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Study of Risks in Confectionery Industry of Ukraine

Abstract. Enforced transformational processes caused by crisis situations, such as battle against consequences of the spread of COVID-19 pandemic and the formation of a socio-economic and security mechanism for counter fighting Russian war in Ukraine, are significantly reflected in the specifics of Ukraine's confectionery market operations today. It is determined that danger, instability, uncertainty, complexity and ambiguity accompany the development of various socio-economic systems, including confectionery market. The purpose of the article is to reveal the potential of the Ukrainian confectionery market in view of the intensification of competition in crisis situations, to identify the dominant influencing factors in the developmental environment of confectionery enterprises in order to design alternative competitive strategies to support their sales. The main goal is to present the results of the analysis of determinants of confectionery market development in Ukraine in the period of the spread of crisis situations in terms of identifying risks in the sector. Research methods are the method of economic analysis and comparison for researching the specifics of the confectionery market; abstract-logical method for theoretical generalisation and conclusions; calculation of confectionery market capacity and market shares of Ukrainian confectionery enterprises; index method for assessing the concentration levels in the confectionery market. Conclusions and added value of work: the specifics of Ukrainian confectionery market development are revealed. Analysis of the dynamics of the confectionery production volume in Ukraine has been carried out; the number of business entities in the segments characterised by types of economic activity and in terms of large, medium, small and micro enterprises has been identified. Analysis of export-import operations volumes has been carried out based on the commodity structure of foreign trade in confectionery products. The list of risks of the developmental environment of confectionery enterprises and intra-industry risks has been identified using the probabilistic method of risk assessment; analysis of factors affecting the dynamics of confectionery market development has been established in accordance with M. Porter's method of five forces of competition, an assessment of market concentration has been carried out using the index method (in particular, the Herfindahl-Hirschman index and the Lind index). According to the results of the evaluation of concentration levels of confectionery market in Ukraine and the factors affecting the conjuncture of this market, it has been identified that three enterprises are involved in the core of the confectionery market, namely SE "KK ROSHEN", PrJSC "HBF" and PrJSC "AVK". Forms of their interaction are secret conspiracies, the policy of dictating prices in order to maintain the market power of influence on industry counterparties and other stakeholders of the confectionery market, and other forms of interaction characteristic of an oligopolistic market structure

Keywords: confectionery market, market concentration, market share, Lind index, Herfindahl-Hirschman index, risks of economic activity, 5 forces of competition

INTRODUCTION

Implementation of megatrends, introduced by globalisation and informatisation, in the activities of Ukrainian confectionery industry enterprises under the influence of crisis situations caused by the spread of pandemic and Russian

Federation's military invasion in Ukraine have significantly complicated the processes of managing all components of production and economic activity and led to an increase in external factors in the crisis threat. Internal problems

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in confectionery industry have worsen the ability to adapt to market challenges against the background of a decline in demand for confectionery products in favour of satisfying basic needs. They exacerbate competitive relations in the industry and create the need for preventive measures in terms of quick response to emerging threats. Therefore, the implementation of an effective system of early warning of the appearance of risk factors in Ukrainian confectionery industry in a strategic and short-term perspective is called for.

In addition, the identification of risks against the background of intensifying competition in the confectionary industry will contribute to reducing the negative consequences of threats and identifying positive effects under the conditions of risk acceptance for enterprises and their stakeholders, thereby contributing to the improvement of countermeasures against risks and the satisfaction of economic interests of owners and other interested parties.

The confectionery market in Ukraine, as a complex socio-economic system, actively demonstrates dynamic development of its individual segments, expansion of product range, improvement of consumer characteristics of confectionery products, therefore, it is accompanied by the intensification of competition between manufacturers, trade networks and distributors on the local, national and global levels of confectionery markets.

The impact of crisis situations, mainly the spread of COVID-19 pandemic and military actions of the Russian Federation in Ukraine, has led to significant disruptions in world trade in the target markets of the confectionery industry, complicated the conjuncture of the confectionery market in domestic and foreign markets, disrupted logistics export-import operations and caused a break in local logistics chains and caused problems in increasing the export of confectionery products with a high added value [1; 2].

In order to increase the presence of Ukraine in global food networks due to the active involvement of Ukrainian operators in global supply chains, and to harmonise competitive relations on the local and national markets of confectionery products, Ukrainian manufacturers have resorted to an in-depth analysis of the conjuncture of confectionery market in order to identify the influence of dominant factors in the environment of their development from the point of view of improving marketing and logistics in order to develop alternative competitive strategies to support their sales.

The purpose of the work is to present the results of a comprehensive analysis of the determinants in Ukrainian confectionery market development during the period of crisis situations.

The outline allowed the authors to put forward the task of researching the dynamics of Ukrainian confectionery market development in terms of:

- analysis of the dynamics of confectionery production volume in Ukraine in natural terms;
- identification of the number of economic entities in segments: by types of economic activity; in terms of large, medium, small and micro enterprises;

- analysis of the volumes of export-import transactions in terms of identification of the commodity structure of foreign trade in confectionery products;
- analysis of the retail turnover of enterprises of retail trade in confectionery and products;
- identification of risks in development environment of confectionery enterprises and intra-industry risks using the methodology of five forces of competition according to M. Porter and the index method of assessing the concentration levels of confectionery market in Ukraine.

LITERATURE REVIEW

The main areas of research regarding the assessment of concentration levels of confectionery market in Ukraine, considering the risks of the environment in development of confectionery enterprises in Ukraine, have been determined through the symbiosis of a significant number of areas of research.

