is also opposed by the United Nations, which in its Sustainable Development Goals aims to halve food waste at the retail and consumer level by 2030 and reduce food loss in production and supply chains (United Nations, 2023).

In their paper, Torstensson et al. (2021) confirm the results of previously conducted studies on food consumption in Sweden by providing a different assessment of sustainable diets based on sales statistics of food retailers rather than self-reporting. Another important finding from this research is that animal products need to be reduced or replaced with plant-based alternatives to reduce the climate impact and increase the nutritional value of the diet.

Retail chains should understand that conveying information through marketing communication tools about sustainable products (quality, composition, production process, sufficient information, including reuse and

recovery of packaging), e.g. on packaging, labels, etc., could lead to an increase in the consumption of sustainable products and also improve consumer knowledge about the product, its nutritional value, use and recovery. It is also important to remember that retail chains are essentially the retailer of the products, and the information on the packaging of products on the store shelf is the direct responsibility of the manufacturer (Škiltėre and Bormane, 2018).

The EU intends to revise the Regulation on providing food information to consumers in the context of the provision of information on sustainable products. This revision will consist of harmonized mandatory nutrition labelling on the front of the packaging for consumers to make informed food choices. It will also seek to develop nutrition profiles to limit the promotion (through nutrition and health claims) of foods high in fat, sugars or salt (European Commission, 2023).

On the other hand, this raises the question of how retailers perceive sustainable diets in general and what strategies and appeals they use to provide and promote the purchase of sustainable products. An example would be the study by Trewern et al. (2021), which suggested that UK retailers have a varied understanding of sustainable diets, which rarely include 'less and better' meat and dairy products. This could be exemplified by improving the sustainability of their meat and dairy supply chains, but they no longer implement interventions to reduce meat product purchases, for example.

Regarding the environmental focus of sustainable products, it is also interesting to consider, for example, efforts to reduce the sale of packaged liquid detergents. According to a study by Pak et al. (2022) concerning the decision by Wal-Mart (a US retail chain) to force its suppliers to switch to reduced production of packaged detergents, this decision had a market-wide impact and drove the production of non-concentrated liquid detergents out of the market.

In the case of sustainable (environmental) products, the attitude of retail consumers in choosing the mode of transport they use for their purchases is also important. The carbon footprint for the same products delivered through different distribution channels should not be identical, according to the research of Wang and Lin (2021).

3. Research objective and methodology

This article focuses primarily on the area of sustainable consumer nutrition but also sustainable purchasing behaviour in general. Sustainable nutrition is an important factor in reducing the impact of consumption behaviour on sustainable development. Nutrition and its sustainability are perceived differently by different generations.

The aim of this paper will be to identify differences between generations in their sustainable purchasing behaviour and in the purchase of sustainable food products themselves and consequently in their meat consumption.

To achieve the objective, the following research questions were set:

1. *Which generation buys more sustainable products?*
2. *Is there a significant difference between generations in food sustainability?*

This paper presents the results of a questionnaire survey of Czech consumers. The survey was conducted in February 2023, through an online survey via the Trendaro platform and in cooperation with the research agency BehavioLabs. A sample of 1,000 respondents provided relevant answers to the research questions. The sample's representativeness was ensured by quota sampling, which ensures that the distribution of relative frequencies of auxiliary statistical features in the sample corresponds to their distribution in the base population.

StatGraphics was used to process the data. Frequency tables and graphs were created not only to create an overview of sustainability in the diet of the Czech consumer but also for each generation, defined based on age

range. In this way, the article's authors try to show whether the emerging generation can significantly reduce the negative impacts of nutrition on sustainable development. The preference for sustainable products may be one aspect that will contribute significantly to climate protection. And their popularity with the younger generation may encourage their parents' consumer preferences. In interpreting the results, the results of the 2023 survey will be compared with the results of the authors' 2020 survey to identify the purchasing trend in the Czech market.

3. Results and discussion

Table 1 shows that Czech consumers do not intentionally seek out sustainable products to purchase. However, more than half of the respondents (586) said they sometimes buy these products. 34% do not consider this question at all when choosing products.

Table 1. Buying sustainable products

Do you buy sustainable products?	Absolute frequency 2023	Relative frequency 2023	Absolute frequency 2020	Relative frequency 2020
Yes, I search for them.	79	8%	109	11%
Sometimes.	586	59%	582	58%
I do not care about it.	335	34%	309	31%

Source: own processing

When comparing responses to the same question in 2020, there is also no increasing tendency to buy these products. Instead, the opposite is true, albeit to a negligible extent.

