SCIENTIA FRUCTUOSA

Scientific journal

Established: 1998

№ 5(151)2023

To October 2000 had been published under the title"Herald of Kyiv State University of Trade and Economics"
To February 2022 had been published under the title"Herald of Kyiv National University of Trade and Economics"
From March 2022 it will be published under the title "Scientia fructuosa"
It is published six times a year
The journal is recognized by the Ministry of Education and Science of Ukraine as the professional edition in economic sciences of Category "B"

Founder, edition,
publisher and manufacturer
State University of Trade and Economics

Deputy director of scientific periodicals –
Head of the editorial board – KRYVYTSKA I.

Editors: KYRYCHENKO E., RASSKAZOVA I.,
KRYVENKO O.
Artistic and Technical Editor
PSHENICHNA T.

Entered into the Register of entities in the field
of print media by decision
of the National Council of Ukraine on Television
and Radio Broadcasting
No. 798 dated August 31, 2023
and assigned the identifier R30-01229

Index of the magazine in Catalogue
of publications in Ukraine in 2023 – 21910

Signed 13.10.2023.
Conventional print. pages. 11
Circulation 250. Order 225

Address of the Editorial board,
publisher, manufacturer:
st. Kyoto, 19, Kyiv-156, Ukraine 02156.
Contact us at 531-31-16
e-mail: visnik@knute.edu.ua

Printed on equipment of SUTE.
Certificate of subject of publishing industry
series DK № 7656 of 05.09.2022

Published on the recommendation
of the Academic Council of SUTE
(minutes № 2 of 28.09.2023)

The journal is represented in international and national scientometrical databases such as Index Copernicus, *abstract database* Ukraine Naukova *and in search system of* Google Scholar.

Kyiv · SUTE · 2023

C O N T E N T

STATE AND ECONOMY

ENTERPRISE

З М І С Т

ДЕРЖАВА ТА ЕКОНОМІКА

ПІДПРИЄМНИЦТВО

STATE AND ECONOMY

DOI: 10.31617/1.2023(151)01
UDC 323.2(477):355.271=111

UMANTSIV Yurii,
Doctor of Sciences (Economics), Professor,
Head of the Department of Economic
and Competition Policy
State University
of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0003-0788-7110
y.umantsiv@knute.edu.ua

SHKUROPADSKA Diana,
PhD in Economics, Senior Lecturer
of the Department of Economic
and Competition Policy
State University of Trade
and Economics,
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0002-6883-711X
diana.shkuropadska2016@knute.edu.ua

NATIONAL RESILIENCE OF UKRAINE UNDER THE MARTIAL LAW

On February 24, 2022, russia unleashed the first continental war in Europe in the 21st century, undermining the system of collective world security established after World War II. The aggravation of hostilities and the scale of the destruction of Ukrainian cities and critical infrastructure objects actualize the issue of national resilience research. The aim of the article is to substantiate the national resilience of Ukraine as a necessary condition for countering russian aggression, as well as to identify directions for its support. General scientific and special methods have been used: theoretical generalization, system analysis, systematization, statistical, grouping, and scientific abstraction. Ensuring national resilience for Ukraine can be considered as a new stage of state building and restoration of sovereignty. National resilience determines the reaction of the state and society to internal and

УМАНЦІВ Юрій,
д. е. н., професор,
завідувач кафедри економічної теорії та
конкурентної політики
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0003-0788-7110
y.umantsiv@knute.edu.ua

ШКУРОПАДСЬКА Діана,
доктор філософії з економіки,
старший викладач кафедри економічної теорії
та конкурентної політики
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0002-6883-711X
diana.shkuropadska2016@knute.edu.ua

НАЦІОНАЛЬНА СТІЙКІСТЬ УКРАЇНИ В УМОВАХ ВОЄННОГО СТАНУ

24 лютого 2022 р. росія розв'язала першу в XXI ст. континентальну війну в Європі, підірвавши систему колективної світової безпеки, встановлену після Другої світової війни. Загострення бойових дій і масштаб руйнувань українських міст та об'єктів критичної інфраструктури актуалізують проблематику дослідження національної стійкості. Метою дослідження є обґрунтування національної стійкості України як необхідної умови протидії російській агресії, а також ідентифікація напрямів її забезпечення. Використано загальнонаукові та спеціальні методи: теоретичного узагальнення, системного аналізу, систематизації, статистичний, групування та наукової абстракції. Забезпечення національної стійкості для України може розглядатися як новий етап державотворення та відновлення суверенітету. Національна стійкість визначає реакцію держави і суспільства на внутрішні та

external challenges and threats. However, in the conditions of war, an important component in the development of national resilience is the international support of partner countries, which can satisfy the key needs of our state with their resources and diplomatic efforts. Such support includes the provision of humanitarian and military aid, financial assistance, and participation in international diplomatic efforts to negotiate a ceasefire and restore peace. The russian-Ukrainian war caused a series of global challenges that destabilized the international security environment. Key among them are: food, energy, humanitarian, security and environmental global challenges. Restoring global stability and countering new challenges is a common goal for all stakeholders. Using the Peace Fund's approach to assessing the level of national resilience, the spheres of Ukraine's national resilience were analyzed and its vulnerabilities were identified. The process of ensuring national resilience is multi-vector and requires careful planning and financing in all directions.

Keywords: national resilience, security environment, martial law, global challenges, government policy**.**

зовнішні виклики і загрози. Проте в умовах війни важливою складовою розбудови національної стійкості є міжнародна підтримка країн-партнерів, які своїми ресурсами та дипломатичними зусиллями можуть задовольнити ключові потреби нашої держави. Така підтримка включає постачання гуманітарної та військової допомоги, фінансову допомогу, а також участь у міжнародних дипломатичних зусиллях для обговорення умов припинення вогню та відновлення миру. Російсько-українська війна спричинила появу низки глобальних викликів, які дестабілізували міжнародне безпекове середовище. Основні з них: продовольчі, енергетичні, гуманітарні, безпекові та екологічні глобальні виклики. Відновлення глобальної стабільності та протидія новим викликам є спільною метою для всіх зацікавлених сторін. Використовуючи підхід Фонду миру до оцінювання рівня національної стійкості, проаналізовано сфери національної стійкості України та визначено її вразливі місця. Процес забезпечення національної стійкості є багатовекторним і потребує ретельного планування та фінансування за всіма напрямами.

Ключові слова: національна стійкість, безпекове середовище, воєнний стан, глобальні виклики, державна політика.

JEL Classification: E65, F42, H56.

Introduction

Acceleration of world globalization processes creates new problems, activates methodological searches, and forms conceptual approaches to the study of economic processes. In their numerous lists, the problem of ensuring national resilience is singled out.

In 2022, the main event on a global scale was the russian-Ukrainian war, which in terms of the intensity of technical means became one of the largest after the Korean War, as well as the largest conflict in Europe since 1945. The analysis of the national resilience of Ukraine as a necessary condition for countering russian armed aggression brings the topic up to date research.

Ukrainian and foreign researchers are actively studying the problem of ensuring national resilience. A monograph by O. Reznikova (2022) is devoted to the study of national resilience in the conditions of a changing security environment. The researcher notes that strengthening national resilience can be an effective response to modern challenges. The formation and implementation of state policy of the appropriate direction make it possible to effectively respond to threats of any origin and nature, including hybrid ones, to adapt to sudden and unpredictable changes in the security environment, to maintain the stable functioning of the state before, during

and after a crisis, and to quickly recover to the optimal equilibrium level under the specified conditions.

The research of national resilience as a strategy for the preservation and development of the country is carried out by the employees of the Institute of Political and Ethnonational Studies named after I. F. Kuras NAS of Ukraine. Scientists note that, unlike national security, which is more focused on the military component, national resilience is a broader concept and covers all spheres of public life. Also, its main emphasis is not so much on responding to hybrid challenges and destructive influences, but on the application of strategies to anticipate their appearance, the formation of a stable immunity to them in the state and society by creating an unfavorable environment for the realization of hybrid threats and challenges (Pirozhkov, Maiboroda, Khamitov, Golovakha et al., 2022).

The publication of T. Gerasimchuk (2022) is devoted to national resilience as a determinant of the European integration of Ukraine, which claims that a high level of national resilience is achieved through an effective state management system, defense forces, and development of the national economy, infrastructure and civil society, which is manifested by a powerful volunteer movement.

Features of community and nation resilience in the context of the military conflict in the Gaza Strip (November 17–18, 2019) were revealed by Israeli scientists from the Center for Stress and Resilience Research (Kimhi, Marciano, Eshel & Adini, 2020). Researchers argue that Israelis' continuous experience of wars and acts of terrorism has strengthened their national resilience, patriotism, and citizens' faith in Israel's ability to withstand these calamities.