In particular, the analysis and determination of prospects in the development of confectionery market of Ukraine, among other things, were carried out by such groups of scientists as A.A. Voronin, who studied trends in the development of confectionery industry and drew conclusions about the high potential of the industry due to effective management and other internal competitive advantages [3]; K.A. Demianenko, who continued the analysis of the dynamics of confectionery market by regions and types of products with the involvement of world experience and revealed the dominant competitive advantage of the Ukrainian confectionery market, based on price [4]. A.V. Zahrychanska and V.Ya. Holiuk in their works focused on the study of the competitive advantages of Ukrainian confectionery enterprises and according to the results of the study, identified the main ones, notably, a wide range of products, qualified personnel, reputation on the market, a wide sales market [5]. A.A. Zaynchkovskyi et al. focused attention on identification of product offers by confectionery manufacturers; the conclusions regarding the high level of competition in the confectionery market, saturation and a wide range of dynamically updated products should be considered in the scientific work of the authors; expanding the geography of exports and strengthening the target offer on the domestic market are proposed as promising directions of development [6]. M.V. Shashyna focused attention on the organisational and technological processes of production of confectionery enterprises, and also presented results on increasing competitiveness and further promotion of products on the foreign and domestic markets [7]. O.S. Kilnitska et al., as a result of the confectionery market research, provided recommendations on improving the assortment, promotion and sales of commercial products in the industry [8]. V. Samofatova & T. Bova investigated the factors influencing the improvement of competitiveness of confectionery enterprises in Ukraine and, according to the results of the study, attributed the market positions of enterprises, product quality and ownership, marketing measures

to increase sales, flexibility of the product range, the possibility of export, diversification in search for new ways of selling goods in Ukraine [9]. The work of A.V. Hrytsyshyn, who proposed an improved method of automated accounting of transportation of material values using global positioning technology in confectionery industry; to implement the principle of “chaotic storage” of material values in free warehouse spaces into the system of accounting for logistics costs using electronic documentation of logistics operations, inventory of material stocks and identification of value; and also suggested positioning the warehouse as a center of responsibility and a center of costs [10].

In her scientific work H.V. Razumova et al. [11] determined the components of risk in setting the price for the products of Ukrainian confectionery enterprises, as well as the main reasons for their occurrence. The choice of enterprises - manufacturers of confectionery products when forming a marketing pricing strategy is analysed. Recommendations are provided regarding the feasibility of applying the competition-oriented pricing method, as well as suggestions for increasing the efficiency of Ukrainian enterprises in the confectionery market of Ukraine. In the paper [2], the authors H.V. Razumova and O.V. Oskomova continued the study of the confectionery market of Ukraine, according to the results of which it was established that the stable development of the confectionery industry for the country's economy will make it possible to simultaneously stimulate the development and growth of production in the field of rural economy, transport and logistics sphere, trade, increase the employment of the population, as well as significantly increase the country's export potential.

In her work M.A. Saiensus investigated the organisational and economic foundations of cold logistics management of confectionery enterprises thanks to the study of the concept of cold logistics in the supply chains of confectionery products and developed a model of the network design of the cold supply chain of food industry enterprises in the conditions of sustainable logistics formation, carried out an assessment of the effectiveness of the logistics activities of food industry enterprises, which are included in the cold supply chain [12]. At the same time, despite the diversity of the authors' research on the development of the confectionery market, the assessment of the concentration of the confectionery market on the basis of a comprehensive analysis of the factors influencing the development environment of the industry's counterparties, taking into account the significant risks that arose during the crisis period of 2019-2022, is insufficiently covered, which signifies the relevance of this study.

MATERIALS AND METHODS

In accordance with the criterion of professional qualitative and quantitative dynamics of evaluating confectionery market development in Ukraine, the work uses materials from monographic and dissertational studies, scientific periodical publications, the results of research by consulting agencies and the opinions of experts in the confectionery

industry and materials from comprehensive statistical publications for the period 2014-2022. The use of statistical publications made it possible to analyse the dynamics of the number of economic entities on the confectionery market of Ukraine by types of economic activity and by the segmentation of entities of large, medium, small and micro enterprises; the structure of the volume of production of confectionery products by the width of the product range; the commodity structure of foreign trade in confectionery products using the export-import coverage ratio to reflect the ratio of export-import operations; retail turnover of Ukrainian confectionery retail enterprises by product group.

Therefore, the collection and analysis of statistical materials made it possible to structure the number of business entities in the confectionery market, including the identification of entities of large, medium, small and micro enterprises, to assess the ratio of export and import of products of the confectionery industry; calculate the capacity of the Ukrainian confectionery market and the capacity of its macro-segments, in particular, the capacity of the flour and sugar confectionery retail markets; shares of these sectors in the structure of the Gross Domestic Product of the country.

The study of the quantitative parameters of the conjuncture of the confectionery market of Ukraine is supplemented by the authors with a qualitative analysis and classification of the main risks in this industry. The identification of the specificity of one of them, namely the aggravation of various types of competition in the confectionery market of Ukraine, was carried out with the help of the toolkit of five forces of competition according to M. Porter [12]. Further detailing of the analysis of the risks of intensifying competition in the confectionery market was carried out using the Gervindahl-Hirschman Index and the Lind Index, which obliged the authors to determine the market shares of individual counterparties - leaders in the confectionery market of Ukraine (using the analysis of secondary reporting of the studied enterprises) and supplemented probabilistic assessment of the influence of competition forces in the confectionery industry.

Methods used in the study, such as statistical analysis of the dynamics of the confectionery market development, the index method for the quantitative assessment of individual segments of the confectionery market in Ukraine, supplemented by the results of a qualitative assessment of the levels of competition in the confectionery industry (the method of five forces of competition according to M. Porter) are of a systemic nature and allow us to understand the specifics of the competitive environment in the confectionery industry and the intensity of competition in the core of the studied market.

RESULTS AND DISCUSSION

The confectionery market is one of the most dynamic and competitive markets in Ukraine. 90% of products on the confectionery market are supplied by Ukrainian manufacturers, only 10% of them are imported goods, which indicates a high level of competition in the confectionery industry [13]. The authors recommend structuring the

confectionery market in Ukraine into the following segments according to the macro-segmentation grid based on the types of economic activity (which are fully consistent with the structuring of the studied market in statistical sources of information):

- production of cocoa, chocolate and sugar confectionery;

- production of crackers and biscuits; production of long-storable flour confectionery, cakes and pastries.