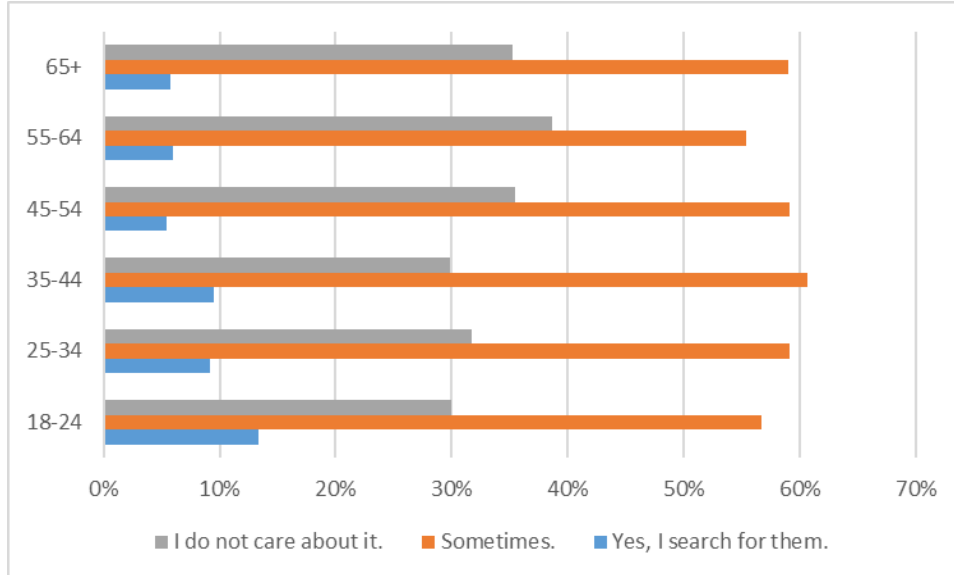


Figure 1. Buying sustainable products

Source: own processing

To assess the impact of age, age categories were established so that it is possible to build on life stages more than just the globally generalized characteristics of broadly defined generations.

Figure 1 shows that younger age groups win in the preference for sustainable products. Although purchasing sustainable products is more often associated with higher costs and the younger generation belongs to a lower

income group, the percentage of those who prefer sustainable products is above the 10% threshold. In contrast, those who are not interested in this aspect are under 30 %. The graph also shows a decreasing tendency to seek these products as age increases.

Based on these research results, the first research question, "Which generation is more likely to buy sustainable products?" can be answered by the younger generation between 18 and 24 years old. Similar results also emerged from research by Kamenidou et al. (2019) and Gibson et al. (2023). Sustainable products may occupy an important place in the consumption basket of Czech consumers; however, the next question focused on assessing the importance of the sustainability aspect of food purchasing.

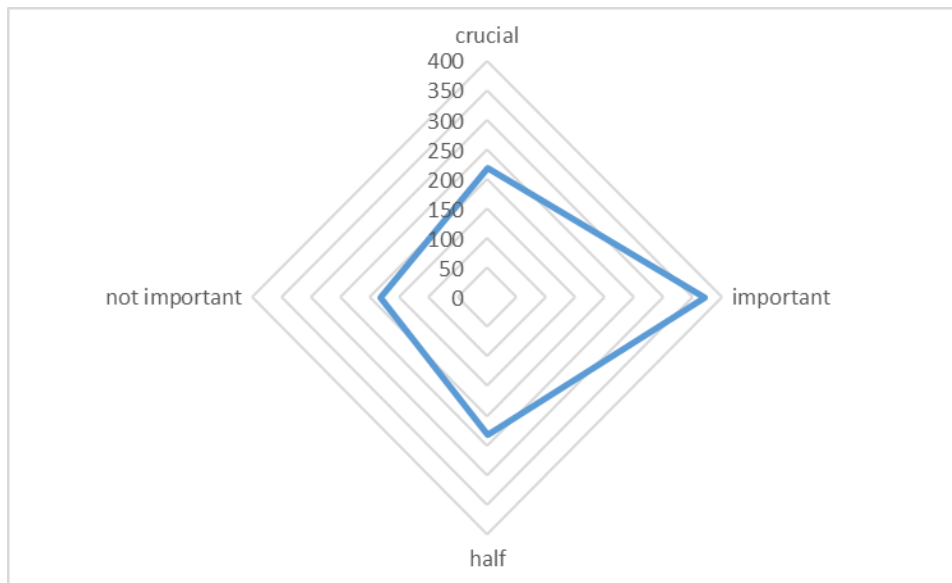


Figure 2. Importance of sustainable aspects in the food buying process

Source: own processing

Figure 2 shows that sustainability is an essential aspect of food shopping for Czechs of all ages. In fact, according to the survey results, 36% of Czech consumers consider sustainable products to be of high quality and health is a key (for 41% of respondents) or important (for 44% of respondents) factor when choosing what to eat. The highest percentages are found among the oldest age group 65+. For 59% of them, health is a key aspect, and for 31% an important one. The researchers also looked at habitual sustainable dietary behaviour from a dietary perspective, and the results from the research were important in answering the second research question, "Is there a significant difference between generations in dietary sustainability?".