The publication of scientists from Warwick University in Britain and Ariel University in Israel is devoted to the analysis of the problems of national resilience of Ukraine in the conditions of a full-scale russian invasion (Goodwin, Hamama-Raz, Leshem & Ben-Ezra, 2023). Based on the results of a sociological survey of Ukrainians, the researchers concluded that national resilience among young people is at a high level, especially among those who have a sufficient level of interpersonal trust, live in Ukrainian-speaking regions and were not immigrants. State policy should be aimed at increasing interpersonal trust and providing social support to older and less mobile population groups and residents of Russian-speaking regions to ensure their resilience in times of national threat. It is also stated that increasing the level of national resilience is a vital aspect of ensuring national security and economic recovery in Ukraine.

The Organization for Economic Cooperation and Development (OECD) is engaged in the study of policy directions for ensuring national resilience. According to the OECD approach, cooperation at all levels of government is one of the key factors for coherent and comprehensive provision of national sustainability (OECD, 2017).

The North Atlantic Treaty Organization (NATO) examines national resilience in the context of the combination of citizen readiness and military capacity to resist and rapidly recover from major shocks or armed attack (North Atlantic Treaty Organization, 2018).

Therefore, the aspects of national resilience are investigated both at the theoretical and practical levels. However, insufficient attention is paid to the assessment of Ukraine's national resilience in the face of full-scale russian aggression and the analysis of global challenges associated with it.

The aim of the research is to substantiate the national resilience of Ukraine as a necessary condition for countering russian aggression, as well as to identify directions for its support.

To achieve the aim of the research, a complex of general scientific and special methods was used: theoretical generalization – to reveal the content of the concept of national resilience; system analysis and systematization – to identify the key global challenges of the Russian–Ukrainian war and determine directions for ensuring national resilience; statistical and grouping – to analyze the level of national resilience of Ukraine; scientific abstraction – to justify generalizations and conclusions to the conducted research. The research hypothesis is the statement that the level of national resilience affects the country's ability to protect its national interests from internal and external threats.

The structure of the article is: first, the concept of national resilience, factors and areas of its support are considered, then the key global challenges that arose as a result of the Russian–Ukrainian war are analyzed, and the level of national resilience of Ukraine is assessed according to the approach developed by the Fund for Peace, at the end it is highlighted directions of ensuring national resilience in the war and post-war periods.

1. The concept of national resilience of the state

The development of conceptual approaches to understanding the national security of the state, the evolution of systems theory and the emergence of a separate direction of research on sustainability contributed to the spread of the concept of sustainability in the field of security research and the emergence of the concept of "national sustainability". Further analysis and systematization of relevant knowledge led to the formation of an independent concept of national resilience.

For Ukraine, the problem of resilience can be considered as a new stage of state building. The legal basis for strengthening resilience and forming a national resilience system is: National Security Strategy of Ukraine (Decree of the President of Ukraine No. 392/2020 (2020, September 14), Military Security Strategy of Ukraine (Decree of the President of Ukraine No. 121/2021 (2021, March 25), Strategy foreign policy activities of Ukraine (Decree of the President of Ukraine No. 448/2021 (2021, August 26),

Concept of ensuring the national resilience system (Decree of the President of Ukraine 479/2021 (2021, September 27), Information Security Strategy (Decree of the President of Ukraine No. 685/2021 (2021, December 28), Strategy for ensuring state security (Decree of the President of Ukraine No. 56/2022 (February 16, 2022).

On September 27, 2021, the Decree of the President of Ukraine approved the Concept of Ensuring the National System of Resilience, which defines the purpose, main principles, directions, mechanisms and deadlines for the introduction and operation of the national system of resiliency aimed at ensuring the ability of the state and society to identify threats, identify vulnerabilities and assess risks in a timely manner national security, prevent or minimize their negative effects, respond effectively and quickly and fully recover from the emergence of threats or emergency and crisis situations of all kinds, including threats of the hybrid type, but not limited to them. The concept defines that national resilience is the ability of the state and society to effectively resist threats of any origin and nature, to adapt to changes in the security environment, to maintain stable functioning, and to quickly recover to the desired balance after crisis situations (Decree of the President of Ukraine No. 479/2021, 2021, September 27).

Ensuring the national resilience of Ukraine includes various factors that affect the development and resilience of the country.

Geopolitical location: Ukraine is located in the center of Europe, borders 7 countries and has a significant impact on the geopolitical situation in the region. Geopolitical location affects a country's foreign relations and security.

Political stability: the development of democratic institutions, respect for human rights and political stability are key factors in ensuring national resilience.

Economic development: ensuring stable economic development, diversifying industries and attracting investments affect ensuring economic resilience.

Social support: ensuring equal opportunities for all segments of the population, the development of education and health care, as well as social protection contribute to social sustainability.

Cultural diversity: preservation and maintenance of cultural heritage, national identity is important for strengthening social unity and social cohesion.

Security and defense: the development of national defense capabilities and cyber security systems contribute to ensuring national security against external threats.

International relations: cooperation with other countries, participation in international organizations and compliance with international norms and treaties determine the position of Ukraine in the international arena.

Innovations and technological development: development and introduction of modern technologies, support of innovative sectors of the economy increase the level of competitiveness and development of the country.

Ecology: balanced use of natural resources and protection of the environment ensure environmental sustainability.

Social consensus: ensuring the unity and support of the population regarding development strategies and solving national issues contributes to social resilience in the country.

In general, the national resilience of the state is determined by the ability of the government, society and institutions to effectively respond to changes maintain stability and ensure the security, well-being and development of the country in the face of internal and external challenges. National resilience also requires a balance between different spheres of a country's life (*Figure 1*).

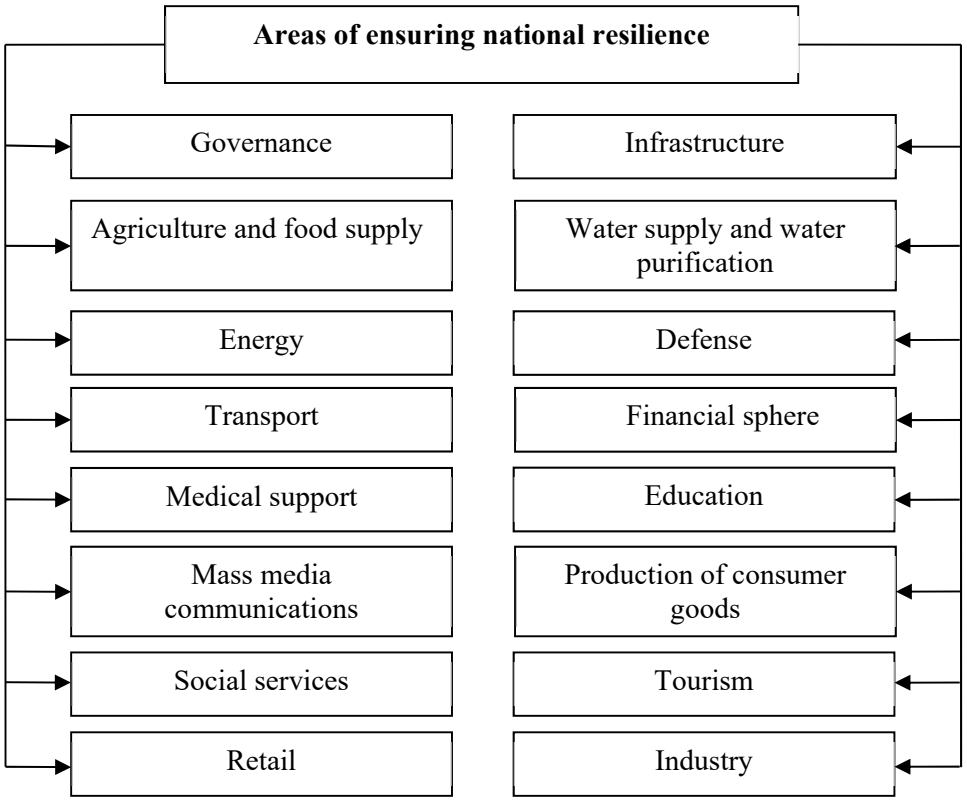


Figure 1. Areas of ensuring national resilience

Source: compiled by the authors based on data (Reznikova, 2022).

An integrated approach to ensuring national resilience assumes that different industries and sectors of the country must be ready for challenges and respond to them in unity. Understanding the interrelationship and interaction of these spheres helps to holistically evaluate national resilience in the conditions of modern realities.

2. Global challenges of the Russian-Ukrainian war

Russian military aggression in Ukraine significantly shook stability in Europe. First, the war led to tensions between russia and Western countries, in particular, with EU and NATO member states. This caused aggravation of diplomatic relations and increased the volume of military activity in the region. Secondly, this war is not limited to military actions, but also actively uses the methods of information aggression and cyber aggression. Thirdly, the war caused uncertainty in international relations and revealed the destructiveness of the norms of international law. Such processes have created a threat to the international order and world security.

