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**ODESSA NATIONAL ACADEMY OF  
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International Competition of  
Student Scientific Works

# **BLACK SEA SCIENCE 2021**

## **PROCEEDINGS**



**ODESSA, ONAFT 2021**

Ministry of Education and Science of Ukraine  
Odessa National Academy of Food Technologies

International Competition of Student Scientific Works

# **BLACK SEA SCIENCE 2021**

**Proceedings**

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**5. ECOLOGY AND**  
**ENVIRONMENTAL**  
**PROTECTION**

## RELEVANCE OF THE CONCEPT OF SUSTAINABILITY IN THE RESTAURANT BUSINESS OF THE REPUBLIC OF BELARUS

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***Abstract.** The work examined the nutritional problems of the population, the impact of the population's diet on the state of the environment, the application of the concept of sustainability in nutrition as a way of achieving the UN Sustainable Development Goals and the terms of the Paris Agreement. In addition, the application of the concept in catering facilities was considered. As a result of work with the help of the method of online-poll research was carried out for the creation of a portrait of consumers of «healthy food» products, estimation of the demand for said products, including in catering facilities. The results of the research confirmed the topicality and prospects of using the concept «sustainability» by catering facilities.*

***Keywords:** sustainability, healthy eating, restaurant business, sustainable diets, catering.*

### I. INTRODUCTION

Research into the prospects and problems of developing the restaurant business is relevant both in understanding its role in the economic and social life of the society and in determining important directions of development of the food industry. The main trend at the moment is that consumers prefer healthy eating. The problem of quality nutrition has been recognized as a key factor in improving the quality of life of the population. The quality of nutrition has a direct impact on the health of the nation, on the demographic situation as a whole, and is taken into account as a basic element of the country's national security.

Unhealthy and produced in unsustainable production systems poses global health and global health risks. More than 820 million people are undernourished and many more are eating unhealthy diets that cause disease and thus increase the risk of premature death [1].

A commitment to modern dietary trends, coupled with a projected population growth of up to 10 billion by 2050, will increase the risks to human health and the planet's environment. The global burden of non-communicable diseases, the greenhouse effect of food production and pollution from nitrogen and phosphorus compounds are expected to increase, and further damage to the planet's biodiversity and the stability of the Earth's ecosystems through the exploitation of water and land resources.

Improving diets through a sustainable food supply system is a prerequisite for achieving the UN Sustainable Development Goals and the Paris Agreement.

Catering facilities play an important role in public health: environmentally friendly diets are being developed as part of national public campaigns on health and sustainable development, as 130 cooks from 38 countries did on World Food Day 2017. A healthy, tasty and affordable meal can be a major condition for a massive nutritional

recovery. Food production and consumption processes will determine the health of people and the health of the planet, and major changes are needed to avoid both a reduction in life expectancy and the observed degradation of the environment. However, it is important for the managers of food objects, besides the social effect, to assess the possibility of obtaining an economic effect from the application of the concept «sustainability».

## II. LITERATURE ANALYSIS

### 2.1 Concept of sustainability worldwide

The global food system needs to be transformed to protect human health and environmental stability, as well as to reverse the current unhealthy trend in the human food culture [2]. However, such a transformation will not be possible unless humanity changes its views on the food system and its own nutrition. Humanity must recognize the inextricable link between health and environmental sustainability and, by integrating the two, place healthy diets through sustainable food systems on the global agenda. The call for an integrated programme to transform human activity dates back to the 1980s, while the concept of healthy and sustainable food systems, which is the focus of attention, has only emerged in recent years.

In the last decades of the twentieth century the world community began to realize and rethink the critical importance of the nutritional problems of the population. The world is witnessing the emergence of institutes of nutrition at the international level, whose research considers the nutritional problems of the population from the standpoint of international cooperation: the United Nations Institute of Nutrition and Agriculture (Budapest) was established in 1995; The United North American Nutrition Council was organized in 1997. Japan has an Institute for the Preservation and Development of National Food Culture, due to the increasing number of people who are turning from national cuisine to less useful fast food. The establishment and operation of these institutions have brought the issue of nutrition to the forefront of national and global concerns.

