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**Organizing Catering Systems in General Educational Organizations:
Foreign Experiences and Implications for Russia**

Eteri Mindzaeva¹, Sergey Neustroev², Margarita Ivanova³, Nataliya Zimnyukova⁴

Abstract

The article discusses the current experiences and prospects of organizing hot meals in educational institutions in the context of health-saving technologies. The authors state that there is a tendency to develop universal requirements for a system of school feeding in each general educational organization, taking into account local conditions. Following this trend involves selecting and disseminating the best practices in organizing school nutrition in the general context of health-saving technologies. The concretization of this approach consists in analyzing the existing domestic and foreign experience in organizing school nutrition and creating an effective model of organizing a catering system. Such an effective model is understood as a set of organizational elements that comprehensively ensure the process of organizing a catering system in a general education organization that meets requirements of the regulatory framework existing in the Russian Federation, as well as taking into account certain territorial, climatic, geographical, ethnic, cultural, socio-economic, and other features of a particular region. More than that, the authors argue that such a model should address the population's level and way of life, as well as students' number, age, and individual needs.

Keywords: Catering, Schoolchildren, Experience, Model, Efficiency, Implementation.

¹ Federal State Budgetary Institution "Institute of Education Management of the Russian Academy of Education," 16 Zhukovskogo str., Moscow 105062 Russian Federation. Email: 1vega1@mail.ru

² Federal State Budgetary Institution "Institute of Education Management of the Russian Academy of Education," 16 Zhukovskogo str., Moscow 105062 Russian Federation. Email: uprstrateg@yandex.ru

³ Federal State Budgetary Institution "Institute of Education Management of the Russian Academy of Education," 16 Zhukovskogo str., Moscow 105062 Russian Federation. Email: rita.ivanovva@ya.ru

⁴ Federal State Budgetary Institution "Institute of Education Management of the Russian Academy of Education," 16 Zhukovskogo str., Moscow 105062 Russian Federation. Email: komolovann78@mail.ru

1. Introduction

In educational institutions of Russia, a system of catering (including hot meals) has been developed and is currently functioning. According to Article 37 “Catering for students” of the Federal Law N 227-FZ of July 3, 2016, catering for students is assigned to organizations that carry out educational activities. It should form a schedule of classes, providing for a break of sufficient duration to feed their students. In particular, the law regulates the provision of meals to students at the expense of budgetary allocations. The procedure and cases of such provision shall be established by state authorities of the constituent entities of the Russian Federation. In particular, catering is provided from the budgets of the constituent entities of the Russian Federation (by regional governments), or it can be funneled through allocations from local budgets (by municipalities).

Some areas of school feeding are regulated at the legislative level (Russian Federation, 2000; Russian Federation, 2017). However, to date, the Russian legislation does not contain clear requirements on the mandatory use of certain forms of catering. Therefore, educational organizations choose them independently.

When catering in schools, compliance with the norms of a number of acts of technical regulation in accordance with regulations of the Customs Union, as well as regulations of the Eurasian Economic Union (Commission of the Customs Union, 2014), is mandatory. Despite the above-mentioned regulations, there are problems in organizing school catering. These problems are constantly discussed by the parent community, becoming the subject of close attention from the media and various public organizations. Of course, this is due to the fact that children’s health is the future of Russian society and state. The executive and legislative authorities are doing a lot of work to improve legislation that establishes a proper legal basis for regulating relations in the field of production and circulation of food products for children food. Executive and legislative authorities of different levels rely on their work on results of sociological studies devoted to the satisfaction of parents and children with the quality of food in schools. Sociological studies are conducted in the country with varying degrees of regularity.

A school catering system, which provides for students’ physiological needs and also forms a set of healthy habits in them, is part of organizing a system of healthy eating in the Russian Federation. This has been announced by the conceptual Principles of the state policy of the Russian Federation in the field of population’s healthy nutrition for the period up to 2020, which was approved by the Order of the Government of the Russian Federation of October 25, 2010, N 1873-p (Government of Russia, 2010). In addition, the key targets for catering are laid down in the Decree of the President of the Russian Federation of May 7, 2018 N 204 (as amended on July 19, 2018) “On the National Goals and Strategic Objectives of the Development of the Russian Federation for the Period up to 2024” (President of Russia, 2018). Establishing a system of motivation in citizens to lead a healthy lifestyle, including healthy eating and giving up bad habits, is called by Strategy among the priority directions (President of Russia 2018). Of course, the formation and development of the need to lead a healthy lifestyle are laid in the family and at school. Such work is carried out in educational institutions, traditionally. However, now, the need to reach a new qualitative level in this direction is not only overdue but also enshrined in the relevant government regulatory documents (read more in Tuorila et al., 2015).