Table 2. Diet

What is your diet?	Absolute frequency	Relative frequency
vegan	33	3%
vegetarian	76	8%
I eat everything.	891	89%

Source: own processing

Table 2 clearly declares the prevailing trend to eat everything. When we look at the age categories (see Figure 3), the youngest age groups are again more interested in a sustainable diet.

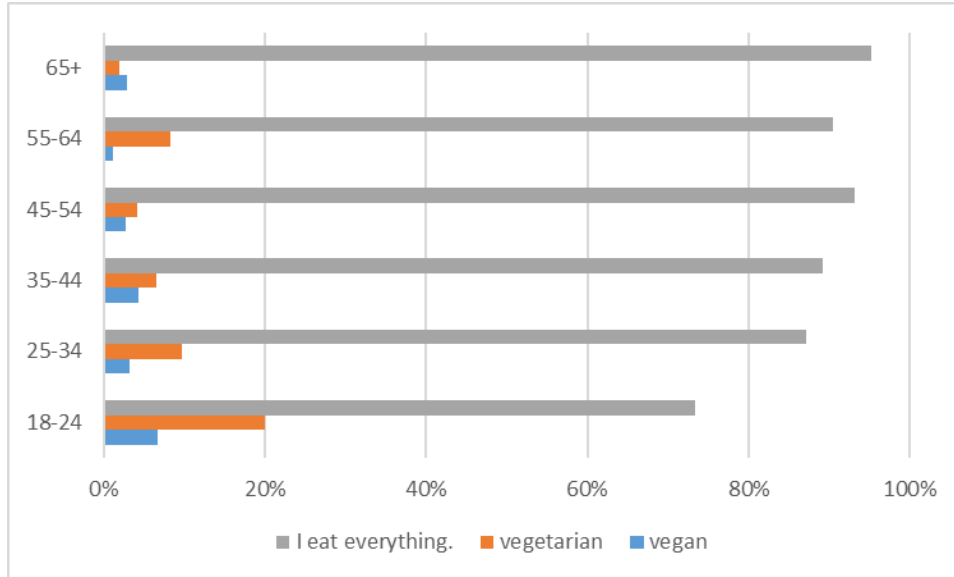


Figure 3. Diet
Source: own processing

The chart shows that the highest representation of vegetarians and vegans is among consumers aged 18-24. However, their numbers are still within the top 20 per cent. There are the fewest vegans in the 55-64 age group, and vegetarians in the 65+ category. The second research question can be answered based on these research results that, again, the younger generation is the one that does not include meat and meat products in their diet and, therefore, behaves sustainably in their eating habits. On the other hand, simply reducing meat consumption can also help to reduce carbon. Another question in the questionnaire survey was directed towards this issue, which concerned the willingness to limit meat consumption. The survey results showed that 67% of respondents eat meat as before and do not restrict their meat consumption. 19% try to restrict it but still eat it. This question was only answered by those who are neither vegan nor vegetarian - 89% of respondents.