An improved planetary diet will require significant changes in the diet of the population by 2050, including a reduction of more than 50 per cent in global consumption of unhealthy foods such as red meat and sugar, and an increase of more than 100 per cent in the consumption of healthy products (nuts, fruits, vegetables, pulses and others). Transforming modern diets into healthy diets with a high probability will significantly improve people's health and prevent 10.8-11.6 million deaths per year, which in percentage terms means reducing mortality by 19.0-23.6% [2]. The issue of nutrition in the Anthropocene era is one of the most serious problems of the 21st century, posing a threat to human health and the environment.

A sustainable diet is a diet with low environmental impacts that contributes to food security and nutrition and to healthy lifestyles for present and future generations. Sustainable diets protect biodiversity and ecosystems, are culturally acceptable, affordable, affordable and affordable; Full, safe and healthy; Aim at the management of natural and human resources [3].

Sustainable and healthy diets provide an optimal intake of calories and consist mainly of a variety of vegetable products, a small number of animal products, a preference for unsaturated fats, while limiting saturated fats and peeled cereals and excluding highly processed products as well as products with excess sugar content. The diet of a "healthy dish" consists of about half a plate of fruits and vegetables in terms of calories consumed; The other half is responsible for contributing to sufficient caloric intake, and consists mainly of whole-grain crops, plant protein sources, unsaturated vegetable oils and optional but still small amounts of animal protein sources.

Today there is a growing demand for healthy foods. According to a study by the Global Wellness Institute, the global Health and Wellness market for 2015-2018 increased by 20% to \$4.5 trillion. [4]. The positive development of the market is due to the increase in consumer spending on the prevention of chronic diseases. The growth of the market is also due to increased costs of fitness, food and medical equipment due to increased stress on end-users. In 2018, the healthy eating and weight loss segment accounted for 16% of the Health and Wellness market, or \$702 billion in monetary terms.

The organic food segment is expected to be a key factor in the growth of the healthy food market in the near future [5]. The global organic food market for 2017-2018 increased by \$3 billion. to \$95 billion. The United States, Germany, France, Italy, and China have the most importance in the organic food market. It is expected that in 2020-2025 the global market for organic food and beverages will grow on average by 16.44% due to increased consumer knowledge of the health benefits of this product.

The world vegan food market was estimated at \$14.2 billion in 2018 and is expected to reach \$31.4 billion in 2026. In the near future, the world market for vegan products may follow several development scenarios. For example, in North America and Europe, consumption of meat and animal products will slow down or increase less because of saturation. At the same time, in developing countries, meat and livestock products will gradually replace vegetable products by increasing disposable income.

The following trends prevail in the healthy food market. The demand for vegetable foodstuffs continues. An increasing number of these products are produced in packaged form. The growth of social networks, faster and more active lifestyles, unstable political and economic situation exposes the consumer to daily stress, which negatively affects the diet. As a result, there is a growing demand for foodstuffs that solve the problems of sleep, intestines and allergies. Covid-19 has contributed to increasing consumer awareness of the relationship between food and health, which has had a positive impact on the growth of sales in the healthy food market, as people seek to increase their immunity to protect themselves from the virus. At present, consumers are maintaining a balanced diet, not only because of their concern for health, but also to participate in solving global environmental problems.

The growth of the healthy food market is a direct consequence of changes in consumer behaviour patterns. A recent study by Deloitte showed that the traditional criteria of consumer choice in the food market - price, taste and quality - today are inseparable from the new group of criteria - health and healthy lifestyles (health & wellness), safety and transparency (consumers want to know what they are consuming). Finally, an important factor influencing changes in consumer behaviour

is the activity of producers in the sphere of R&D (Research & Development) and the promotion of innovative food products, which allows them to create demand and to lure consumers away from competitors.

## **2.2 Application of the concept of «sustainability» in the restaurant business**

Given that food production is one of the greatest global risks of environmental degradation, all sustainable food systems on Earth must operate in an environmentally sound manner.

