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TRENDS AND PROSPECTS OF FORMATION AND FUNCTIONING OF THE FOOD MARKET ON THE EXAMPLE OF GLUTEN-FREE PRODUCTS

This study highlights the relevance and importance of gluten-free products, which are responding to consumers' increased interest in dietary restrictions. It examines the health benefits of these products, which open up new perspectives for producers and consumers. The essence of gluten-free foods and their impact on society, including economic and socio-cultural factors, are explored. The growing popularity of these products among people with celiac disease, allergies, and other food restrictions indicates their potential as a lucrative market segment. By analysing the various strategies companies are using to meet consumer needs and address production and marketing challenges, we explore opportunities for growth. The study of international experience provides an overview of key trends and best practices that can be adapted to the Ukrainian context. The domestic market analysis identifies barriers and opportunities for gluten-free product development, considering regional characteristics and demand in Ukraine. The final part of the study discusses forecasts and recommendations for future market development in the country. It identifies potential growth areas, manufacturers' strategies, and critical factors that influence the success of this segment. Overall, the study confirms the importance of developing gluten-free products in the context of healthy eating and opens up opportunities for innovation and growth in this area. Researching the concept of a "gluten-free product" was a vital element of this analytical work, allowing us to examine critical aspects of these products in detail. The definitions and characteristics of gluten-free products have been thoroughly analyzed to understand their nature and importance to consumers. The assessment of the impact of gluten-free products on society included an analysis of their health effects, dietary benefits, and accessibility. The study of international experience in the production of gluten-free products identified best practices and innovative approaches. The domestic market analysis considered consumer demand, the competitive environment, and the potential for development. The study identified key trends and opportunities for Ukrainian gluten-free producers. Particular attention was paid to analyzing the potential for the development of the gluten-free market in the economic and social context. Given the growing interest in healthy lifestyles and dietary restrictions, the analysis highlighted the importance of this food industry sector. The study's findings point to the significant potential of the gluten-free market for development and innovation.

Keywords: gluten-free products, gluten, food restrictions, celiac disease, gluten-free diets, consumer demand, healthy eating.

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ТЕНДЕНЦІЇ ТА ПЕРСПЕКТИВИ ФОРМУВАННЯ ТА ФУНКЦІОНУВАННЯ РИНКУ ХАРЧОВОЇ ПРОДУКЦІЇ НА ПРИКЛАДІ БЕЗГЛЮТЕНОВИХ ПРОДУКТІВ

Дане дослідження підкреслює сучасну релевантність та значущість продуктів без глютену, які відповідають на збільшений інтерес споживачів, що мають дієтичні обмеження. У ньому розглядаються здоров'язберігаючі переваги цих продуктів, які відкривають нові перспективи для виробників та споживачів. Досліджено суть безглютенових продуктів та їх вплив на суспільство, включно з економічними та соціокультурними факторами. Зростаюча популярність цих продуктів серед людей з целіакією, алергіями та іншими харчовими обмеженнями вказує на їхній потенціал як прибуткового ринкового сегменту. Аналізуючи різноманітні стратегії, які використовують компанії для задоволення потреб споживачів та вирішення виробничих та маркетингових викликів, ми вивчаємо можливості для росту. Вивчення міжнародного досвіду надає огляд ключових тенденцій та найкращих методик, які можуть бути адаптовані до українських умов. Аналіз внутрішнього ринку виявляє перепони та шляхи розвитку безглютенової продукції, враховуючи регіональні особливості та попит в Україні. У заключній частині дослідження розглядаються прогнози та рекомендації для майбутнього розвитку цього ринку в країні.