Analyzing an annual monitoring “On Catering for Students in Day-Time General Educational Organizations” conducted by the Ministry of Enlightenment of the Russian Federation (Kursobr, 2018), we find that the quality and safety requirements of schoolchildren are not fully complied with in all regions. Only 43% of the subjects of the Russian Federation have programs (subprograms) in which measures to improve the organization of the school catering system for students are envisaged.

Therefore, the situation develops when, on the one hand, government agencies provide a catering management system that takes into account the existing system conditions for its effective functioning at the legislative level. On the other hand, not all educational institutions organize a system for providing students with hot meals at the proper level. The foregoing makes us believe that there is a tendency to develop more or less universal requirements for the system of school catering in each general educational organization, regardless of numerous differences existing between them. These requirements set the vector for improving individual school systems and the entire holistic nutritional system for students.

In our opinion, it is advisable to solve the problem of improving school catering systems by considering them as an element of a larger system aimed at promoting a healthy lifestyle, developing a food culture, and using health-saving technologies.

In the case of organizing a catering system, health-saving technologies are considered as a system of conditions that includes interrelation and interaction of all factors of catering organization in schools, which are aimed at preserving children’s health at all stages of their education and development (Smirnov, 2002). The overall task is to select, disseminate, and implement the best regional and municipal experience in a systematic integrated approach in order to address this national problem.

Consequently, a comprehensive study of the existing system of catering in schools is necessary, along with identifying effective practices and creating on their basis a catering organization model, which can be extended to all general educational organizations, additionally taking into account regional specifics. Based on this model, this research presents a set of activities for establishing and developing a catering system in schools.

We also would like to note that the problem of organizing school catering is one of the most important problems in the context of developing health-saving technologies. Various aspects of this problem are addressed in regulatory documents (Federal Service for Supervision of Consumer Rights Protection and Human Welfare, 2017) and discussed by many researchers (Koldasheva, 2009; Nutriciology-2040, 2017). At the same time, the problem of creating an effective model for organizing school meals, which comprehensively ensures organizing a catering system in a general education organization still remains unresolved. Thus, our research presented in this paper contributes to this highly important issue.

2. Materials and Methods

In the course of the research, the authors formulate the concept of an effective model of organizing a catering system. Such an effective model is understood as a set of organizational elements that comprehensively ensure the organization of a catering system in a general education organization that meets certain requirements of the existing regulatory framework of the Russian Federation, as well as taking into account territorial, climatic, geographical, ethnic, cultural, socio-economic, and other regional

features. More than that, a model should address the existing level and way of life of the population, a number of students, as well as students' age and individual needs.

The main tool for identifying effective practices and building an effective model based on them is monitoring the existing school catering systems. In 2019, the main accents of such monitoring are made on organizing nutrition for children who have a dietary need due to chronic diseases, such as digestive system diseases, obesity, anemia, diabetes, celiac disease, food allergies, HIA, etc. Also, the development of food culture as a basis for forming a strong need to maintain a healthy lifestyle is in focus. For example, it is highly important to analyze the whole process of organizing and holding traditional events (holidays, festivals, themed events, quizzes, national cuisine festivals, workshops for parents, etc.) that are aimed at developing a school catering system. Also, effective monitoring should focus on the availability of a system of competitive events aimed at developing catering services at schools, as well as the availability of educational programs for forming a culture of healthy nutrition. More than that, one could also analyze the use of media sources to cover information on current issues related to school meals (Internet sites, publications in newspapers and magazines, television and radio programs, social networks).

An effective model of organizing an effective catering system in general education organizations must also be susceptible to positive foreign experience. The issue of catering for schoolchildren is relevant not only in foreign countries as well since the quality of children's food in schools concerns the parental community all over the world.