Positive dynamics of the development of Ukrainian confectionery market during 2016-2019 in terms of the analysis of the number of business entities in its main segments are noteworthy (Table 1).

Table 1. Analysis of the dynamics of the number of business entities on the Ukrainian confectionery market by type of economic activity, unit

Segment	2016	2017	2018	2019	2019/2016
Production of cocoa, chocolate and sugar confectionery (type of economic activities – 10.82)	424	477	485	526	1.3
Production of crackers and dry biscuits; production of long-storable flour confectionery, cakes and pastries (type of economic activities – 10.72)	1575	1496	1533	1555	0.9

Source: systematised on the basis of [14]

According to the analysis, the number of business entities in the “Production of cocoa, chocolate and sugar confectionery” segment increased by 30% in 2016-2019, which indicates the promising development of this segment in terms of the number of potential participants. In contrast, the rate of growth of the number of economic entities in the

segment “Manufacture of crackers and dry biscuits; production of flour confectionery, cakes and long-storable cakes” decreased by 10% over the same period [15]. An analysis of the dynamics of the number of subjects of large, medium, small and micro enterprises in the confectionery industry is given in Table 2.

Table 2. Analysis of the dynamics of the number of subjects of large, medium, small and micro enterprises in the confectionery industry in Ukraine by the type of economic entity, units

Type of business entity	Years				
	2015	2016	2017	2018	2018/2015
Large enterprises	6	4	3	6	1.0
Medium-sized enterprises	248	244	247	274	1.104
Small enterprises	5179	4983	4946	5179	1.0
Micro enterprises	4775	4566	4490	4648	0.97
Total	10208	9797	9686	10107	0.99

Source: systematised on the basis of [14]

Analysis confirmed the renewal of the number of large and small enterprises in the confectionery industry in 2018, in accordance with 2015 (6 and 5179 entities, respectively); the number of medium-sized enterprises in

2018 was 274 or (110.48%) compared to 2015; the number of micro-entrepreneurs in 2018 was 97% of 2015 or 4.648 contractors. Analysis of the dynamics of confectionery production in Ukraine is given in Table 3.

Table 3. Analysis of the dynamics of Ukrainian confectionery production volume according to the product offer, thousand tons

Products	2016	2017	2018	2019	2019/2016
Sweet biscuits	163	177	171	159	0.9
Waffles and waffle products	49.5	51.0	51.2	52.6	1.1
Chocolate in briquettes, plates or tiles	16.5	18.6	22.2	24.7	1.5
Chocolate sweets	52.3	53.3	53.4	66.6	1.3
Confectionery products made of sugar or its substitutes, with cocoa content	70.3	70.4	64.4	47.0	0.6
Chewing gums, fruit jellies and fruit pastes in the form of sugar confectionery	39.7	41.0	44.2	47.7	1.2
Boiled candies and chewing gum	29.3	23.0	21.6	29.3	1.0
Caramels, toffee and similar sweets	75.6	78.3	75.1	77.6	1.0
Total	333.2	512.6	503.1	504.5	-

Source: systematised on the basis of [14]

According to the results in the Table 3 in the structure of the production volume of Ukrainian confectionery in 2019.

The three leading segments are occupied by the following sectors: production of sweet biscuits – 159 thousand tons (or 30%);

production of caramel, toffee and similar sweets – 77.6 thousand tons (with a share of 15%) and chocolate candies – 66.6 thousand tons or 13% of the total. Boiled candies and chewing gum take the smallest share in the volume

of production – 6% (29.3 thousand tons) and chocolate in sugar briquettes – 5% (or 24.7 thousand tons). The commodity structure of foreign trade in confectionery products by macro-segments is analysed in Table 4.

Table 4. Analysis of the commodity structure of foreign trade in confectionery products in Ukraine in 2019 by the export-import coverage ratios

Segment	Import		Export		Export-import coverage ratio
	Thousand US dollars	In % of the total	Thousand dollars USA	In % of the total	
Total:	50054606	100	60800173	100	1.2147
Sugar and sugar confectionery	25389.7	0.0507	70485.4	0.1159	2.7761
Cocoa and cocoa products	204586.6	0.4087	327139.7	0.5381	1.5990
Flour confectionery	269366	0.5381	200744.6	0.3302	0.7453

Source: systematised on the basis of [14]

The authors supplement the analysis of the commodity structure of foreign trade in confectionery products, unlike other authors, with the export-import coverage ratio in the confectionery industry, which details the research and reveals the specifics of the ratio of export-import operations in the industry.

In the sector of sugar production and sugar confectionery in 2019, the export-import coverage ratio was 2.7761, which indicates a significant predominance of exports over imports (USD 70.485.4 thousand compared

to USD 25.389.7 thousand, respectively). In the production of cocoa and cocoa products, the export-import coverage ratio was 1.5990, which also indicates the predominance of exports over imports (327.139.7 versus 204.586.6 thousand US dollars, respectively). The export-import coverage ratio for the flour confectionery sector demonstrates the opposite situation – imports outweigh exports, so the export-import coverage ratio was 0.7453. The analysis of the retail turnover of confectionery retail enterprises is given in Table 5.

Table 5. Analysis of retail turnover of confectionery retail enterprises. 2017-2021. Million UAH

Products	2017	2018	2019	2020	2021	2021/2017, %
Flour confectionery products	9921.1	12147.3	14691.4	15502.4	19040.7	1.9192
Sugar confectionery	16962.6	21997.4	26225.0	28366.7	33782.5	1.9991
Total	26883.7	34144.7	40916.4	43869.1	52823.2	1.9649

Source: systematised on the basis of [14]

In 2021 the retail turnover of flour confectionery retail enterprises amounted to UAH 19.040.7 million, which is 91.92% more than the corresponding sales volume in 2017 (UAH 9.921.1 million). The retail turnover of sugar confectionery in 2021 amounted to UAH 33.782.5 million, which is UAH 16.819.9 million; more than in 2017 (99.91% more than in the previous period).