The Global Peace Index (GPI), created by the Institute for Economics and Peace (IEP), measures and ranks 163 countries according to their level of peacefulness. In assessing peacefulness, the IEP examines the extent to which countries are involved in current internal and international conflicts and attempts to gauge the level of harmony or discord within a nation. Accordingly, a low level of crime, a minimal number of terrorist acts and violent demonstrations, harmonious relations with neighboring countries, a stable political situation and a small share of internally displaced population or refugees may indicate a high level of peace. GPI is measured from 1 to 5 points (Institute for Economics & Peace, 2023).

In 2023, the GPI identifies Iceland (1.124), Denmark (1.31), Ireland (1.312), New Zealand (1.313) and Austria (1.316) as the most peaceful countries, while Afghanistan (3.448), Yemen (3.35), Syria (3.294), South Sudan (3.221) and the Democratic Republic of the Congo (3.314) as countries with low levels of peace. Over the past decade, the GPI has presented trends of increasing global violence and decreasing peace. The dynamics of GPI for Ukraine in 2012–2023 are shown in *Figure 2*.

In 2022, GPI for Ukraine increased by 10.46 %, in 2023 by 2.36 %. In general, over the past 12 years, the index has increased by 35.8 %. Now the country ranks 157th in the world ranking, and is among the top ten countries with a low level of peace. Russia's invasion of Ukraine in February 2022 became the main factor in the deterioration of peace. The full-scale invasion had a devastating effect on the Ukrainian population, which is reflected in the deterioration of the indicator in the sphere of social security. The biggest change occurred in the growth rate of refugees and internally displaced persons (IDPs). Currently, more than 30% of the total population of Ukraine is refugees or internally displaced persons. Before the invasion, this figure was only 1.7 % of the population. The second largest deterioration occurred in the mortality rate due to war. According to the latest data, more than 30.000 Ukrainians were killed with hundreds of thousands wounded (Institute for Economics & Peace, 2023).

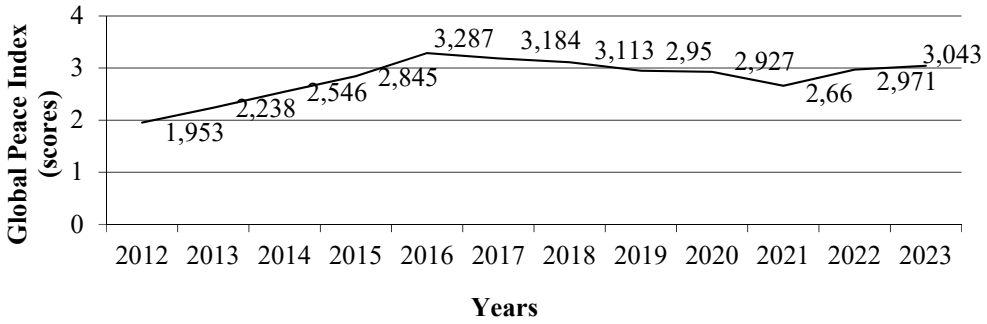


Figure 2. Dynamics of the Global Peace Index for Ukraine in 2012–2023

Source: compiled by the authors from data (Institute for Economics & Peace, 2023).

Ukraine is one of the few countries where the level of militarization has worsened over the past year due to a significant increase in arms exports and an increase in the size of the armed forces. There was a significant deterioration in the indicators of the severity of internal conflicts and political instability. Although domestic support for the Ukrainian government is reasonably high, instability remains high due to the intensity of hostilities in the eastern and southern regions. Even the less affected areas in western Ukraine are systematically subjected to rocket fire and drone attacks.

The russian-Ukrainian war became the source of the emergence of global challenges, the consequences of which directly affect the international community and geopolitics. The key global challenges of the russian-Ukrainian war include: food, energy, humanitarian, security and environmental challenges (*Table 1*).

Table 1

Global challenges of the Russian-Ukrainian war

Global challenges	Essence
Food	Due to russia's occupation and mining of parts of Ukrainian territories, as well as the blockade of sea ports, domestic farmers lost the opportunity to freely sell their grown products. Both European and African countries felt the lack of supplies of agricultural products from Ukraine
Energetic	Rejection of russian energy sources, as well as price blackmail by the aggressor country, caused an acute energy crisis in the EU. As a result, the EU is forced to look for new suppliers, setting up new ways of supplying energy resources, as well as to expand the list of anti-Russian sanctions in the energy sector (Mykhailovska, 2022)
Humanitarian	Russia's invasion of Ukraine triggered one of the biggest humanitarian crises in Europe since World War II. As a result of the war, tens of millions of Ukrainians were forced to change their place of residence, of which about five million left through the western border, where they received temporary shelter. Usually, refugees become a burden for the countries that receive them. Immigrants require considerable expenses for their maintenance and adaptation (Vinokurov, 2023)
Safe	Russian military aggression has shaken the security situation not only in Europe, but also in the whole world, causing tensions around Taiwan, threats of nuclear strikes by North Korea and russia, and aggressive actions by Iran in the region (Center for Security Studies "SENSS", 2023)
Ecological	The explosion of the Kakhovskaya HPP dam led to a global environmental disaster, the consequences of which will directly affect global food security, food price increases and drinking water shortages

Source: compiled by the authors.

The russian-Ukrainian war has a profound global impact and creates a number of complex challenges for the international community. Peaceful settlement of this conflict remains one of the main priorities for the world community and requires joint efforts and cooperation of Ukraine's partners to restore stability in the region and beyond.

3. The level of national resilience of Ukraine

Analysis of the level of national resilience is a key task in the context of assessing the challenges and threats that Ukraine faces on the way to its development and struggle for independence. To determine the level of national resilience, it is worth using the approach of the Peace Fund, which calculates the State Resilience Index for 154 countries of the world (Fund for Peace, 2022). This index takes into account such areas as social cohesion, inclusion, state capacity, and civic space, personal capabilities of citizens, economy, environment and ecology (*Table 2*).

Table 2

Spheres of the state resilience index

Sphere	Direction	Sphere	Direction
Social cohesion	Social relations	Personal opportunities of citizens	food (nutrition)
	Social capital		Educational system
	Confidence in national institutions		Health
			Welfare
Inclusion	Inclusion of youth	Environment and ecology	Pollution
	Political integration		State of the seas and fisheries
	Access to employment		Productivity of agriculture
			State of the ecosystem
	Group inclusion		Biodiversity
	Protection against instability		Long-term climate stability
	Access to economic resources		Clean energy
	Fight against corruption		Availability of water
State capacity	Government efficiency	Economy	Diversification
	Limitation of natural risks		
	Public health		Business environment
	Education		
	Rule of Law		Innovations
	Finances		
Civic space	Interaction		Infrastructure
	Responsibility		
	Democratic structures		Capital flows
	Human rights and freedom of citizens		Management of the economy
	Access to information		

Source: compiled by the authors from data (Fund for Peace, 2022).

Understanding the sustainability of the state and its components is important for analysis, forecasting and ensuring effective public administration. The index of state resilience is a tool that makes it possible to assess the state's level of stability in its various spheres and directions of development. *Figure 3* shows the value of Ukraine's sustainability index in 2022.

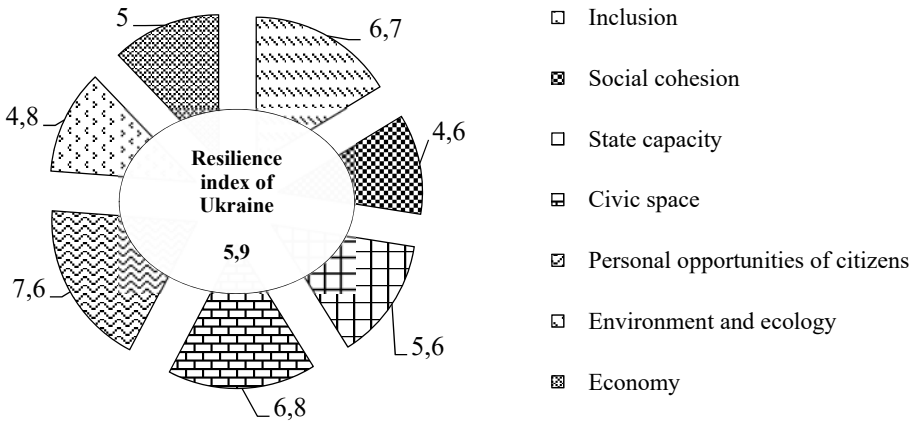


Figure 3. Resilience index of Ukraine in 2022 by spheres, points

Note. Level: low (≤ 2.8), moderate (≥ 2.9), medium (≥ 4.6), sufficient (≥ 6.4), high (≥ 8.3).