To obtain a more complete picture of organizing a catering system, countries that differ from each other in the population's level and way of life, education, and features of food culture were chosen. In particular, we conducted a rigorous analysis of open sources on the aforementioned research question in the following countries:

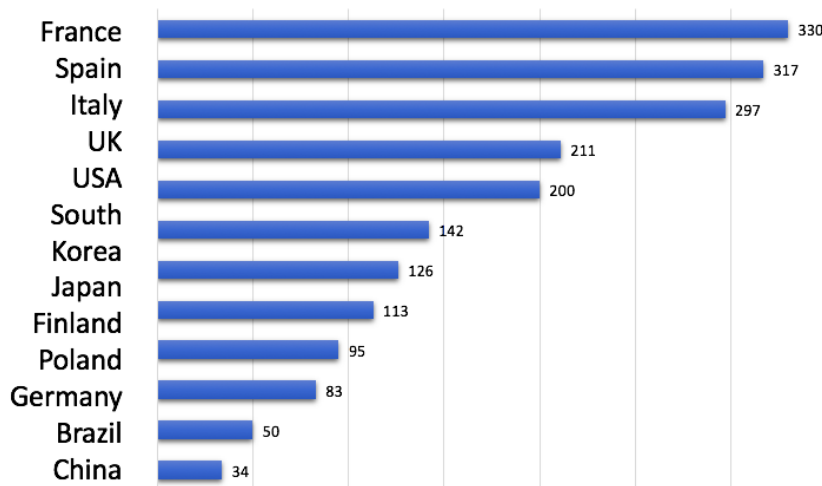
- European countries with a developed system of state social security: France, Spain, Italy, Great Britain, Finland, Poland, Germany;
- The United States of America, as one of the largest and most developed countries in the world;
- Brazil, as the largest country in Latin America being in a difficult economic situation;
- Developing countries of East Asia: South Korea, Japan, China.

3. Results and Discussion

In several countries, the organization of school meals is controlled at the state level. Financial resources for providing school meals come from state funding (subsidies, benefits). One of the first countries in the world to organize free school lunches is Finland. In 1943, Finland adopted the Law on Providing Free Meals to All Students. In Finland, the Basic Education Act 628/1998, namely Article 31, is dedicated to the guarantee of free education in Finnish schools. Also, the article indicates that each student is provided with a balanced, organized, and controlled diet every school day. Such food for schoolchildren and students in Finland is free of charge (*School meals: Finish...*, 2018).

In the US, as part of children food programs, about 30.5 million children are provided with reduced-price lunches or even free lunches (*School meals: the US...*, 2018). In South Korea and in the UK, children from primary school only are provided with free lunches. The state of China fully assumes the costs

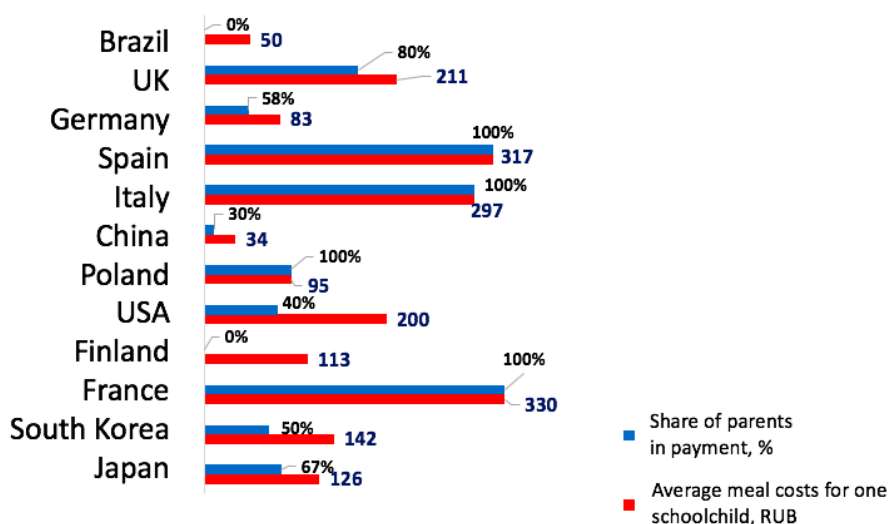
of organizing school meals if such a school is located in rural areas. In France, parents pay for children’s meals, but the state provides compensation for school meals for low-income families. In Germany, Britain, South Korea, and China, benefits are also provided for meals for children from poor families. In Italy, the cost of lunch for schoolchildren of this category is provided at a discount of 10-15%, while in Japan, the state provides free and reduced lunch programs. An average cost of school meals per child in a day varies from one country to another. Our analysis shows that the lowest cost for a school lunch is set in China, and the highest rate of cost for school meals in Europe: France, Spain, and Italy (Figure 1).