It is proved that Ukrainian confectionery market is developing dynamically. According to the authors' calculations, the capacity of the confectionery retail market in 2021 amounted to UAH 52.823.2 million, which is 96.49% more than in 2017. The authors suggest choosing flour confectionery and sugar confectionery as macro-segments of the confectionery market. It was found that export volumes significantly exceed the volume of confectionery imports in Ukraine, identified by the export coverage ratio of confectionery imports, which in 2019 was 1.2147. The "sugar and sugar confectionery" segment has the largest spread in the ratio of exports and imports. Therefore, the export-import coverage ratio is 2.7761.

Note that in the context of the research methodology, with the aim of introducing a clear identification of the content of the signs of structuring of the Ukrainian confectionery market, the authors proposed to expand the structuring of the subjects of the confectionery market according to the following characteristics: types of economic activity; by the type of economic entities, the product offer of industry producers, which have been researched by other authors, but have not been identified according to such characteristics.

Analysis of risks in the confectionery industry. Studying the dynamics of the development of Ukrainian confectionery market and observing the specifics of its conjuncture allows us to identify and characterise the risks in this industry. Among the most tangible risks in the confectionery sector, we can highlight: economic risks associated with the spread of COVID-19 pandemic; political risks associated with military aggression on the part of the Russian Federation and industrial risks – dependence on foreign suppliers of raw materials, logistical risks and a high level of various types of competition.

Economic risks associated with the spread of COVID-19 pandemic. The spread of COVID-19 pandemic had the effect of reducing the solvent demand of end consumers, who primarily turned to meeting basic needs. Priority was given to essential goods and affordable (cheaper) goods. Private label products of retail chains, which are much cheaper in their product categories, have gained popularity. Also, consumer

preferences are changing dramatically: the popularity of healthier alternatives to sweets or sweets with less sugar content, containing healthy ingredients, the popularity of snacks and sweets based on plant-based or lactose-free milk, as well as vegan products is increasing. Analysis of the dynamics of confectionery sector development in the structure of Ukraine's GDP is given in Table 6.

Table 6. Analysis of the dynamics of confectionery sector development in the structure of Ukraine's GDP for 2016-2021

Year	Nominal GDP (in actual prices, UAH million)	Flour confectionery retail market capacity, in thousand UAH	The capacity of retail market of sugar confectionery, thousand UAH	The total capacity of confectionery market, thousand UAH	Share in GDP, %
2016	2383182	1579501.3	1436726.0	3016227.3	0.12656
2017	2982920	1665090.5	1430403.5	3095494	0.10377
2018	3558706	1724943.1	1690275.2	3415218.3	0.09597
2020	4194102	1706304.7	1872485.9	3578790.6	0.08533
2021	5459574	1754081.3	1994197.5	3748278.8	0.06866
2021/2016	2.3	1.1	1.4	1.2	0.54251

Source: systematised on the basis of [14]

The share of confectionery sector in the structure of Ukrainian GDP in 2021 was 0.0686%, which is 54.25% of the similar indicator in 2016 (0.1265%). The decrease in the share of the confectionery sector in the share of GDP indicates the narrowing of the share of the confectionery sector in the GDP structure in favor of the development of other industries. Note that in previous studies, other authors do not calculate the capacity of the confectionery market by assessing the capacity of its macro-segments and do not identify the impact of the development of the confectionery market in the structure of the country's GDP.

So, the impact of COVID-19 pandemic on the development of the sector, which is illustrated by its share in the structure of GDP, indicated a significant decrease in the capacity of this sector by 0.05791 g.p. for the period 2016-2021.

Political risks associated with military aggression by the Russian Federation. According to the forecast of the World Bank from April 10, 2022 in connection with the military invasion of the Russian Federation the GDP of Ukraine will decrease by about 45% [16]. During the illegal military actions of the Russian Federation on the territory of Ukraine, numerous infrastructure objects of the confectionery industry were destroyed or damaged (for example, the Mondelez Ukraine PJSC factory in Trostyanets, with assets of 104 million dollars and income in 2020 of 7.2 billion UAH and 900 employees) [13].

Dependence on foreign cocoa beans suppliers. The essence of the risk is the impossibility of controlling the stocks of raw materials or production components, as well as the complication of the pricing process due to the risks of price increases due to the reduction of raw material stocks. The main raw material for chocolate products is cocoa beans, which is an imported product. Growing cocoa trees requires special conditions – a humid climate, frequent

rains and a small number of dry days. This is explained by the territorial location of cocoa plantations on both sides of the equator. With a global environmental catastrophe, climate change is having a devastating effect on the cocoa bean growing industry. A significant proportion of cocoa tree plantations die due to floods, droughts, aging of the soil or from pests. Accordingly, prices for cocoa beans increase in connection with the limitation of raw materials, which is reflected in the final price of the finished product [6; 15].

Logistics risks. COVID-19 pandemic caused an imbalance in cargo flows, due to changes in demand for cocoa beans, as well as the cessation of production during lockdowns and beginning of quarantine restrictions. The main reasons for the decrease in freight flows are: border closures, a decrease in demand due to decrease in the purchasing power of the population, the closure of retail outlets, an increase in currency value, quarantines, and an aggravation of the epidemic situation. The consequences are a slowdown in imports and goods supply in the country, a suspension of exports, which represents a risk of European agricultural crisis, since Ukraine is one of the largest suppliers of agricultural products to the EU countries. According to data, in 2021, the supply of agricultural products amounted to 8.4 billion dollars [12]. Slow processes of import of such a strategic product as cocoa beans are critically felt in the confectionery industry of Ukraine. For example, Table 7 provides an assessment of the efficiency of logistics and logistics risks with the example of cold supply chains, taking into account the impact of food safety risks, factors of the food system functioning, considering external factors of influence (rapid changes in climatic conditions or products, as required by special conditions of transportation; risks of system failures, which are more sensitive for cold supply chains than for chains operating at room temperature).