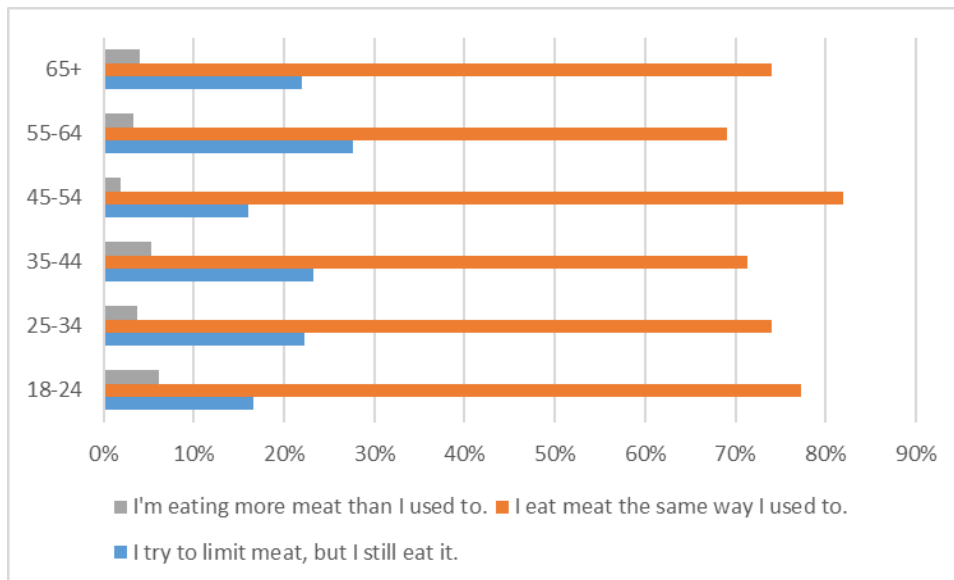


Figure 4. Eating meat
Source: own processing

Again, this factor was also compared in terms of age (see Figure 4). People aged 55-64 are the most likely to try to reduce their meat consumption (25%), while the same percentage of respondents aged 45-54 eat meat (over 80%). Only a negligible percentage of respondents in this age group eat more meat than before (3%).

This shows that meat restriction is more common among consumers aged 55-64. This confirms the difference between generations; although compared to the inclination towards veganism or vegetarianism, the trend is the opposite with regard to age. If we consider the claim that meat restriction leads to sustainability in diet, according to Di Novi and Marenzi (2022), Arslan and Alataş (2023), Willett (2019) and Hoehn et al. (2021), this generation would be perceived as more sustainable. However, a widespread reason is more likely to be health considerations. In contrast, the young follow nutritional trends, encouraging them to consume more meat.

Conclusions

The article focused on sustainable nutrition through the eyes of Czech consumers. First, the focus was on the purchase of sustainable products. In the Czech Republic, the interest in these products is relatively low. More than half of the 1000 respondents buy these products sometimes, but 34% of respondents are not interested in the issue of sustainability at all. With regard to age, there is a tendency that the younger the consumer, the more interested in sustainable products.

The sustainability of food was another topic monitored. The majority of respondents address the issue of sustainability in food. They associate it with the quality of food and, consequently, its positive impact on health, which is why the highest percentage of interest in sustainable food is among the oldest of the age groups surveyed, 65+. The results, therefore, show that sustainability in food is essential. However, the trend to eat everything still prevails in the Czech Republic. Overall, according to the study's results, there are only 3% vegans and 8% vegetarians. Again, younger age groups have shown a higher interest in these diets, especially vegetarianism.

Sustainability in nutrition is linked to the consumption of meat and its limitations. Nearly 90% of respondents answered that they eat everything, and the question on limiting meat in the diet was directed to them. Only 19% of respondents said they try to limit it but still eat it. The percentages of these responses did not vary much with age.

This suggests that sustainability as a concept is more important for younger generations. However, the benefits of sustainability in nutrition, such as quality and positive impact on health, is also an interesting decision factor for older generations more concerned about their health.

Communicating the sustainability aspect thus becomes interesting, especially towards younger generations. They are also more aware of the need for change and that they are the ones who can make a difference. It is possible to use this factor in the message towards this generation. Moreover, they are also the ones who can significantly influence the consumer behaviour of the middle-aged generations, who are often in the middle of the statistics.

Older generations draw on their experience and do not seek changes, except perhaps those promoting their health. And that is the message that should continue to be conveyed to them. Sustainable food is good quality and healthy; limiting meat consumption is good for their health and, incidentally, the planet. These are aspects that go hand in hand, but each generation perceives them differently.

The limitations of the above research can be seen in the fact that only one data collection method was used, namely a questionnaire survey. Therefore, it would be advisable to use other research methods of data collection,

such as focus groups or guided in-depth interviews not only with supporters of buying sustainable (food) products but also with their opponents in future research.

A common argument against sustainable behaviour is the economic factor. Sustainable products tend to be more expensive. Perhaps this is why there has been a slight decline in interest in sustainable products in recent years. The economic comfort of Czech society is lower. It would be interesting to investigate further whether income influences the willingness to buy sustainable products or otherwise contributes to sustainability in nutrition.

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Funding: This paper is one of the outcomes of the research grant SGS/2019/01 Jaderná, Department of Marketing and Management at SKODA AUTO University, Mladá Boleslav. This article is one of the partial outputs of the currently solved research project IVSUPS2305. This research was funded by the Institute of Technology and Business in České Budějovice, grant number IVSUPS2305.

Author Contributions: Conceptualization: *Alena Srbová*; methodology: *Alena Srbová, Eva Jaderná*; data analysis: *Eva Jaderná*; writing—original draft preparation: *Alena Srbová, Eva Jaderná*, writing; review and editing: *Alena Srbová, Eva Jaderná*; visualization: *Alena Srbová, Eva Jaderná*. All authors have read and agreed to the published version of the manuscript.

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