Source: Calculated by the authors.

Figure 1. A diagram showing the average cost of school meals per child per day (as of 2018, rubles)

When analyzing the provision of state subsidies and subsidies for organizing school meals in foreign countries, the share of parental fees for school meals per child per day is revealed, which is reflected in Figure 2.



Source: Calculated by the authors.

Figure 2. A diagram showing the ratio of parental fees for school meals per child in a day

In France, Great Britain, Finland, the USA, Japan, China, South Korea, and Brazil, school meals are carried out on the basis of state programs for organizing catering for children. Using the US experience, one could trace the effect of various national school feeding programs. In particular, there are the following programs: National School Lunch Program, School Breakfast Program, Fresh Fruit and Vegetable Program, Special Milk Program, Child and Adult Care Food Program, Summer Food Service Program (Gordon, Niland, & Fox, 2016; Amin et al., 2015).

The National School Lunch Program is designed for those children who, depending on the level of family income, receive a free lunch or dinner at a reduced price. It is valid for the same schools and institutions, taking into account the level of family income giving the right to participate. The Fresh Fruit and Vegetable Program was developed as a way to include fresh fruit and vegetables into the National School Lunch Program and the School Breakfast Program.

The Special Milk Program helps schools and institutions that do not participate in other nutrition programs provide children with free or low-cost milk. The Child and Adult Care Food Program was established to provide benefits, such as those in the National School Lunch Program and the School Breakfast Program, for children who are under care of various non-profit child welfare institutions. The Summer Food Service Program was established to ensure that food services are available to children from low-income areas at a time when there are no classes in schools (*School meals are free...*, 2019).

In 2018, a pilot project for the transition to vegetarian meals for schoolchildren was implemented in Brazil. The “Escola Sustentável (Sustainable School)” project was initiated by the “Humanity Society International”, an animal rights organization, to reduce the negative impact of animal husbandry on the environment in the region and to combat rising obesity rates in Brazil. According to the project, all meat dishes in some Brazilian schools will be replaced with vegetable dishes, including peanut butter, soy, vegetable milk, vegetables, cereals, whole wheat bread and other products (*What to eat...*, 2019).

When studying programs for organizing school catering in foreign countries, we find that many programs are aimed at developing a nutrition culture. For example, in Japan, the State Program “Sekuiiku” (“Learning to Eat Right”) is aimed at promoting a balanced, healthy diet and an aesthetic perception of food consumption (Ishida, 2018). It is also worth noting that a school lunch for Japanese schoolchildren is a must-see, as this is an educational process that is no different from other subjects. Lunch is not in a dining room, but it is done directly in the classrooms. Heads of educational organizations and school nutritionists monitor food quality in schools. These “special rules” have led to the fact that the country has one of the highest rates in life expectancy indicators and the lowest level of obesity in the world. Special attention to developing food culture is also given in Finland, Brazil, and the United States (*How schoolchildren dine...*, 2018).

One of the main indicators of the quality of food nutrition for schoolchildren is the variety of assortments of dishes included in the school menu. Despite the fact that the cost of school meals per child in a day in some European countries is quite high (Figure 1), the range of dishes is distinguished by its diversity and balance. Meals at educational institutions in France are regulated by the Government Decree “Arrêté NOR: AGRG1032380A du 30 Septembre 2011 relatif à la qualité nutritionnelle des repas servis dans le cadre de la restauration scolaire”, according to which the principle of diversity of dishes is observed on the basis of frequent changes in the 20-course assortment of an exemplary menu (*School menu in France*, 2018).

Table 1 provides an analysis of school menus in foreign countries. A level of each country is shown by individual products used in school menu dishes. All studied countries are divided into zones (levels) for food use.