Source: compiled by the authors from data (Fund for Peace, 2022).

In 2022, Ukraine took 64th place among 154 countries in the world in the sustainability rating of states, receiving 5.9 points, which is an average level. Let's consider in more detail the spheres of the sustainability index of Ukraine from *Figure 3*, as they are interconnected and influence each other.

Inclusion is the process and practice of ensuring equal rights, opportunities and access to participation in various spheres of life for all citizens, regardless of their nationality, religion, disability, age, gender or any other characteristics. Inclusion is aimed at creating a society where every person has the opportunity to realize their potential and be a full member of the community. In the field of "inclusion", Ukraine demonstrates a sufficient level.

In addition to inclusion, a sense of social cohesion is key to a sustainable society. Social cohesion of a nation is a concept that describes the level of unity, cooperation, mutual respect, solidarity among citizens, as well as their trust in state institutions. Social cohesion is characterized by shared identification between individuals united by common values, culture, history, interests, and purpose. The number of points received by Ukraine in this area determines the average level.

State capacity is the ability of the state to function effectively and ensure internal order, protect the rights and interests of citizens, develop and manage financial resources, ensure the safety and protection of society from external and internal threats. In the field of "state capacity", Ukraine received an average level.

Civic space is a social, cultural and political environment where citizens have the opportunity to freely express their opinions, discuss issues of public interest, and interact with each other and with state bodies. This is the area where citizens feel their active civic role and influence the formation of public policy. Civic space contributes to the development of the democratic process and the strengthening of civil rights and freedoms. According to the number of points in this area, Ukraine showed a sufficient level.

Personal opportunities of citizens are a set of opportunities that are available to each individual in society for their personal and social development. They contribute to unlocking the potential of citizens, create conditions for improving the quality of life and contribute to the general well-being of society. Ensuring equal and expanded personal opportunities of citizens is a key task for the social development of the state. In the field of "personal capabilities of citizens", Ukraine has demonstrated a sufficient level.

Environment and ecology. Stable ecosystems provide soil fertility necessary for agricultural production. Disruption of these ecosystems can lead to a decrease in harvests and a growing threat to the country's food security. In addition, ecosystems regulate water resources. Rivers, lakes and wetlands play a key role in providing access to drinking water, irrigation and infrastructure for energy production. Conservation of aquatic ecosystems is critical to national sustainability, as their loss can cause serious water and energy security challenges. In the field of "environment and ecology" Ukraine is at the average level by the number of points.

Economy. Developed and innovative economies with access to capital are less vulnerable to price shocks and supply chain disruptions, and recover more quickly from crises. Long-term economic sustainability requires high-quality infrastructure and effective economic management to ensure competitiveness in a changing global economy. In the field of "economy", Ukraine also demonstrates an average level in terms of the number of points scored.

Thus, balanced sustainability in all analyzed areas is an important factor for ensuring national resilience and development. The improvement of these spheres is the task of both the state itself and the international community in order to support the national resilience of Ukraine in conditions of war.

4. Directions of ensuring national resilience

The problem of ensuring national resilience is one of the most strategically important for the development of our country. National resilience encompasses a country's ability to counter threats in the political, economic, social, technological and environmental environments (*Figure 4*).

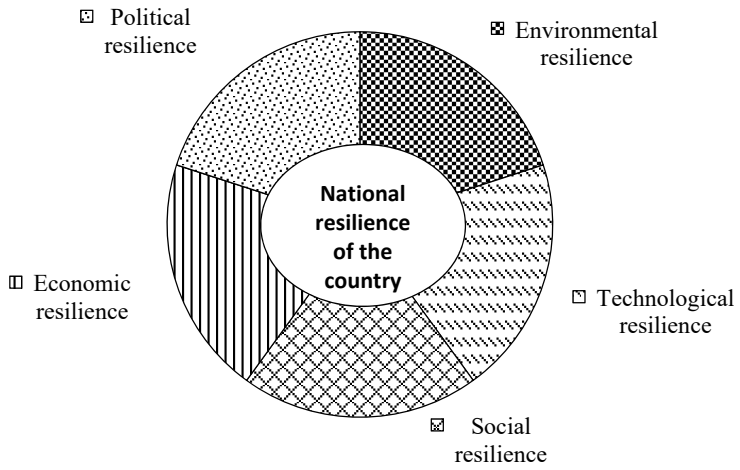


Figure 4. Directions of ensuring national resilience

Source: compiled by the authors.

The war became a serious challenge for the Ukrainian nation and its political system. In such difficult conditions, it is important to preserve political resilience in order to restore peace and maintain citizens' trust in the authorities. Political resilience is the unity and integrity of relations between various political subjects of the system, the determination of the order and conditions for the adoption and implementation of power decisions, the legitimacy of power and its ability to respond adequately to external changes. Political resilience in the conditions of war requires not only domestic measures, but also international cooperation and diplomatic initiatives. The joint efforts of the international community can contribute to the settlement of the conflict and prevent further aggression by russia. Thus, on August 7, 2023, negotiations on peace in Ukraine took place in Saudi Arabia with the participation of 40 countries of the world, including the USA, China, India, Brazil, South Africa, Great Britain, Mexico, Turkey, Indonesia, Japan, Chile and EU countries. Different countries have different political approaches to solving global problems, but they are all committed to the principles of respect for the sovereignty and inviolability of the territorial integrity of Ukraine. According to the results of the negotiations, the parties decided to continue consultations on the peace formula in Ukraine (BBC News Ukraine, 2023).

War is always accompanied by serious challenges for the national economy, and it is important to understand how to ensure its sustainability and restore economic well-being after the end of russian aggression. The economic resilience of the state can be ensured only by the resilience of its components: territories, industries and sectors. On July 4–5, 2022, at a conference in Lugano, the Ukrainian government presented the "Ukraine Recovery Plan", which lays the foundations for the future reconstruction of the national economy and is designed to create mechanisms for self-sustaining economic development (Ukraine Recovery Conference, 2022).

The war also deepened the demographic crisis in Ukraine, intensifying migration processes, as well as a drop in the birth rate. The social resilience

of a nation in the conditions of war is one of the key components of its survival and further development. The social sphere has a key role in creating favorable conditions for the expanded reproduction of human potential. It is the driving force of the intensification of social production, raising the level and quality of life and the leading factor of social inclusion and cohesion.

In addition, war always creates significant challenges for society, and it is important to maintain social resilience by ensuring the protection of the rights and well-being of citizens, which requires an integrated approach, cooperation between the government, the public and the international community. For example, Ukrainians affected by the war receive financial assistance from the following international organizations: UNICEF, the United Nations (World Food Program), the International Organization for Migration (IOM), the Mission of the International Committee of the Red Cross in Ukraine and the Red Cross Society of Ukraine), the Office of the United Nations High Commissioner for Refugees (UNHCR), the assistance of the non-governmental organization ACTED France, the Norwegian Council for Refugees, BO Human in Distress and others (Galadzhii, 2022).

Over the past nine years, cyberspace has become a battlefield for russian hackers from the special services, who have used all their most advanced weapons on Ukrainian information systems. Ukraine emerged from this battle with unique experience and knowledge that can help our partners build a reliable defense against russia's unjustified aggression in cyberspace. Technological resilience of the state is manifested in the ability to successfully cope with technological challenges, ensure the functioning of critical infrastructures, maintain competitiveness and security in the digital world, as well as protect and effectively use its technological resources and knowledge. Technological sustainability is becoming increasingly important in today's world, where technology affects all areas of life, from the economy and defense to communications and medicine.

The russian-Ukrainian war also led to the destruction, pollution and degradation of the environment. Hostilities have had serious consequences for ecosystems, from the destruction of natural landscapes to the contamination of soil, air and water with dangerous chemicals. Environmental sustainability is a critical aspect of the russian-Ukrainian war. The destruction of the Kakhovskaya HPP became an ecological disaster not only for Ukraine, but also for the entire Black Sea region. The implementation of tasks and projects of the Recovery Plan of Ukraine in the direction of ecological security will ensure the implementation of environmental policy in accordance with the European integration direction of the development of Ukraine and the European Green Course, as well as the integration of the environmental component into all reforms and projects for the recovery of the country in accordance with the European course and the principles of sustainable development (Ukraine Recovery Conference, 2023).

Ensuring national resilience in the conditions of war is a complex and multi-vector process. Each of the areas of ensuring national resilience requires careful planning, financing and attracting investments.

Conclusions

The study of the problems of national resilience of the state shows that resilience is not only a security concept. It is expressed in economic, social, political, technological and ecological planes. The national resilience of the state is characterized by three key capabilities: function smoothly, adapt to negative influences and changing conditions; withstand unexpected blows; quickly recover from the destructive consequences of phenomena or actions of any nature to the desired balance.