Table 7. Indicators for evaluating the efficiency of logistics and logistics risks of cold supply chains of confectionery products

Evaluation of logistics efficiency		Supply chain safety	Supply chain complexity	Assessment of logistics risks	
Max. rating	Gradation			Max. rating	Gradation
5.75	Average	2-4	3-4	4.09	Average

Note: The evaluation is carried out on a 10-point scale, where 10 is the highest rating

Source: systematised on the basis of [12]

The analysis of Table 7 shows that the confectionery production sector is characterised by average logistics risks, which are calculated based on the assessment of logistics efficiency, security and complexity of the confectionery supply chain. The evaluation of the efficiency of logistics of confectionery supplies is estimated at 5.75 points out of 10, which indicates an average level of efficiency. The security of the confectionery supply chain is rated at 2-4 points out of 10, which is a sign of an insufficient level of security of the chain. The complexity of the confectionery supply chain is defined as not complex with a score of 3-4 points out of 10. The average level of logistics efficiency for the confectionery supply sector is the result of a medium degree of adaptability to changes in the external environment.

High level of competition in the confectionery market of Ukraine. The intensity of competition in the confectionery market is determined not only by the level of industry competition, but also the potential of foreign companies to enter the market, the intensity of competition between substitute goods and the impact on the complementary goods industry, the strength of pressure from suppliers and consumers of confectionery products, the influence of institutions and the level of state regulation, interests of stakeholders, the intensity of competition in logistics supply chains in the confectionery market, the potential of marketing in expanding the market share of individual counterparties and other factors. The logic of competition research actualises in the use of M. Porter five forces of competition instrument (Table 8).

Table 8. Analysis of five forces of competition according to M. Porter in the confectionery market of Ukraine

No.	Force	Description
1	Competition between existing firms	In the market, 80% of the power belongs to domestic enterprises. In the Ukrainian confectionery market, the share of foreign companies (Mars Corporation, Ferrero International and others) does not exceed 10%, which indicates the intensifying competition between Ukrainian manufacturers and the presence of formal barriers to entry into the confectionery industry.
2	Barriers for new participants	The Ukrainian confectionery market is at the stage of saturation. Therefore, the entry of a new participant and its conquest of a significant share of the confectionery market is a difficult and unlikely process. In addition, there are such barriers for new participants in the confectionery market, such as the need for high-quality production facilities, laboratories for input and output quality control of raw materials and finished products. Compliance with food regulations, domestic and international quality standards, the need for significant personnel costs, development of goods, procurement of raw materials, innovations in the manufacturing process, provision of necessary conditions for storage and supply of goods, etc. Leaders of the confectionery market also actively apply measures of price competition and the effect of scale.
3	Market power of buyers	In the confectionery market of Ukraine, the study of consumer preferences is relevant. since the trend of healthy food alternatives (sweets with a lower sugar content, vegan sweets, sweets based on lactose-free or vegetable milk) is spreading throughout the country. Price is the main criterion when choosing a product on the Ukrainian market, especially for such audiences as older people and children.
4	Market power of suppliers	The confectionery industry is completely dependent on the import of cocoa beans. Now there is a global shortage of this raw material, which causes an increase in the prices of cocoa beans and cocoa powder, which are the main ingredients for making chocolate products. As a result, the final price of products increases, which is not a positive phenomenon, taking into account the purchasing power of the population. Also, the number of suppliers of cocoa beans is small, if compared, for example, with the number of suppliers of milk or sugar, which allows the supplier to dictate its rules in the confectionery market.
5	Threat of substitute products or services	On the confectionery market, manufacturers offer a wide range and nomenclature of products in the same categories. The appearance of substitute products on the Ukrainian market is unlikely.

Source: own design

The weighted assessment method was used to analyse the influence of competition factors. The assessment of the impact is carried out on a 5-point scale, where 5 points is

the maximum score, the total weight of the criteria is 1. The assessment of the impact of the forces of competition in the confectionery industry is given in Table 9.

Table 9. Assessment of the influence of competition forces in the confectionery industry of Ukraine

No.	Force	Weight	Mark	Influence (+; -)	Weighted mark
1	Competition between existing firms	0.2	5	-	1.0
2	Barriers for new participants	0.2	3	+	0.6
3	Market power of buyers	0.2	3	-	0.6
4	Market power of suppliers	0.3	5	-	1.5
5	Threat of substitute products or services	0.1	1	-	0.1
Total		1	-	-	3.6

Source: designed by authors

The most influential factors are the market power of suppliers (weighted score of 1.5) and the level of competition in the industry (weighted score of 1.0). The lowest impact coefficients are determined by such a criterion as a threat from interchangeable products or services (weighted score of 0.1), since it is unlikely and will not significantly affect large market players. Criteria such as market power of buyers (weighted score of 0.6) and barriers to new entrants (weighted score of 0.6) have a medium impact. Consumer preferences are changing, so manufacturers need to constantly monitor new trends and meet new consumer needs. There are quite a lot of barriers to entering the confectionery market, first of all, a high level of competition, the need

for strong financing, strict requirements for manufacturers, so the threat of a newcomer gaining a significant share of the market is very small.

The risk of a high level of competition in the industry is manifested in the difficulty of entering the confectionery market due to the presence of strong competitors with a significant market share. The confectionery market in Ukraine is controlled by several largest manufacturers. The leader is SE “KK ROSHEN” with a market share of 28.73%. Among the largest companies in the confectionery market of Ukraine are PrJSC “HBF”, PrJSC “AVK” and JSC “VO Konti”. An analysis of the dynamics of the volume of confectionery production in Ukraine is given in Table 10.