Table 1. Foreign countries using particular products in their school menu

A product used in the school food menu	<i>Meat</i>	<i>Meat (poultry)</i>	<i>Fish</i>	<i>Soups</i>
Countries using this product in their school food menu by zones	France	France	Japan	France
	Finland	Finland	South Korea	Finland
	UK	UK	France	Japan
	Germany	Poland	Finland	South Korea
	Spain	Germany	UK	UK
	Italy	USA	Spain	Spain
	Brazil	Spain	Italy	Italy
	USA	Italy	Germany	Germany
	China	Brazil	Brazil	Poland
	Poland	China	USA	China
	Japan	Japan	Poland	USA
	South Korea	South Korea	China	Brazil
A product used in the school food menu	<i>Milk and dairy products</i>	<i>Vegetables</i>	<i>Fruits</i>	<i>Dessert</i>
Countries using this product in their school food menu by zones	Japan	France	France	France
	USA	Finland	UK	Finland
	UK	Japan	USA	UK
	Finland	South Korea	South Korea	Spain
	France	USA	Japan	Germany

	Germany	UK	Finland	USA
	Spain	China	Italy	Italy
	Italy	Germany	Spain	Japan
	China	Spain	Germany	Poland
	Brazil	Italy	Poland	South Korea
	Poland	Poland	Brazil	China
	South Korea	Brazil	China	Brazil
A product used in the school food menu	<i>Bread</i>	<i>Pasta</i>	<i>Legumes</i>	<i>Fast food</i>
Countries using this product in their school food menu by zones	France	Italy	Finland	USA
	Finland	France	Spain	UK
	UK	Finland	USA	Germany
	Germany	UK	Italy	Finland
	USA	Germany	Brazil	France
	Spain	Spain	UK	Italy
	Italy	Poland	Poland	Spain
	Poland	USA	France	Brazil
	Brazil	Brazil	Germany	Poland
	Japan	Japan	Japan	Japan
	South Korea	South Korea	South Korea	South Korea
	China	China	China	China
A product used in the school food menu	<i>Potato</i>	<i>Rice</i>	<i>Sauces</i>	<i>Cheese</i>

Countries using this product in their school food menu by zones	Finland	China	Italy	Finland
	Poland	South Korea	USA	Germany
	USA	Japan	Finland	France
	Germany	Brazil	Spain	Spain
	France	Spain	South Korea	Italy
	UK	UK	Japan	USA
	Spain	Poland	Brazil	Poland
	South Korea	Germany	France	UK
	Japan	Finland	China	Brazil
	Brazil	France	UK	Japan
	Italy	Italy	Germany	South Korea
	China	USA	Poland	China

Countries divided into zones (levels) according to their use of food in a school menu:

- Countries using this product in a wide range of dishes: ■
- Countries moderately using this product in school menu dishes: ■
- Countries that rarely use this product in school menu dishes: ■
- Countries that do not use this product in school menu dishes: ■

Thus, we can note that the range of dishes used in the school menu depends on the territorial location of a particular country. For example, in Asian countries, rice, seafood, and fish are more often used for cooking than it is in European countries. In the school menu of France, Finland, and the UK, dishes made from meat (veal, beef, pork, rabbit, and lamb) and poultry meat (chicken and turkey) are widely used. But at the same time, all the countries we study offer a choice of diet menus and vegetarian dishes, taking into account students' individual characteristics.

Despite the availability of programs for organizing healthy catering for children in the US and the UK, fast food is still on the school menu, unlike in Japan and Brazil, where products grown by the students themselves in the school garden and backyard areas are used for cooking.

Of no small importance in providing school meals is the timely familiarization of parents with the assortment of dishes included in the school menu. Especially, it is developed in the following countries: Spain, Italy, Germany, Poland, South Korea, and Japan.

When studying the experience of foreign countries in organizing school catering, we note that not all schools have canteens, for example, they are not available in schools of West Germany (Dairynews, 2019). In some countries, meals for children are not organized by a school itself, but it is provided by catering companies that rent school canteens (Spain, Poland).

One of the problems of organizing quality food in many countries is the availability of vending machines with food since the range of goods sold in vending machines does not always consist of useful products for schoolchildren. In Japan, the installation of such machines in school canteens is prohibited. In Finland, legislation has imposed a ban on the sale of products high in fat, salt or sugar, as well as lemonades, energy drinks, sweetened juices, and sweets in vending machines (Lehikoinen & Salonen, 2019).

It should also be noted that not in all countries under analysis, students are provided with both school breakfasts and school lunches. This is due to the lack of state funding for providing schoolchildren with two meals per day. In Germany, Poland, Italy, Spain, parents provide children with homemade food by collecting containers with food (lunch boxes).