Russian aggression against Ukraine, which began in 2014 and became full-scale in 2022, has many aspects of manifestation and tests Ukrainian national resilience in various forms, starting from the occupation of territories, ending with massive cyber-attacks on critical infrastructure facilities. The level of national sustainability of Ukraine is average, which was significantly influenced by the sufficient level of sustainability in the spheres of "personal capabilities of citizens" and "civic space". A vulnerable area of national resilience is "social cohesion", as a significant part of Ukrainians went abroad, others are under occupation, and some were forcibly deported by the occupiers to the territory of russia.

In general, the national resilience of Ukraine is a complex and multifaceted problem that requires significant efforts both from the government and civil society, as well as from the international community, which has felt the global consequences of Russian aggression. Ensuring global stability and countering global challenges is a common goal for all stakeholders.

Thus, ensuring national resilience under martial law is a task that requires complex measures and cooperation both at the state and international levels. Properly developed strategies and effective management of resources will help ensure stable development and post-war recovery of Ukraine in the directions of ensuring national resilience.

Further research of this issue is extremely relevant for Ukraine and requires the definition of organizational and legal conditions for ensuring its national resilience.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	**REFERENCE**
Вінокуров, Я. (2023). Українські мігранти підіймають економіку Європи. Що буде з Україною без них? *Українська правда*. https://www.epravda.com.ua/publications/2023/01/10/695807/	Vinokurov, Y.A. (2023). Ukrainian migrants are boosting the European economy. What will happen to Ukraine without them? *Ukrainian Pravda.* https://www.epravda.com.ua/publications/2023/01/10/695807/
Галаджій, О. (2022). Виплати від міжнародних організацій. Яку допомогу українці можуть отримати з 1 жовтня 2022 року. *Бізнес.* https://biz.nv.ua/ukr/economics/dopomoga-ukrajincyam-vid-mizhnarodnih-organizaciy-hto-maye-pravo-na-viplati-ta-yak-otrimati-50274491.html	Haladzhiy, O. (2022). Payments from international organizations. What assistance can Ukrainians receive from October 1, 2022. *Biznes*. https://biz.nv.ua/ukr/economics/dopomoga-ukrajincyam-vid-mizhnarodnih-organizaciy-hto-maye-pravo-na-viplati-ta-yak-otrimati-50274491.html

Герасимчук, Т. Ф. (2022). Національна стійкість як детермінанта європейської інтеграції України. *Науковий журнал "Політикус"*. *4*, 18-28. http://dspace.pdpu.edu.ua/jspui/bitstream/123456789/16440/1/Gerasymchuk%20Tamila%20Fedorivna.pdf	Herasymchuk, T. F. (2022). National resilience as a determinant of European integration of Ukraine. *Politykus*, *4*, 18-28. http://dspace.pdpu.edu.ua/jspui/bitstream/123456789/16440/1/Gerasymchuk%20Tamila%20Fedorivna.pdf
Михайловська, С. (2022). Енергетичні виклики зими – чого очікувати Україні та ЄС? *Бізнес*. https://biz.nv.ua/ukr/experts/ataki-rosiji-na-infrastrukturu-chi-bude-elektroenergiya-v-ukrajini-vzimku-ta-do-chogo-gotuvatis-yes-50277994.html	Mykhaylovs'ka, S. (2022). Energy challenges of winter – what can Ukraine and the EU expect? *Biznes*. https://biz.nv.ua/ukr/experts/ataki-rosiji-na-infrastrukturu-chi-bude-elektroenergiya-v-ukrajini-vzimku-ta-do-chogo-gotuvatis-yes-50277994.html
Пирожков, С. І., Майборода, О. М., Хамітов, Н. В., Головаха, Є. І., Дембіцький, С. С., Смолій, В. А., Скрипнюк, О. В., Стоєцький, С. В. (2022). Національна стійкість України: стратегія відповіді на виклики та випередження гібридних загроз: *національна доповідь*. Інститут політичних і етнонаціональних досліджень ім. І. Ф. Кураса НАН України. Київ: НАН України. https://ipiend.gov.ua/wp-content/uploads/2022/05/ nats_dopovyd.pdf	Pyrozhkov, S . I., Mayboroda, O. M., Khamitov, N. V., Holovakha, YE. I., Dembits'kyy, S. S., Smoliy, V. A., Skrypnyuk, O. V., Stoyets'kyy, S. V. (2022). National resilience of Ukraine: a strategy for responding to challenges and anticipating hybrid threats: *a national report.* Institute of Political and Ethnonational Studies named after I. F. Kuras NAS of Ukraine.. Kyiv: NAN Ukrayiny. https://ipiend.gov.ua/wp-content/uploads/ 2022/05/nats_dopovyd.pdf
Резнікова, О. О. (2022). *Національна стійкість в умовах мінливого безпекового середовища*: *монографія*. Київ: Національний інститут стратегічних досліджень. https://niss.gov.ua/sites/default/files/2022-03/reznikova-ukraineresilience2022_02.pdf	Reznikova, O.O. (2022). *National resilience in the conditions of a changing security environment.* Kyiv: National Institute of Strategic Studies. https://niss.gov.ua/sites/default/files/2022-03/reznikova-ukraineresilience2022_02.pdf
Указ Президента України № 479/2021 (2021, 27 вересня). Концепція забезпечення національної системи стійкості. https://www.president.gov.ua/documents/4792021-40181	Decree of the President of Ukraine No. 479/2021 (2021, September 27). The concept of ensuring the national system of resilience. https://www.president.gov.ua/documents/4792021-40181
Указ Президента України № 121/2021 (2021, 25 березня). Стратегія воєнної безпеки України "Воєнна безпека – всеохоплююча оборона". https://zakon.rada.gov.ua/laws/show/121/2021#Text	Decree of the President of Ukraine No. 121/2021 (March 25, 2021). Military security strategy of Ukraine "Military security – comprehensive defense". https://zakon.rada.gov.ua/laws/show/121/2021#Tekst
Указ Президента України № 56/2022 (2022, 16 лютого). Стратегія забезпечення державної безпеки. https://www.president.gov.ua/ documents/562022-41377	Decree of the President of Ukraine No. 56/2022 (February 16, 2022). Strategy for ensuring state security. https://www.president.gov.ua/documents/562022-41377
Указ Президента України № 448/2021 (2021, 26 серпня). Стратегія зовнішньополітичної діяльності України. https://www.president.gov.ua/documents/ 4482021-40017	Decree of the President of Ukraine No. 448/2021 (2021, August 26).Strategy of foreign policy activity of Ukraine]. https://www.president.gov.ua/ documents/ 4482021-40017
Указ Президента України № 685/2021 (2021, 28 грудня). Стратегія інформаційної безпеки. https://www.rnbo.gov.ua/ua/Ukazy/5203.html	Decree of the President of Ukraine No. 685/2021 (December 28, 2021). Information security strategy. https://www.rnbo.gov.ua/ua/Ukazy/5203.html
Указ Президента України № 392/2020 (2020, 14 вересня). Стратегія національної безпеки України "Безпека людини – безпека країни". https://zakon.rada.gov.ua/laws/show/392/2020#Text	Decree of the President of Ukraine No. 392/2020 (September 14, 2020). National security strategy of Ukraine "Human security – country's security". https://zakon.rada.gov.ua/zakony/show/392/2020#Tekst
Центр безпекових досліджень "CEHCC". (2023). Роль Ради Безпеки ООН у підтримці міжнародного миру та безпеки в сучасному світі та оцінка її ефективності на прикладі України. https://censs.org/rol-rady-bezpeky-oon-u-pidtrymtsi-mizhnarodnoho-myru-ta-bezpeky-v-suchasnomu-sviti-ta-otsinka-yiyi-efektyvnosti-na-prykladi-ukrayiny/	Center for security research "SENSS". (2023). The role of the UN Security Council in maintaining international peace and security in the modern world and evaluating its effectiveness on the example of Ukraine. https://censs.org/rol-rady-bezpeky-oon-u-pidtrymtsi-mizhnarodnoho-myru-ta-bezpeky-v-suchasnomu-sviti-ta-otsinka-yiyi-efektyvnosti-na-prykladi-ukrayiny/