Визначено потенційні зони зростання, стратегії виробників та ключові фактори, які впливають на успіх цього сегменту. В цілому, дослідження підтверджує важливість розвитку безглютенових продуктів у контексті здорового харчування та відкриває можливості для інновацій та зростання в цій області. Процес дослідження концепції "безглютеновий продукт" був ключовим елементом цієї аналітичної роботи, дозволяючи нам детально розглянути важливі аспекти цих продуктів. Визначення та характеристики безглютенових продуктів були ретельно проаналізовані, щоб зрозуміти їхню суть та важливість для споживачів. Оцінка впливу безглютенових продуктів на суспільство включала аналіз їхнього впливу на здоров'я, дієтичні переваги та доступність. Вивчення міжнародного досвіду у виробництві безглютенових продуктів виявило кращі практики та інноваційні підходи. Аналіз вітчизняного ринку враховував споживчий попит, конкурентне середовище та потенціал для розвитку. Дослідження виявило ключові тренди та можливості для українських виробників безглютенових продуктів. Особлива увага була приділена аналізу потенціалу розвитку ринку безглютенових продуктів у економічному та соціальному контекстах. Аналіз підкреслив важливість цього сектору харчової промисловості з огляду на зростаючий інтерес до здорового способу життя та дієтичних обмежень. Висновки дослідження вказують на значний потенціал ринку безглютенових продуктів для розвитку та інновацій.

Ключові слова: Безглютенова продукція, клейковина, харчові обмеження, ціліакія, безглютенові дієти, попит споживачів, здорове харчування.

Gluten-free products play an essential role in ensuring food safety for patients with the autoimmune disease celiac disease. Patients with celiac disease can suffer serious health consequences from consuming even small amounts of gluten. Therefore, the availability of gluten-free alternatives is essential to ensure regular physical condition and quality of life [3].

However, the relevance of gluten-free products goes beyond the medical aspect. With the growing interest in healthy lifestyles and nutrition, more and more people are choosing gluten-free alternatives, even if they have no direct medical indications. This creates new opportunities for the development of the gluten-free market and stimulates innovation in the production and development of gluten-free formulations.

Gluten-free diets are becoming increasingly popular among athletes and fitness enthusiasts who seek to optimize their nutrition to improve training performance and recovery. Gluten-free foods are also attracting the attention of people living vegan and vegetarian lifestyles and looking for a plant-based alternative to traditional foods [3].

Gluten-free products, including restaurants and cafes, have become an essential part of the food service industry. The growing demand for gluten-free food has led many establishments to expand their menus and consider using alternative ingredients to meet the needs of their customers.

Scientific research and technological innovations have also contributed to the development of gluten-free products, making them tastier, more varied, and more accessible to consumers. Gluten-free products are essential not only for people but also for animals with gluten intolerance or allergies. Some animals, such as dogs and cats, may suffer from celiac disease or other gluten-related conditions. For many owners, gluten-free diets are essential to pet care. Many owners seek gluten-free foods to help improve their pets' health [13].

Gluten-free foods contain alternative protein sources that do not contain gluten, such as meat, fish, eggs, and plant-based products. This allows owners to feed their pets a balanced and safe diet, avoid gluten-related health problems, and lead a comfortable and healthy life.

For food producers, the gluten-free theme opens up opportunities to expand their product range, attract new customers, and increase market competitiveness. Innovations in the development of gluten-free products, such as bread, pasta, snacks, confectionery, and feed, are crucial to meeting the demands and needs of modern consumers. Thus, the topic of gluten-free products continues to be important for both consumers and food manufacturers.

Despite the high level of interest in the sector and existing research, many market aspects still need to be explored or require further investigation. Understanding these aspects is essential for effectively implementing gluten-free strategies and policies, both at the level of government programs and in practice. Therefore, this study aims to fill the gaps in knowledge about the gluten-free market and contribute to creating a more accessible environment for consumers with specific dietary restrictions.

The purpose of this research paper is to analyze the market of gluten-free products in order to identify the main factors influencing their functioning and development.

Accordingly, the task is to:

- to study the concept of "gluten-free product";
- to consider the essence of gluten-free products for society;
- study of international experience in the manufacture of these products;
- study of the domestic market;
- to identify the potential for the development of the gluten-free products market.

In recent decades, the international community has paid increasing attention to understanding and meeting the nutritional needs of people with special dietary restrictions, including gluten intolerance. The market for gluten-free products is proliferating, especially in developed countries. While inclusive development policy poses challenges to society and the state, the gluten-free market contributes to creating an environment where people with special dietary restrictions can lead a whole life without dietary restrictions.

Firstly, it should be noted that the gluten-free market is primarily driven by demand from consumers who have medical conditions that require the exclusion of gluten from their diets, such as celiac disease. This demand is also partly driven by dietary trends, as more and more people choose to eat gluten-free for health and sociocultural reasons. This growth in demand offers significant opportunities for the development of this market.