4. Discussion

As a result of studying the experience of foreign countries, effective practices in organizing school meals for possible use and application in the territory of the Russian Federation are identified. We note that the reviewed foreign states care about the health of schoolchildren, provide them with high-quality and balanced nutrition, cultivate in them knowledge of proper and healthy food, which is not always implemented in practice in the Russian schools. This is due to the lack of programs for the development of school catering in some regions and municipalities of the Russian Federation, in our opinion. In the studied countries, every year, more and more programs and projects are being developed for the organization of children's food. This is seen in the practices of the USA, France, China, Japan, and Brazil.

A variety of US food programs provide children with discounted or free lunches and breakfasts. But despite their number, it is impossible to say that these programs are aimed at developing a food

culture, unlike the programs of France, China, Japan, and Brazil. It is expedient for us to highlight the state program of Japan because it reflects the principles aimed at developing students' eating culture, educating eating behavior, developing taste perception, and studying peoples' traditions. Their schoolchildren are taught what and how to eat. In Chinese schools, classes are held where children listen to the effects of nutrition on human health, food safety, and hygiene rules. The scheme of classes is designed taking into account children's age characteristics. More than that, a variety of non-profit organizations have launched special programs aimed at familiarizing students with the rules of nutrition. This practice is acceptable for Russian schools as well. Teaching schoolchildren about even the basics of food culture will solve the problem of helping them to take correct and informed decisions in food choices.

Our analysis also shows that the state is ready to pay for school lunches and breakfasts not in all countries. In Spain, Italy, Poland, France, the parent fee is 100%, but at the same time, the variety of dishes of the school menu is offered at the expense of the parents. In France, the diversity of their school menu includes about 20 names of dishes, which cannot be found in Russian school canteens. In the Russian Federation, there are however regions that could share their experience in compiling a school menu. For example, in the Republic of Tatarstan in Kazan, the project "School Restaurant" is developing. In this project, a wide selection of dishes is presented, including dishes from world cuisine (RT online, 2019).

School meals are controlled not only by state authorities but also by specialized services responsible for food quality and safety. For example, in Finland, the National Nutrition Council set up a working group with functions of identifying the nutritional needs of young people and make recommendations for school leaders in the field of school catering. Such an experience would be useful for the Russian Federation. Identifying children's needs through surveying parents (legal representatives) will allow covering a larger percentage of students provided with hot school meals.

Also, our analysis of using particular products for making school breakfasts and lunches in foreign countries revealed interesting practices. For example, the Brazilians are promoting a healthy lifestyle among schoolchildren by developing school gardens in which their students could grow vegetables themselves. And these products are used in school meals. But the real purpose of such a garden is not to supply a school with ingredients, but to explain to their students how food appears on their table. The same experience can be noted in Japan. In particular, the Japanese schoolchildren get lunch dishes made from fresh produce that are produced in the area where this school is located. Children will learn how to grow vegetables and fruits by regularly visiting nearby farms, or by growing these products in their "school grounds."

In Russia, one of the main documents regulating nutrition issues is the "Strategy for Improving the Quality of Food Products in the Russian Federation until 2030" (Government of Russia, 2016). The purpose of this Strategy is to ensure the quality of food products as an essential component of health promotion, increasing the duration and improving the quality of life of the population of the Russian Federation. Leading scientists in the field of nutriciology identify gaps in nutrition research that are relevant to the Russian general situation with nutrition, not only in educational organizations, among which are the following: (1) impact of nutrition on the earlier development; (2) nutrition and

neurological development, including effects on cognitive function and behavior; (3) causal relationships between various aspects of nutrition, physical activity, and sedentary lifestyle; (4) influence of food habits from early childhood on eating behavior and readiness to follow a healthy lifestyle; (5) analyzing how consumers use and interpret various sources of information; (6) conducting a quality nutrient, learning, and behavior research; (7) studies of the relationship between unhealthy diet and the development of neurocognitive disorders, etc. Obviously, the solution to these broader nutrition problems is a complex task, which requires a set of multi-directional efforts in all spheres of social life and food science. A part of this larger challenging problem is an urgent need for introducing effective experience that has already been developed and is being successfully used in the Russian school catering systems.

5. Conclusion

In conclusion, the presented research critically discusses a variety of experiences and prospects for organizing a system of catering in an educational organization in the context of health-saving technologies. Having considered international perspectives on this set of problems, the authors discuss how such problems and challenges could be addressed by creating an effective model of organizing a catering system in an educational organization. Hence, the authors define not only the conceptual issues of such a model. The paper also emphasizes the need to follow strict legal requirements of the Russian regulatory mechanisms, as well as take into account a variety of highly important characteristics.

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