BBC News Україна. (2023). Саудівські переговори щодо миру в Україні. Про що домовилися і що стало проривом. https://www.bbc.com/ukrainian/features-66427193	BBC News Ukrayina. (2023). Saudi negotiations on peace in Ukraine. What was agreed upon and what was the breakthrough. https://www.bbc.com/ukrainian/features-66427193
Fund for Peace. (2022). State Resilience Index. https://www.fundforpeace.org/SRI/about.html	Fund for Peace. (2022). State Resilience Index. https://www.fundforpeace.org/SRI/about.html
Goodwin, R., Hamama-Raz, Y., Leshem, E. & Ben-Ezra, M. (2023). National resilience in Ukraine following the 2022 Russian invasion. *International Journal of Disaster Risk Reduction*, *85*. https://doi.org/10.1016/j.ijdrr.2022.103487	Goodwin, R., Hamama-Raz, Y., Leshem, E. & Ben-Ezra, M. (2023). National resilience in Ukraine following the 2022 Russian invasion. *International Journal of Disaster Risk Reduction*, *85*. https://doi.org/10.1016/j.ijdrr.2022.103487
Institute for Economics & Peace. (2023). Global Peace Index 2023. Measuring peace in a complex world. https://www.visionofhumanity.org/wp-content/uploads/2023/06/GPI-2023-Web.pdf	Institute for Economics & Peace (2023). Global Peace Index 2023. Measuring peace in a complex world. https://www.visionofhumanity.org/wp-content/uploads/ 2023/06/GPI-2023-Web.pdf
Kimhi, S., Marciano, H., Eshel, Y. & Adini, B. (2020). Community and national resilience and their predictors in face of terror. *International Journal of Disaster Risk Reduction*, *50*. https://doi.org/10.1016/j.ijdrr.2020.101746	Kimhi, S., Marciano, H., Eshel, Y. & Adini, B. (2020). Community and national resilience and their predictors in face of terror. *International Journal of Disaster Risk Reduction*, *50*. https://doi.org/10.1016/j.ijdrr.2020.101746
North Atlantic Treaty Organization. (2018). The Secretary General's Annual Report 2017. https://www.nato.int/nato static fl2014/assets/pdf/pdf 2018_03/20180315_SG_AnnualReport_en.pdf #page=7	North Atlantic Treaty Organization. (2018). The Secretary General's Annual Report 2017. https://www.nato.int/nato static fl2014/assets/pdf/pdf 2018_03/20180315_SG_AnnualReport_en.pdf #page=7
OECD. (2017). National policy frameworks on resilience in OECD countries. https://www.oecd.org/cfe/regionaldevelopment/national-policy-resilience-frameworks.pdf	OECD. (2017). National policy frameworks on resilience in OECD countries. https://www.oecd.org/cfe/regionaldevelopment/national-policy-resilience-frameworks.pdf
Ukraine Recovery Conference. (2023). https://www.urc-international.com/	Ukraine Recovery Conference. (2023). https://www.urc-international.com/
Ukraine Recovery Conference. (2022). https://www.urc-international.com/urc-2022	Ukraine Recovery Conference. (2022). https://www.urc-international.com/urc-2022

Conflict of interest. The authors certify that don't they have any financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that the authors is affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution.

The contribution of the authors is equal.

Umantsiv Y., Shkuropadska D. National resilience of Ukraine under the Martial Law. *Scientia Fructuosa*. 2023. № 5. S. 4-19. https://doi.org/10.31617/1.2023(151)01

Received by the editorial office 30.08.2023.
Sent for revision 15.09.2023.
Accepted for printing 22.09.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)02
UDC 004:351.9]:331.5=111

ILYINA Anastasiya,
PhD (Economics), Associate Professor, Associate Professor at the Department of Public Administration
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0002-6374-7078
a.ilyina@knute.edu.ua

ELECTRONIC GOVERNANCE IN THE HUMAN CAPITAL ASSESSMENT SYSTEM

Current affairs in our country necessitate the introduction of effective steps for the post-war restoration of various spheres of the state and society. One of the most important aspects of Ukraine's post-war restoration is currently considered to be the recovery of human capital, which will have a positive impact on improving various aspects of the state's functioning. At the same time, it is important to continuously assess human capital by determining the relevant indexes, which should be facilitated by electronic governance. The aim of the research is to study the possibility of using electronic governance in Ukraine as a tool for reflecting the process of post-war recovery of human capital. The research was conducted using methods of theoretical generalization, comparative and systemic analyses, modeling. The paper analyzed the concept of human capital as a special type of capital that is expressed in the form of intellectual abilities and practical skills that were acquired in the process of education and practical activity of a person. The state of human capital in Ukraine before the war, which remained relatively stable until 2021, and during the war period, when there were noticeable losses of human capital under the influence of various factors, were analyzed. The prospect of post-war recovery of human capital was considered, with special attention. In addition, the concept and features of electronic governance as a tool for reflecting the recovery of human capital and one of the strategies for Ukraine's post-war restoration were considered. The dynamics of the Human Capital Index in Ukraine for 2010–2021 was analyzed. It was found that electronic governance, by analyzing

ІЛЬЇНА Анастасія,
к. е. н., доцент, доцент кафедри публічного управління та адміністрування
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0002-6374-7078
a.ilyina@knute.edu.ua

ЕЛЕКТРОННЕ УРЯДУВАННЯ В СИСТЕМІ ОЦІНКИ ЛЮДСЬКОГО КАПІТАЛУ

Сучасні події у нашій країні зумовлюють необхідність запровадження дієвих кроків повоєнного відновлення різних сфер життя держави та суспільства. Одним із важливих аспектів повоєнного відновлення України наразі вважають саме відновлення людського капіталу, що позитивно впливатиме на вдосконалення різних аспектів функціонування держави. При цьому важливою є постійна оцінка людського капіталу шляхом визначення відповідних індексів, у чому має допомогти електронне урядування. Метою дослідження є вивчення можливості використання електронного урядування в Україні як інструменту відображення процесу повоєнного відновлення людського капіталу. Дослідження проводилося з використанням методів теоретичного узагальнення, порівняльного та системного аналізів, моделювання. Досліджено поняття людського капіталу як особливого різновиду капіталу, який виражається у формі інтелектуальних здібностей та практичних навичок, що були отримані у процесі освіти й практичної діяльності людини. Проаналізовано стан людського капіталу в Україні до війни, який залишався відносно стабільним до 2021 р., та у воєнний період, коли відбулися помітні втрати людського капіталу під впливом різних факторів. Особливу увагу приділено перспективі відновлення людського капіталу у повоєнний період. Крім того, розглянуто поняття та особливості електронного урядування як інструменту відображення відновлення людського капіталу та однієї зі стратегій повоєнного відновлення країни. Проаналізовано динаміку Індексу людського капіталу в Україні за 2010–2021 роки. Встановлено, що електронне урядування шляхом аналізу даних дає

data from official sources, makes it possible to calculate the Human Capital Index. It was noted that Big Data and artificial intelligence can be used to determine changes in human capital, which is possible due to the availability of electronic governance. The results allow us to state that there are significant opportunities to use electronic governance to assess human capital with a reflection of its post-war recovery.

Keywords: electronic governance, human capital, Human Capital Index, post-war recovery.

можливість прорахувати Індекс людського капіталу. Зазначено, що для визначення змін людського капіталу можуть бути використані великі дані та штучний інтелект, користування якими є можливим завдяки наявності електронного урядування. Результати аналізу свідчать про наявність значних можливостей використання електронного урядування для оцінки людського капіталу із відображенням його повоєнного відновлення.

Ключові слова: електронне урядування, людський капітал, Індекс людського капіталу, повоєнне відновлення.

JEL Classification: J24, O15, O33, O38.

Introduction

Today, an important issue for researchers is the development of effective ways of post-war restoration of Ukraine, which will take into account all important aspects of the life of society and the state. At the same time, post-war recovery strategies are being developed, which include both global trends in the country's development and specific areas to which the Government of Ukraine should pay attention. So, an important aspect of modern research development of the strategy of post-war recovery is the study of a peculiar concept of human capital. The scholars consider a person to be the real wealth of a country, which, together with material goods, has a positive effect on its development. Thus, the researches and public figures consider the improvement of human capital to be an important component of the revival of Ukraine. At the same time, it is important to take into account the methods of human capital assessment, which will make it possible to clearly follow the dynamics of its changes.

Under modern conditions, problems of human capital development are actively considered by Ukrainian and foreign researchers. So, for example, Boikivska, Saladiak, (2022); Grishnova (2001); Kozhyna, Razina, Kravchenko, Kuprii, & Melnyk (2022); Nicolaescu, Florea, Kifor, Fiore, Cocan, Receu, & Zanetti (2020); Prushkivska, Pereverzieva (2007); Fonaryova (2017) devoted their works to the study of human capital in the education system, including training, retraining and advanced training of personnel of enterprises, institutions and organizations that exercise their powers in the sectoral direction, while not paying enough attention to the study of human capital in public authorities. Along with this, Antonyuk (2022); Zaloznova, Azmuk (2022); Mishchenko (2022) studied the phenomenon of human capital in the conditions of war and in the post-war perspective, paying insufficient attention to the study of the process of improving the human capital management system, including the development of human capital analysis methods, where electronic

governance plays a significant role. Along with this, the researches Arkhypova (2015); Zhekalo, Zaiats, & Vakun (2020); Kosariev, Lazebna, & Pasyk-Kosarieva (2019); Pogrebnyak (2014); Furashev (2012) devoted their works to the study of electronic governance as a systemic means of improving the work of public and private institutions. However, here scholars mainly study the essence of electronic governance and its impact on the activities of the public and private sectors, where it would not be superfluous to work out the problems of the connection of the development of electronic governance with human knowledge, as well as the skills and abilities to apply it, which reflects human capital. All this will significantly contribute to the improvement of the human capital management system in the public and private sectors in the post-war period.