The market for gluten-free products reflects not only the technical aspects of production but also social trends, consumer preferences, and economic conditions of consumption. The development of gluten-free markets plays a vital role in ensuring that people with different eating habits can access quality and safe food.

Аналіз останніх досліджень та публікацій. Various researchers have studied the relationship between a gluten-free diet and the improvement of the condition of patients with celiac disease and other food restrictions. These include domestic scientists such as K.V. Mykhalyk, K. Pavlov, O. Pavlova, O. Strinesenets, V. Lagodienko and A. Husar, N. Shulhach, A. Ploskina, O. Spas, A. Suriak, G. Sargsyan, L. Ilyin, K. Zaychuk, as well as foreign researchers such as I. Demirkesen and B. Ozkaya. They have studied the effectiveness of gluten-free diets, their impact on patients' health, and the possibility of improving the quality of life [5, 6, 7-9, 12, 16].

Gluten, also known as gluten, is a protein that acts as a "building block" in the body. It is found in many foods, including bakery, confectionery, sauces, ketchup, sausages, and other day-old products. We often unconsciously consume these products without paying attention to their composition. In addition, gluten is also found in many products on supermarket shelves, such as cereals and milk powder [1].

Gluten in flour is essential in the baking industry. It determines the properties of dough, such as elasticity when mixed with water, and is a criterion for flour quality. Gluten contributes to the production of loose or porous flour products. Depending on the type of flour, the average gluten content is defined as 20-30% by weight. A genetic defect can lead to gluten intolerance, requiring a lifelong diet that eliminates all gluten-containing foods [4].

Foods containing gluten:

- Cereals: whole wheat, wheat bran, barley, rye, spelled, couscous, semolina, bulgur, and wheat germ. Oats remain controversial. Oats contain a protein called avenin, which is structurally similar to gluten. However, studies have shown that a small proportion of people with gluten intolerance similarly react to avenin. Therefore, people with gluten intolerance should consult a doctor before consuming oats;
- Processed grain-based foods: crackers, bread, pasta, noodles, biscuits, cakes, waffles and other pastries;
- Other foods and beverages: soy sauce, tomato sauce, mayonnaise sauce, spice mixes, chips, beer, cheese desserts, sweet yogurt, processed cheese, ice cream, malt, and some wines;
- medicines: Some medicines contain wheat gluten [14].

Gluten-containing products are standard and are included in many regular food products. However, for some people, gluten consumption can cause serious health problems, so gluten-free diets are becoming increasingly popular amid growing demand for healthier diets. This is due not only to current fashion trends but also to diseases associated with gluten intolerance and food sensitivities. For people with celiac disease, a genetic disorder characterized by gluten intolerance, following a gluten-free diet is the only way to maintain their health. A gluten-free diet is also recommended for people who have diabetes, tearfulness, irritability, depression, autism, many other mental disorders, overeating, and certain gastrointestinal diseases [2].

In recent years, more and more people have been concerned about their health and diet. Many food trends are related to healthy eating and fitness, but only some understand the importance of following a diet for medical reasons.

Gluten-related diseases include celiac disease, non-celiac disease, gluten sensitivity, gluten ataxia, herpetiform dermatitis (HD), and wheat allergy.

Celiac disease is a severe autoimmune disorder that occurs in people with a genetic predisposition to damage to the small intestine due to gluten consumption. It is estimated that 1 in 100 people worldwide have celiac disease, but only 30% of them are correctly diagnosed. When a person with celiac disease eats gluten, the body forms an immune response and attacks the small intestine. This attack damages the villi - the small, finger-like protrusions that line the small intestine and help absorb nutrients. Celiac disease is hereditary and runs in families. People with first-degree relatives with celiac disease (parents, children, or siblings) have a 1 in 10 chance of developing the disease [23].

Gluten ataxia is an autoimmune disease in which eating gluten causes damage to the cerebellum (including the loss of Purkinje cells), which controls coordinated and complex movements such as walking, talking, and swallowing. People with celiac disease usually have problems with walking and coordination, as well as tremors in the upper limbs. Nystagmus and other ocular signs of cerebellar dysfunction are common. Myoclonus, palatal tremor, and opsoclonus may also occur.