Restaurants and cafes are potent sources of carcinogenic organic compounds and particulate matter in urban air and therefore require special catalytic air-purification systems that are released into the atmosphere from cooking areas [6]. According to a report by Deborah Gross (Carleton College, Minnesota) and a research team from the University of Minnesota, atmospheric emissions from cooking facilities are dangerous to human health.

That is why the introduction of the concept of «sustainability» and stable diets in public catering facilities is so timely. A healthy diet implies the use of sparing food processing technologies. Suction, stewing, baking, drying, cooking, and a small grilled roast are the main methods of preparing healthy positions. This significantly reduces emissions to the environment.

The World 50 Best Restaurants has already received the nomination «sustainable restaurant», and Russian-speaking countries have not yet agreed on how to translate the term correctly. The Sustainable Restaurant Association in England started in 2010 with two member restaurants: it was invented by enthusiasts from consulting agencies to explain to restaurateurs why it was necessary to make the establishment more sustainable. Now the association already has more than 8000 members and grants annual awards in 17 nominations: from «best work with seasonal and local products» and «smallest amount of garbage» to «honest interaction with staff» and «support of local communication». In the United States, the Green Restaurant Association, which has branches in 41 states and Canada and, of course, its own award and certification system for restaurants, is doing the same.

However, according to the joint report of the World wild fund for nature and Sodexo, catering managers face a number of obstacles in the economic justification of the use of sustainable diet [7]. It is widely believed that healthy items are more expensive. Other barriers include supply chain constraints, complexity of implementation and control, the myth that the buyer is preoccupied with price rather than sustainability (which may be true in the short term, but in the long term, there is a trend towards informed, sustainable nutrition).

According to a survey conducted by the National Restaurant Association, almost all major nutrition trends are related to environmental and health issues.

Consumers are increasingly interested in healthy eating. A lot of people want to know the energy value of a dish. However, consumers want to control their choices about whether or not to eat healthy food; and want to keep on the menu «tasty» (junk) food. Often the demand for «healthy positions» in the menu is much higher than the supply. A study for «Menus of Change» (conference on ecologically safe food) found

the greatest differences in intake of whole-grain (supply 47% versus 83% of demand), nuts (44% versus 82%) and pulses (53% versus 80%).

Flexitarianism, a predominantly vegetarian diet with low meat content, is gaining momentum, partly because of the news about the health effects of eating large quantities of red and processed meat. A Mintel study shows that more than a quarter of millennials are vegetarians or vegans. Globaldata estimates that about 70% of people are seeking to reduce meat consumption or to give up animal products altogether. Some restaurateurs successfully made changes to the menu, such as «Monday without red meat» in the UK (and completely without meat in other countries) and changed the composition of the dishes to reduce meat content.

Interest in the origin of food is a trend that is expected to increase. More and more people are asking questions about where the raw materials come from. And thanks to technology, people are becoming more and more aware. For example, by scanning the label with a smartphone, the consumer ends up on the farm from which the products come in real time. Consumer interest has raised growing concerns about the safety and transparency of their supply chains. New quality and nature assurance tools, including mobile applications such as Shopwell, Open Label and the Smart Label platform, are available to make products and supply chains «transparent» for consumers (block chain technology).

One of the concepts that can be applied within the restaurant «sustainability» is locavorism. In modern gastronomic culture, localism, or locavorism, the principle of food based solely on local foods. It's basically a classic, geographically based diet.

Another popular philosophy was the concept of zero waste. One of the movement's ideologists, Frenchwoman Bea Johnson, articulated five basic zero waste principles:

- Refuse - Refuse to buy extra products and containers;
- Reduce - reduce resource consumption, for example, save energy;
- Reuse - reuse of, for example, bottles and storage packages;
- Recycle - recycling of waste;
- Rot - composting organic waste.