Therefore, analyzing the current trends of scientific and technological development in Ukraine during the period of martial law, it is important to emphasize that further research is needed, firstly, the features of human capital and the factors influencing its development, in particular during the wartime in the country; secondly, the features of electronic governance and its impact on the post-war recovery of human capital in the country; thirdly, the interdependence between the development of electronic governance and the quality of human capital assessment both under the conditions of martial law and in the future period of post-war recovery.

The aim of the research is to study the possibility of using electronic governance in Ukraine as a tool for reflecting the process of post-war recovery of human capital.

The study consists of two main parts: the first part characterizes the concept of human capital using the method of theoretical generalization, analyzes the pre-war state of human capital in Ukraine and the impact of military actions on its development using the method of comparative analysis. The second part characterizes the concept of electronic governance using the method of theoretical generalization, describes the interaction of the principles of the introduction of electronic governance according to the method of system analysis, and determines the possibilities of using electronic governance as a process of reflecting the post-war recovery of human capital in the country according to the modeling method.

1. Human capital

1.1. Content of the concept and analysis of human capital in Ukraine during the pre-war period.

Human capital is a special kind of capital, which is expressed in the form of intellectual abilities and practical skills, obtained in the process of education and practical activity of a person. The founders of the theory of human capital are considered to be H. Becker and T. Shultz, according to

which human capital is a set of expenses for obtaining education, qualifications, upbringing, etc. This is a peculiar economic category as a key factor of economic growth and social well-being of the nation and the state (Fonaryova, 2017).

In addition, human capital is a certain accumulated stock of knowledge, skills and abilities that are used in various spheres of social reproduction, and also have a positive effect on the growth of labor productivity and, therefore, on the increase of income of an individual (Prushkivska, Pereverzieva, 2007).

Human capital is also considered as a set of productive abilities, personal traits and motivations of individuals formed and developed as a result of investments, which are in their possession, used in economic activity, contribute to the growth of labor productivity and, thanks to this, affect the growth of the income of its owner and the national income (Grishnova, 2001).

Thus, human capital occupies an important place in the sustainable development of the country. However, given the state of war, the position of human capital in Ukraine is in a difficult position and needs significant recovery. However, in order to find out to what extent the current state of human capital in the country requires the application of certain recovery measures, taking into account the negative factors of the influence of military actions, it is worth analyzing the Human Capital Index (HCI) in Ukraine in the pre-war period until 2022 (*Figure 1*).

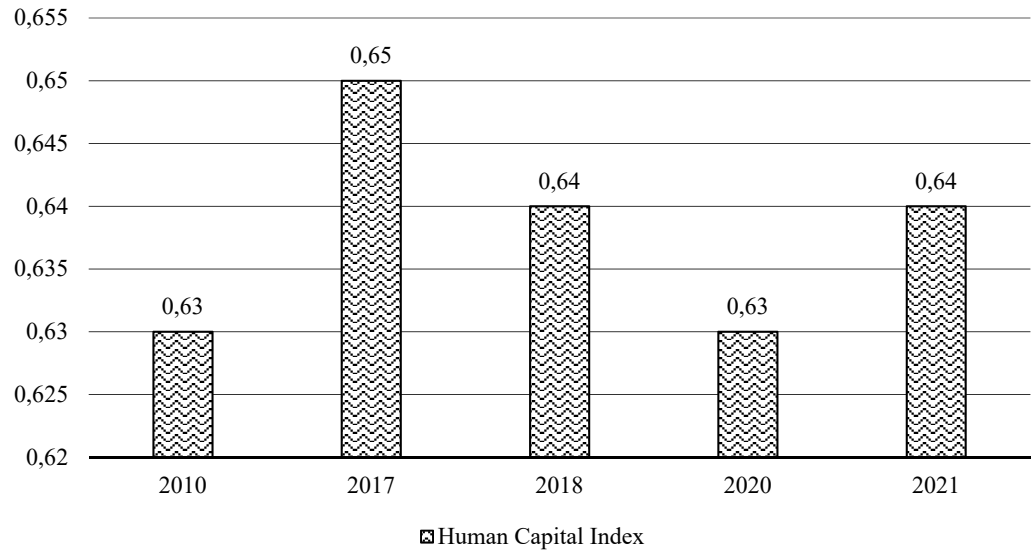


Figure 1. Human Capital Index in Ukraine for 2010–2021

Source: developed by the author based on: Our World in Data, 2020; Kozhyna et al., 2022.

As you can see, the HCI fluctuated moderately in Ukraine for the period from 2010 to 2021. If in 2010 the financial and economic crisis became a significant demotivation for the activity of innovative and active

enterprises, which was reflected to some extent on the HCI, then the gradual decline of the indicator from 2017 to 2020 has a close interdependence with the reboot of the system of management relations. This is connected, firstly, with the approval of 2017 year of the Concept of e-Governance Development in Ukraine (Order of the Cabinet of Ministers of Ukraine, 2017), which forced the management staff of public authorities to waste time and spend funds on the purchase of the latest software in order to introduce electronic systems aimed at ensuring prompt provision of necessary services at a high-quality level, and, accordingly, at increasing the level of professional competence of personnel in the direction of working with information and communication technologies (ICTs). Secondly, with the COVID-19 pandemic, which began in 2019 and continued until the end of 2021, when many enterprises, institutions and organizations were forced to switch to online work. And this, in turn, created many inconveniences both for service personnel and for the vast majority of specialists who had not previously worked remotely and required time to adapt to work in the mode of using ICTs during the provision of necessary services (including educational, social, medical, etc.). However, the increase in the HCI in 2021 may indicate the acquisition of digital literacy of the population, which made it possible to quickly adapt to new working conditions. Here, a deep level of organization of training, retraining and advanced training of personnel in the sphere of human capital management, which combines the fields of education, science, culture, tourism, sports, social protection and health care, played a huge role.

Thus, the introduction of electronic governance in Ukraine can become an important factor in the recovery of human capital in Ukraine in the post-war period, given the detrimental effects of the war on the sustainable development of the country.

1.2. Analysis of factors influencing military operations on the state of human capital in Ukraine.

It is important to note that in the conditions of a full-scale Russian-Ukrainian war, there are significant changes in the characteristics of human capital caused by military actions. So, it is possible to list the following losses of human capital of Ukraine in war conditions (Zaloznova, Azmuk, 2022):

- an increase in the number of forcibly displaced persons both within Ukraine and those who left the territory of the country as a result of military operations: as of May 3, 2022, the total number of displaced persons was 13.7 million people, of which 5.7 million people left Ukraine, where the vast majority of emigrants are women and children;
- forced "evacuation" of Ukrainian citizens from the occupied territories to the Russian Federation: as of April 16, 2022, 808 thousand people were forcibly deported to the Russian Federation, of which 147 thousand were children of various ages, including infants;

- large losses of both conscripts during the performance of military duties in the combat zone, as well as the civilian population due to enemy shelling of populated areas of Ukraine;
- indirect losses in the form of the inability to fully pay wages and use the intellectual and creative potential of human capital.
- V. Antonyuk (2022) supplements this list of losses:
- deterioration of physical and mental health of citizens;
- increase in the share of orphans, destruction of families, etc.;
- damage and destruction of infrastructure;
- suspension and deterioration of the educational process.

Therefore, there is already a need to implement effective steps to improve the state of human capital, which will also make it possible to restore the country's economy destroyed as a result of military operations. Accordingly, human capital is closely related to the economic growth of the state. Therefore, as the analysis of the development of human capital in the pre-war period showed, the improvement of the process of its management in the context of the development of the information society and the electronic state is an integral component of the post-war restoration of Ukraine (Boikivska, Saladiak, 2022).

1.3. Ways of recovery and development of human capital in Ukraine in the post-war period.

So, the full-scale Russian-Ukrainian war, which has been ongoing since February 24, 2022, has caused a number of changes in various spheres of life in Ukraine. Therefore, the government and researches are currently working on the development of measures aimed at ensuring the effective post-war restoration of Ukraine, an important direction of which is the recovery of human capital.