Early diagnosis and treatment with a gluten-free diet can alleviate ataxia and prevent its progression. The effectiveness of treatment depends on the course of the disease from onset to diagnosis, as the death of neurons in the cerebellum due to gluten exposure is irreversible.

However, like humans, our furry friends can sometimes experience health problems, including various diseases and allergic reactions. One such problem is celiac disease, which can occur in animals, especially dogs and cats.

Celiac disease in animals has symptoms similar to human celiac disease and can cause serious health problems and digestive disorders when certain gluten-containing foods are consumed. Discomfort, loss of appetite, skin problems, and low energy levels are some signs of celiac disease in animals [13].

Food allergy is a significant disease for dogs and cats. Therefore, it is worth discussing this type of allergy in more detail. Most commonly, allergic reactions occur to beef, soy, milk, eggs, and wheat gluten. Grains that are considered gluten-free are rice, corn, and sorghum. This is the most common question about corn, so let us answer it here. Corn contains a type of gluten called zein, but this plant protein is safe. Its structure (without gliadin) is very different from the true gluten found in wheat, barley, and rye and does not cause allergic reactions. Corn is a safe food and does not cause allergic reactions. Therefore, corn is a grain that can be fed to dogs and cats prone to allergies [13].

International experience in producing gluten-free products is vital in improving the quality of life of people with gluten intolerance. The introduction of global brands of gluten-free products to the Ukrainian market helps to expand consumer choice and increase the availability of these products. In the future, research into innovations and the development of technologies in this area will further improve the range and quality of gluten-free products.

One of the most popular foreign brands represented in Ukraine is Dr Schar. The company appeared on the Italian market back in 1922. Today, its products are known in Europe, America, and Asia and are available in more than 100 countries. The brand produces a wide range of quality products. First, Dr. Schar offers gluten-free flour and mixes for making bread, pasta, and sweets. Ready-made bakery products, including pizza, are also available. Sweets include chocolate bars, cornflakes, biscuits, waffles, and muffins. Thanks to this, the company covers a large part of the market. The wealth of choice, product quality, and global presence make Dr Schar one of the most prominent figures in the gluten-free market, contributing to the growth of nutritional awareness and providing consumers with the means to live a healthy and tasty life [22].

The Polish company SONKO's products are often seen in stores. Regarding gluten-free products, the company offers very popular rice biscuits and bread [21].

Among German manufacturers, we can name Grundorf. The company offers a wide range of baking mixes [11].

The rest of the imported products are made up of the following brands: "Pedon, Fiorentini (Italy), Provena (Finland), Biovegan, 3Pauly (Germany), Alaska (Slovakia), CandyTree (Netherlands), Amylon (Czech Republic) and others.

Prices for gluten-free products are many times higher than those containing gluten. This is because of constant laboratory testing, raw materials, processing, and high production costs, as exceptional standards and technologies are required to ensure the final product is gluten-free. Imported gluten-free products are characterized by high prices, which makes them unaffordable for many consumers.

Establishing domestic production of high-quality and safe gluten-free food products is necessary to reduce the price of such products. Local production of such products will help reduce costs and increase accessibility for consumers requiring a gluten-free diet. It will also contribute to developing the domestic agricultural sector and increasing employment in this area.

Interest in gluten-free products is growing in today's domestic market, which is reflected in the growing range and popularity of this product category among consumers. Ten years ago, it was almost impossible to find gluten-free products in Ukraine, but things have changed.

Specialist stores and departments of large retail chains have emerged to offer a wide range of gluten-free products, from cereals and bakery products to confectionery and snacks. In addition, gluten-free products have gradually become available in small shops and online stores, giving a more comprehensive range of consumers access to gluten-free products.

Several manufacturers in the gluten-free market in Ukraine stand out for the high quality of their products and active support for consumers with special dietary needs.

"Dobrodiya Foods is one of Ukraine's first and only certified companies specializing in producing gluten-free oatmeal. The company passed an international audit and received the AOECs food certificate of conformity. This certificate confirms the company's products' high quality and safety for celiac disease consumers [10].