Many restaurants compensate for their carbon footprint. Funds from the restaurant holding «Tigras», for example, go to support the Altai project, and the trees can absorb greenhouse gases [8]. For example, the restaurant «Osteria Maria» in Tolyatti. The cost of carbon sequestration in the Centre for Environmental Innovation project is \$1.00. The carbon footprint of the restaurant 734.13 tons per year, that is 46,250 Russian rubles will help to absorb it completely. The holding «Tigris» is the flagship and example of attitude to its carbon track. According to this index «Tigris» got in line with Google, Microsoft. Such environmentally responsible companies are on the rise. The Center offers them icons - climate neutrality to those who have fully absorbed their footprint, and climate-friendly to those who take the first steps and seek to offset greenhouse gas emissions.

More advanced catering facilities have already developed strategies for sustainable diets. These companies make changes to the menu; train staff, customers and consumers in the benefits of nutrition; integrate the concept into all aspects of work. Initiatives include developing vegetarian alternatives to specialty dishes, training

cooks in the sustainability and traceability of the supply chain, «meat-free on Mondays», introducing third-party certification such as MSC, Food for Life Catering Mark and Fairtrade, as well as promoting a sustainable diet for consumers.

There are clear business cases to develop the concept «sustainability», but there are also serious obstacles to overcome. Perhaps the biggest obstacle is the perception that good nutrition can be more expensive (certain catering sectors are cost-oriented). Another obstacle is the assumption by facility managers that there is not yet sufficient consumer demand for clean food.

### **III. OBJECT, SUBJECT AND METHODS OF RESEARCH**

The object of research is the concept of sustainability in restaurant business. The definitions of «sustainability» differ [9, 10]. For some stakeholders, the word includes social and economic aspects in which the environment, economy and society together constitute the «triple pillar of sustainability». Others, however, use the term more narrowly to refer to environmental purposes. In a narrower sense, sustainability can mean only one environmental goal - the reduction of greenhouse gas emissions.

In many catering facilities, the concept of sustainability is limited to the reduction of energy, water and waste. The promotion of a sustainable diet is usually carried out by individual restaurants. It is very rare to find a catering facility that combines these two principles.

The subject of research is the relevance of the concept of sustainability in the restaurant business of the Republic of Belarus. It is important to obtain not only a social effect but also an economic effect for public catering, and it is therefore necessary to assess the demand for healthy foods on the public catering market of the Republic of Belarus.

The following research methods were used: literature and other sources, synthesis, deduction, induction, analysis, online polling. One of the most active areas of Internet marketing is online market research, i.e. marketing research conducted with the help of Internet technologies. Online research is a unique opportunity to quickly and inexpensively obtain information about a poorly understood market or social phenomenon. The Survio online survey service was used to carry out the marketing research. Survio is a software for surveys, marketing research, customer satisfaction assessment and feedback. Data were collected through a direct link to an online survey.

### **IV. RESULTS**

A marketing study has been carried out to develop a profile of consumers of healthy foods and to assess the demand for healthy foods, including in public catering. 100 respondents participated in the online survey. Fifty per cent of the respondents were under 30 years of age, 35 per cent were between 30 and 50 years of age and 15 per cent were over 50 years of age.

The majority of respondents - 51 per cent - stated that their diet was close to healthy diets, 37 per cent did not follow any dietary principles, and only 8 per cent of those surveyed had healthy diets. 4 per cent of the respondents had difficulty answering.

57 per cent of respondents said they wanted to start following the principles of healthy eating, 18 per cent said they already followed the principles of healthy eating sufficiently, 22 per cent were unsure, and only 3 per cent of respondents did not want to adhere to the principles of healthy eating. It is noteworthy that most respondents who stated that they did not want to follow the principles of healthy eating were men.

A doctor's recommendation could encourage 38 per cent of respondents to follow the principles of healthy nutrition, actions and discounts on healthy foods – 33 per cent of respondents, positive example of relatives and friends – 30 per cent of respondents. The promotion of healthy eating in the mass media could have influenced the opinion of only 10 per cent of respondents, while advertising of individual foods could have influenced only on 2 per cent of respondents.

Most of the respondents believe that healthy nutrition is healthy and necessary for the body, a fifth of the respondents believe that healthy nutrition is expensive, 13 per cent believe that healthy nutrition is a diet, 6 per cent believe that healthy nutrition is a tasteless and unpalatable food, and that healthy food isn't hearty. Also, respondents stressed that healthy eating is primarily the high quality of products. One of the respondents stated that healthy nutrition implies alive food, that is, minimally processed or not processed at all.