Table 10. Analysis of the dynamics of the volume of confectionery production in Ukraine, 2018-2020

No.	Name of company	Volume of production. tons			2020/ 2018	Market share. %			2020/ 2018
		2018	2019	2020		2018	2019	2020	
1	SE “CC “ROSHEN”	205112	194168	200834	0.98	23.29	29.59	28.73	1.23
2	PJSC “HBF”	50619	52873	55357	1.09	6.07	7.63	7.92	1.30
3	PJSC “AVK”	97958	41780	53132	0.54	11.75	6.03	7.60	0.65
4	JSC “VO “Conti”	32348	30996	29953	0.93	3.88	4.47	4.29	1.11
5	“MIR” Confectionery Factory LLC	16245	16210	21666	1.33	1.95	2.34	3.10	1.59
6	PJSC “Mondelis Ukraine”	25150	19793	21576	0.86	3.02	2.86	3.09	1.02
7	PJSC «Lviv Confectionery Factory “Svitoch”	22561	20480	20175	0.93	2.71	2.95	2.88	1.06
8	PJSC “Dominik”	19805	19711	18468	0.94	2.38	2.84	2.64	1.11
9	Zhytomyr Lasoshchi PJSC	38767	32651	14780	0.38	4.65	4.71	2.11	0.45
10	Lagoda PJSC	12762	12852	11942	0.94	1.53	1.85	1.71	1.12
11	“Kviten” Confectionery Factory LLC	7289	5393	6532	0.90	0.87	0.78	0.93	1.07
12	Zaporizhia Confectionery Factory PJSC	7289	3214	3935	0.54	0.36	0.46	0.56	1.56
	Others	302161	833789	240620	0.80	37.54	33.489	34.44	0.92
	Total	833789	833789	698970	0.84	100	100	100	-

Source: systematised on the basis of secondary reporting of enterprises in the confectionery industry

In the structure of confectionery production in Ukraine, the three leading positions in 2020 are occupied by enterprises such as “Roshen” Confectionery Corporation. “HBF” PrJSC and “AVK” PrJSC with the volumes of products of 200.834 tons, 55.357 tons and 53.132 tons, respectively. Examining the dynamics of production growth in 2021 compared to 2018, the upward trend is characterised by MIR Confectionery LLC with an increase in production by 33.37% and KhBF PJSC – by 9.36%. In 2020, 44.25% of the market is occupied by SE “KK ROSHEN”. PrJSC “HBF”

and PrJSC “AVK” with a market share of 28.73%, 7.92% and 7.60%, respectively. Having analysed the dynamics of the distribution of market shares among enterprises in the confectionery industry from 2018 to 2020, it can be stated that the most dynamic growth is characterised by such enterprises as PJSC “Zaporizhskaya Confectionery Factory” – 55.56% (market share in 2018 – 0.36%, in 2020 – 0.56%) and LLC “MIR Confectionery Factory”, whose market share in 2020 was 3.10%, which is 58.97% more than in 2020 (1.95%).

Considering the significant number of subjects of large, medium, small and micro enterprises in the confectionery industry (10.107 subjects. 2018), as well as the high level of sector competition, it is advisable to use the assessment of the level of concentration of the confectionery market, in particular, using the Gervindahl-Hirschman Index (1):

$$HHI = \sum Y_i^2 \tag{1}$$

where Y_i – market share of companies in the industry:
 $HHI=28.73^2+7.92^2+7.60^2+4.29^2+3.10^2+3.09^2+2.88^2+2.64^2+2.11^2+1.71^2+0.93^2+0.56^2+34.44^2=965.9$.

This indicator shows that the confectionery market is very saturated. The Lind Index was used to determine the degree of inequality between the leading players in the confectionery market:

– for two players (SE “CC “ROSHEN and PJSC “HBF”) (2):

$$I_L = \frac{K1}{K2} \times 100\% \tag{2}$$

where $K1, K2$ – market share of the first and second largest companies:

$$I_{L2} = I_{L2} \frac{28.73}{7.92} \times 100\% = 362.8\%$$

– for three players (SE “KK ROSHEN”, PJSC “HBF” and PJSC “AVK”) (3):

$$I_{L3} = \frac{1}{2} \times \left(\frac{K1}{(K1 + K3): 2} + \frac{(K1 + K2): 2}{K3} \right) \times 100\% \tag{3}$$

where $K1, K2, K3$ – market share of the first, second and third largest companies:

$$I_{L3} = \frac{1}{2} \times \left(\frac{28.73}{(28.73 + 7.60): 2} + \frac{(28.73 + 7.92): 2}{7.60} \right) \times 100\% = 305.8\%$$

– for four players (SE “KK ROSHEN”, PJSC “HBF”, PJSC “AVK” and JSC “VO “Konti”) (4):

$$I_{L4} = \frac{1}{3} \times \left(\frac{K1}{(K2 + K3 + K4): 3} + \frac{(K1 + K2): 2}{(K3 + K4): 2} + \frac{(K1 + K2 + K3): 3}{K4} \right) \times 100\% \tag{4}$$

where $K1, K2, K3, K4$ – market share of the first, second, third and fourth largest companies:

$$I_{L4} \frac{1}{3} \times \left(\frac{28.73}{(7.92 + 7.60 + 4.29): 3} + \frac{(28.73 + 7.92): 2}{(7.69 + 4.39): 2} + \frac{(28.73 + 7.92 + 7.60): 3}{4.29} \right) \times 100\% = 362.4\%$$

According to the results, there are three enterprises in the core of the confectionery market: SE “KK ROSHEN”. PrJSC “HBF” and PrJSC “AVK”. They support the oligopolistic form of competition in the market, which is characterised by the presence of a few of the strongest players, the formation of price policy by reducing prices using the effect of scale in order to crowd out competitors, secret conspiracies among the strongest participants and other forms of interaction.