BeBig is also a market leader in gluten-free products. Founded in 2015, the company decided to focus on simplicity and quality when launching its gluten-free brand. The company's products feature high-quality ingredients and simple recipes, ensuring all consumers enjoy healthy and delicious food [15].

Ms. Tally is a recognized leader in the gluten-free market in Ukraine and has gained consumer trust for its high-quality products. Created to meet the needs of consumers with special dietary requirements, mstally offers a wide range of gluten-free products, including high quality and delicious products [3].

The online store NiGlutenu also offers high-quality gluten-free products from Ukrainian manufacturers. The store is recommended for those who follow a gluten-free diet or simply choose healthy eating. These manufacturers' products are known for their high quality and are recommended by a wide range of health-conscious consumers [19].

All these manufacturers demonstrate a high degree of responsibility and focus on customer satisfaction, which makes them the best players in the gluten-free market in Ukraine.

There is great potential for developing this industry both globally and in Ukraine. The gluten-free market is expected to reach \$43.65 billion by 2027 [18].

Over the past few decades, demand for gluten-free products has grown globally, and experts say the gluten-free market will grow at a CAGR of 5.6% from 2020 to 2027 [18].

This trend is being driven by increased awareness of the risks associated with gluten, the growing number of people with celiac disease, and other allergic reactions to proteins. Under these conditions, the gluten-free market is gaining significant development and growth potential.

The price of gluten-free products is one of the key issues hindering their widespread adoption. Due to high research, production, and marketing costs, gluten-free products are often significantly more expensive than their gluten-containing counterparts. This situation is particularly problematic for low-income consumers who have limited access to gluten-free products.

To solve this problem and make gluten-free products more affordable for consumers, increasing domestic production of gluten-free products is necessary. Establishing domestic production of gluten-free products will reduce costs by optimizing production processes and reducing transport costs. It will also create new jobs and contribute to the development of the domestic agricultural sector.

Increasing the range of gluten-free products on the domestic market could increase competition between producers and lead to further price reductions. In addition, promoting research and development of new technologies in the sector could lead to more efficient methods of producing gluten-free products, which would help to reduce costs and improve quality.

If we analyze the global market for gluten-free products, we can see specific dynamics in the coming years (according to experts), as shown in Table 1.

Table 1

The global market for gluten-free products in 2024-2034, [17]

Forecast period	2024-2034
Estimated market size (2024)	5870 million USD
Projected market size (2034)	11,587 million USD
Expected growth rate (2024-2034) 7%.	7%
Key regions covered	North America, Latin America, Europe, Middle East and Africa, East Asia, South Asia and Oceania.
Key countries covered	USA, Canada, Brazil, Mexico, Germany, Spain, Italy, France, China, India, Australia, New Zealand and South Africa.
Growth factor	Raising consumer awareness of the side effects and diseases caused by gluten consumption.
Market opportunities	The rapid rise in celiac disease is playing a crucial role in driving the consumption of gluten-free foods.
Market challenges	When products are made gluten-free, they tend to have a shorter shelf life, which is countering trends in this regard.

Thus, the gluten-free market has great potential for further development. Establishing local production and promoting scientific research in this area can make gluten-free products more accessible to consumers and help improve the quality of life for people with special dietary needs.

Researching the "gluten-free product" concept was an essential step in this analytical work, as it allowed us to clarify and consider critical aspects of such products. The definitions and characteristics of gluten-free products were carefully analyzed to understand their nature and meaning for consumers. Consideration of the essence of gluten-free products for society included an assessment of their health impact, dietary benefits, and accessibility for different population groups. Studying international experience in the manufacture of gluten-free products allowed us to identify best practices and innovative approaches to their production and distribution. The study of the domestic market considered the specifics of consumer demand, the competitive situation, and the potential for further development of this segment. The analysis identified key trends and opportunities for gluten-free producers in Ukraine and abroad. Particular attention was paid to identifying the potential for the development of the gluten-free market in both economic and social contexts. The analysis highlighted the importance of developing this food industry sector in view of consumers' growing interest in healthy lifestyles and dietary restrictions. The study concludes that the gluten-free market has significant potential for further development and innovation.

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