Respondents were asked about their relationship to the environment. More than 70 per cent of respondents are concerned with environmental issues in everyday life. 62 per cent of respondents are concerned with environmental pollution issues such as household waste and landfills, half are concerned about air, water and soil pollution, and only a third of respondents are concerned about poor nutrition and sedentary lifestyles. However, every fifth respondent felt that he could not personally affect the environment, every fourth found it difficult to answer, and only 55 per cent of the respondents felt that they could have a positive impact on the environment. 65 per cent of the respondents agree that healthy eating has a positive effect on the environment and are ready to change their diet in order to improve the ecological situation.

One third of the respondents stated that high food prices and seasonality (there was no possibility of eating enough vegetables and fruit in winter) hindered the desire to adhere to healthy diets. 17 per cent are unhappy with the narrow range of healthy foods, every tenth stated that he does not adhere to the principles of healthy eating because healthy food does not taste good.

It is noteworthy that 45 per cent of the respondents stated that the lack of time to prepare healthy meals prevented them from adhering to the principles of healthy eating. However, the survey showed that the majority of respondents use the catering facilities once a month or less frequently. This may be due to the low income of the population. Only 6 per cent use catering services every day, 9 per cent do so 2-4 times a week, 16 per cent do so once a week.

For the majority of respondents, the price level and the variety of menus are the most important when choosing a catering facility, for one third the location and the quality of the service, and for 15 per cent the concept and popularity of the catering facility is important.

Respondents were asked to rank the factors that influence the menu selection in order of importance. The most important is the flavor of the dish, the second place

divided by the size of the portion and the usefulness of the dish (not fat, not fried, etc.) The use of environmentally friendly products has proved to be more important than the price of a dish, low caloric content and high energy value. 77 per cent of respondents said that they were ready to pay more for environmentally friendly products. 42 per cent were ready to pay no more than 5 per cent of the value of the same product, 27 per cent were willing to pay no more than 10 per cent of the value of the same product, and 8 per cent were willing to pay more anyway.

54 per cent of respondents believe that consumers are responsible for the environment, 37 per cent assign responsibility to the state and only 9 per cent assign responsibility to business. Most believe that high fines for environmental damage – 60 per cent, favourable conditions for environmentally friendly business – 55 per cent, environmental education lessons for children – 43 per cent, will help to influence attitudes towards the environment.

Thus, the survey showed that consumers are positive about healthy nutrition and consider it useful and necessary for the body. Many noted, however, that lack of free time for cooking prevented them from following healthy diets. In this way, catering facilities will play an important role in further promoting healthy eating by offering healthy eating positions in their menu.

The level of environmental awareness among consumers is quite high, and most believe that it can have a positive impact on the environment and that they are ready to change their diet in order to improve the environmental situation. The use of environmentally friendly foods has proved to be more important to consumers than the price of a dish. Moreover, most consumers are willing to pay more for environmentally friendly products. Therefore, the use of the concept of sustainability is promising for catering facilities.

### **V. CONCLUSIONS**

Today, consumers in Belarus are striving for a healthy diet. However, one of the obstacles to the improvement of the population's diet is the lack of free time for consumers to prepare food that meets the requirements of a healthy diet. In this way, catering facilities will play an important role in further promoting healthy eating by offering healthy eating positions in their menu.

The level of environmental awareness among consumers is quite high, and most believe that it can have a positive impact on the environment and that they are willing to change their diet in order to improve the environmental situation. The use of environmentally friendly foods has proved to be more important to consumers than the price of a dish. Moreover, most consumers are willing to pay more for environmentally friendly products.

Thus, the application of the concept of sustainability» by public catering facilities can have not only a social effect (improvement of the ecological situation), but also yield a profit. By promoting sustainable diets, catering companies can have short-term reputational benefits, but more importantly, they can strengthen their market position in the long term. Consequently, the use of the concept of sustainability is promising for catering facilities of the Republic of Belarus.

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