It is advisable to summarise the results of the risk study in tabular form (Table 11) for the purpose of a general assessment of risks in the field of confectionery production in Ukraine.

Table 11. Research of risks in the field of confectionery production in Ukraine, considering probability impact of their occurrence

No.	Risk	Probability of occurrence	Impact	Integral mark
1	Economic risks associated with the spread of COVID-19 pandemic	4	3	12
2	Political risks associated with military aggression of the Russian Federation	5	4	20
3	Dependence on foreign suppliers of cocoa beans	4	5	20
4	Logistics risks	3	3	9
5	High level of competition in the confectionery market of Ukraine	4	4	16

Note: factors are evaluated on a five-point scale, where 5 is the maximum score

Source: designed by the author

Analysing the results of the study of risks in the field of confectionery production in Ukraine, it is appropriate to highlight that the greatest risks are political, related to military aggression by the Russian Federation and dependence on foreign suppliers of cocoa beans with an integral assessment of 20 points out of a possible 25. The highest integrated assessment for risks associated with military aggression by the Russian Federation is justified by the military situation

on the territory of Ukraine. The risk of dependence on foreign suppliers is associated with an environmental disaster and a decrease in the amount of the main raw material for the production of confectionery – cocoa beans. The risk of a high level of competition in the confectionery market of Ukraine was assessed at 16 points, which is 4 points less than the previous two. The confectionery market of Ukraine has an oligopolistic character, where market power is concentrated between

the three largest enterprises. The economic risks associated with the spread of COVID-19 pandemic were assessed with an integral score of 12 points. This trend can be attributed to the decline in the spread of COVID-19. The lowest degree of risk among the enterprises in the confectionary industry of Ukraine considered are logistical risks with an assessment of 9 points. Logistical risks were partly related to the spread of COVID-19 pandemic. Therefore, taking into account the improvement of the sanitary-epidemic situation, the establishment of clear rules regarding quarantine restrictions, work regime and vaccination, logistical risks have decreased. However, the issue of food safety risks and the risks of systemic failures of confectionary supply chains still pose a threat to reducing the efficiency of confectionary supply logistics.

It should be noted that the work uses the author's vision regarding the structure of the research process of the Ukrainian confectionary market. The specificity of the conducted research is revealed through the prism of focusing on the concentration levels of the confectionary market, taking into account the influence of macro-environmental factors and assessing the share of the confectionary sector in the GDP structure, the main forces of competition in the confectionary industry (through a qualitative and quantitative assessment of the risks of the developmental environment of the counterparties of the confectionary market), and therefore, the need to assess the share of the main players of the studied market; as well as analysis of the competitive core of the Ukrainian confectionary market.

CONCLUSIONS

The modern confectionary market of Ukraine is one of the largest sectors of the food industry, which is characterised by the presence of a significant number of manufacturers. The high rate of development of the confectionary industry contributes to the aggravation of competitive relations between the counterparties of the confectionary market and affects the efficiency of the industry. The study of competitive forces in the industry (with the help of M. Porter's five forces methodology) with the application of identification of the concentration levels of the Ukrainian confectionary market made it possible to establish that the core of the

confectionary market includes the three leaders of the industry (CC "Roshen", PJSC "HBF" and PJSC "AVK"), which support an oligopolistic form of competition in the market.

In addition to the high level of competition in the confectionary market of Ukraine, barriers have been formed for new participants to enter the market, which are represented by the need for powerful financial, production and personnel resources. The market is characterised by constant study of consumer preferences and attempts to satisfy consumer needs. One of the most important characteristics of the confectionary market of Ukraine is the presence of dependence on imported raw materials (dominantly cocoa beans), which represents the powerful market power of suppliers.

The functioning of enterprises on the confectionary market under the conditions of crisis situations related to overcoming the consequences of the spread of COVID-19 pandemic and military actions by the Russian Federation in Ukraine, demonstrated the need for a significant restructuring of marketing and logistics activities on the territory of Ukraine in view of the disruption of logistics link ties and the need to ensure the safety of production and logistics processes, as well as the high sensitivity and derivative nature of demand in relation to the specifics of satisfying the needs of end consumers of confectionary products under the influence of force majeure, since the latter turned to satisfying basic needs.

Enterprises of the confectionary industry, which follow the trends of their developmental environment in terms of adapting production and economic activities to the specifics of the security environment, will be able to maintain the level of competitiveness in crisis situations by consolidating participants in the confectionary market and avoiding the exit of weak counterparties from the market; to create a product offer demanded by the market and to reconstruct the processes of organisation of logistics activities, as well as to strengthen its strategic positions in the studied market.

Inherent to the Ukrainian confectionary market, the aggravation of intra-industry competition requires industry producers to form effective functional development strategies in the target confectionary markets of Ukraine, which should become the subject of a separate study.

REFERENCES

- [1] Vozovych, A., Mytnyk, I., Horodenko, M., Mezentsev, O., Ohorodnychuk, O., Jobolda, D., Prodaniuk, T., Suprun, Ya., Povstemska, A., & Martsenuk, A. (2021). *Quarantine of the economy*. Retrieved from <https://ucci.org.ua/uploads/files/602f9ce03135f554471158.pdf>.
- [2] Razumova, H.V., & Oskomova, O.V. (2021). Confectionary market of Ukraine: Analysis and prospects of development. In B. Schneider (Ed.), *Theoretical and methodological approaches to the formation of a modern system of national and international enterprises, organizations and institutions development* (article number 7). Dallas: Primedia eLaunch LLC. doi: 10.36074/tmafmsoid.ed-2.07.
- [3] Voronin, A.A. (2019). Problems and prospects of development of the confectionary industry of Ukraine. *Socio-Economic Research Bulletin*, 2-3(70-71), 198-207. doi: 10.33987/vsed.2-3(70-71).2019.198-207.
- [4] Demianenko, K.A. (2016). Trends in the development of the confectionary market of Ukraine in modern conditions. *Young Scientists*, 9(36), 45-50.
- [5] Zahrychanska, A.V., & Holiuk, V.Ya. (2021). Analysis of the modern confectionary market of Ukraine. *Current Problems of Economy and Management*, 15, 21-26.
- [6] Zaynchkovskiy, A.A., Novoitenko, Y.V., & Slobodian, N.Ya. (2014). Trends in the development of the confectionary market of Ukraine. *Current Problems of Economy*, 11, 91-98.

- [7] Shashyna, M.V., & Mrochko, I.I. (2014). Analysis of the confectionery market in Ukraine: Problems and prospects. *Modern Problems of Economy and Entrepreneurship*, 13, 65-72.
- [8] Kilnitska, O.S., Kravchuk, N.I., & Kutsmus, N.M. (2018). Confectionery market in Ukraine: Trends and prospects of development. *Ekonomika APK*, 11, 29-43. doi: 10.32317/2221-1055.201811029.
- [9] Samofatova, V., & Bova, T. (2021). Problems and prospects of development of confectionery industry enterprises in Ukraine. *Food Industry Economics*, 13(3), 56-63. doi: 10.15673/fie.v13i3.2132.
- [10] Hrytsyshyn, A.V. (2020). *Accounting and analysis of logistics activities of the confectionery industry*. Ternopil: Western Ukrainian National University of the Ministry of Education and Science.
- [11] Razumova, H.V., Oskoma, O.V., & Harazha, V.I. (2020). Marketing pricing in the confectionery market of Ukraine. *Ekonomika ta Derzhava*, 37, 77-80. doi: 10.32782/2413-9971/2021-37-s 77-80.
- [12] Saiensus, M.A. (2021). *Organizational and economic bases of cold logistics management of enterprises: Theory and practice*. Odesa: Odessa National Economic University.
- [13] Hordiichuk, D. (2022). *Which companies have suffered the most from the Russian occupiers. List of assets*. Retrieved from <https://www.epravda.com.ua/publications/2022/04/12/685601/>.
- [14] Official website of the State Statistics Service of Ukraine. (n.d.). Retrieved from <http://ukrstat.gov.ua>.
- [15] Radio Free Europe/Radio Liberty. (2022). *Due to the war. Ukraine's GDP will be reduced by 45.1% in 2022 – World Bank*. Retrieved from <https://www.radiosvoboda.org/a/news-vvp-ukraina-skorochennia-svitovyi-bank/31796583.html>.
- [16] BBC. (2018). *In the future, chocolate may become a luxury – scientists*. Retrieved from <https://www.bbc.com/ukrainian/features-43160845>.

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Дослідження ризиків в кондитерській галузі України

Анотація. Вимушені трансформаційні процеси, спричинені кризовими ситуаціями, як-от боротьба з наслідками поширення пандемії COVID-19 та формування Україною соціально- економічного та безпекового механізму протидії війні, суттєво відобразилися на специфіці функціонування ринку кондитерських виробів у державі. Означено, що небезпека, нестабільність, невизначеність, складність та неоднозначність супроводжують розвиток різних соціально-економічних систем, у тому числі ринок кондитерських виробів. Метою статті є розкрити потенціал українського ринку кондитерських виробів з огляду на загострення конкуренції в умовах кризових ситуацій, виявити домінуючі чинники впливу в середовищі розвитку кондитерських підприємств задля розробки альтернатив конкурентних стратегій для підтримки своїх продажів. Основна ціль: представити результати аналізу детермінант розвитку ринку кондитерських виробів в Україні в період поширення кризових ситуацій в частині ідентифікації ризиків в секторі. Методи дослідження: метод економічного аналізу та порівняння для дослідження специфіки ринку кондитерських виробів; абстрактно-логічний метод для теоретичного узагальнення та висновків; розрахунок місткості ринку кондитерських виробів та часток ринку кондитерських підприємств України; індексний метод для оцінювання рівнів концентрації ринку кондитерських виробів. Висновки та додана вартість роботи: розкрито специфіку розвитку українського ринку кондитерських виробів. Проведено аналіз динаміки обсягів виробництва кондитерських виробів в Україні; ідентифіковано чисельність суб'єктів господарювання у сегментах, ідентифікованих за видами економічної діяльності та у розрізі великого, середнього, малого та мікропідприємництва. Проведено аналіз обсягів експортно-імпортних операцій за ознакою товарної структури зовнішньої торгівлі кондитерськими виробами. Ідентифіковано перелік ризиків середовища розвитку кондитерських підприємств та внутрішньо галузевих ризиків із застосуванням імовірнісного методу оцінки ризиків; проведено аналіз чинників впливу на динаміку розвитку ринку кондитерських виробів згідно методики п'яти сил конкуренції за М. Портером, здійснено оцінювання концентрації ринку із застосуванням індексного методу (зокрема, індексу Херфіндаля-Хіршмана та індексу Лінда). За результатами оцінювання рівнів концентрації ринку кондитерських виробів в Україні та чинників впливу на кон'юнктуру даного ринку встановлено, що до ядра ринку кондитерських виробів залучено три підприємства, а саме ДП “КК “РОШЕН”, ПрАТ “ХБФ” та ПрАТ “АВК”, формами взаємодії яких є таємні змови, політика диктування цін задля утримання ринкової сили впливу на контрагентів галузі та інших стейкхолдерів кондитерського ринку та інші форми взаємодії, властиві для олігополістичної структури ринку

Ключові слова: ринок кондитерських виробів, концентрація ринку, ринкова частка, індекс Лінда, індекс Херфіндаля-Хіршмана, ризики економічної діяльності, 5 сил конкуренції