According to the official information of the official website of Ukraine's Government portal, the development of human capital is one of the important components of the country's sustainable development strategy and the basis for the growth of the national economy and the strengthening of Ukraine's competitive position in the world, for which a number of transformations should be carried out in Ukraine, namely:

- to ensure equal access to quality medical services;
- to create conditions for the transformation of the education system;
- to implement a fair pension reform;
- to improve the process of providing social support to vulnerable sections of the population (Government portal, 2020).

Such steps will make it possible to positively influence the development of human capital in the country, which will benefit the development of the information society and the electronic state, the combination of which forms an electronic governance system.

2. Possibilities of using electronic governance to reflect the post-war recovery of human capital

2.1. Electronic governance: concepts and principles of application in the post-war recovery of human capital in the country.

Before analyzing the features of electronic governance, let's turn to the definition of the concept itself. In general, governance is the process of making state management decisions in the spheres delegated by the state and their implementation in the life of society. Electronic governance is a form of public administration organization, which is aimed at ensuring the improvement of efficiency, openness and transparency of the activities of public authorities using ICTs for the most simple and accessible communication with individuals and legal entities, non-governmental organizations, stipulating the formation of information society (Furashev, 2012). Therefore, here, in the first place, reforms of public administration should be carried out.

It is also worth paying attention to the fact that public administration belongs to the exercise of political, economic and administrative powers in the management of the country's affairs, including explaining to citizens their interests and the exercise of their legal rights and obligations. Here, electronic governance can be understood as the performance of public administration functions through electronic media in order to facilitate an effective, fast and transparent process of disseminating relevant information to the public and other institutions (Kosariev, Lazebna, & Pasyk-Kosarieva, 2019).

Taking into account the above, it is necessary to consider the principles according to which the introduction of electronic governance in Ukraine in the post-war period will take place (*Figure 2*).

So, the principle of openness and transparency and the principle of efficiency can become the main principles of the introduction of electronic governance in the country in the post-war period. At the same time, the interaction between the relevant principles gives rise to the principle of systematicity, which is the basis of the target task of the country's government to switch to a single system of electronic governance. So, compliance by government officials with the principle of openness and transparency when exercising their powers with the use of ICTs will contribute to the transformation of ICTs into the main element of the country's development strategy. This approach creates conditions for the involvement of broad masses of the population to participate in management processes, taking into account the expansion of the rights of remote access of individuals and legal entities to information resources. Accordingly, the analysis of the views of the participants on various proposals from government officials suggests the adoption and further development of a joint government strategy for the comprehensive use of ICTs in accordance with the principle of systematicity. Here, the implementation of the specified

strategy formulates a unified approach to the future model of ICTs application in state management, which accompanies quality control over the provision of electronic services to representatives of the state and society from both the public and private sectors.

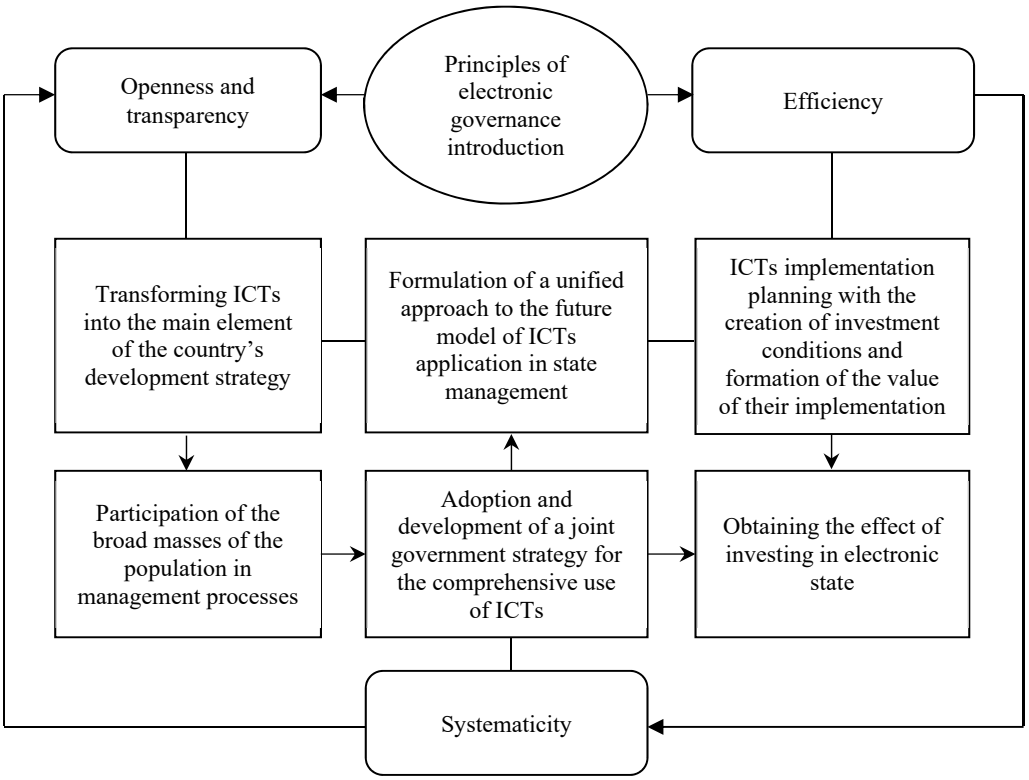


Figure 2. The interaction of the principles of the introduction of electronic governance in Ukraine in the post-war period

Source: developed by the author based on (Pogrebnyak, 2014).

All this increases the probability of obtaining the effect of involving potential foreign investors for the country's economy and creating attractive conditions for the return from abroad of national manufacturers of high-tech products, which public authorities will purchase for the introduction of special electronic systems and other means of information and telecommunication into their activities. And this, in its turn, will contribute to increasing the level of digital literacy of the staff of public authorities and encourage the development and approval of programs aimed at investing in increasing the level of their professional competence. In this context, the principle of systematicity is closely interdependent with the principle of efficiency, the observance of which combines the planning of ICTs implementation and the creation of proper investment conditions for investors and investment recipients, forming the value of ICTs implementation as a way to develop human capital. After all, it is ICTs that can become a convenient tool for investing in objects of innovative infrastructure, the implementation of which increases the number of newly

created jobs and increases the solvency of the population, which, in turn, will contribute to the increase in business profitability, and therefore to the filling of budgets at all levels and the equalization of their balance, which will allow more investing in qualified personnel and in the restoration of the country's infrastructure in the post-war period.

2.2. The methods of using electronic governance during the human capital assessment.

One of the particularly important areas of the use of electronic governance is the control over the dynamics of human capital, first of all, in war conditions, when the question of its post-war recovery arises. It was previously stated that an important direction of the post-war restoration of Ukraine is the recovery of human capital, as an important resource for the development of the state. Electronic governance, for its part, should not affect the process of human capital recovery itself, but play an important role in reflecting this process, which is possible thanks to the functions of electronic governance.

Electronic governance has a number of opportunities for monitoring the process of post-war recovery of human capital, simplifying various administrative, management and other issues, which will contribute to reducing the frequency of contact between citizens and representatives of public authorities. This, in turn, will improve the psychological climate in the country, because residents will not have to experience difficulties with solving issues related to obtaining public services.

So, one of the methods of using electronic governance when assessing human capital is the direct determination of human capital by measuring the HCI, which consists of four components (UIFuture.org, 2021):

- adult literacy level;
- combined ratio of primary, secondary, tertiary gross enrollment;
- estimated years of education;
- average years of education.

Mathematically, the HCI is expressed as follows:

$$HCI = \frac{1}{3}ALR + \frac{2}{9}GER + \frac{2}{9}EYE + \frac{2}{9}AYE, \quad (1)$$

where *HCI* – Human Capital Index;
ALR – Adult Literacy Rate;
GER – Gross Enrollment Ratio;
EYE – Estimated Years of Education;
AYE – Average Years of Education.

At the same time, an important aspect is obtaining information about the percentage of people who have sufficient skills and abilities related to learning; about the share of students studying at different levels of education; about the number of years of education that the child can count on in the future, etc. In the absence of an electronic governance system, in order to

determine the HCI, it is necessary to conduct detailed field and statistical studies, which complicates the calculation procedure. However, with the availability of this system, the HCI can be calculated based on digitally available information obtained from relevant sources, which will provide an opportunity to obtain more accurate data in a limited period of time. In the post-war period, such use of the possibilities of electronic governance is especially relevant, because it will make it possible to systematically study human capital and the trends of its post-war recovery.

In addition, there are other methods of determining the HCI by using electronic governance. So, a group of Romanian scholars who researched the features of human capital assessment believe that it is possible to effectively calculate the HCI by analyzing Big Data (Nikolaescu et al., 2020). Big Data are machine-readable information arrays that can be used to analyze various features of modern society, they are stored in digital form, and various organizations can have access to them, including those engaged in sociological and statistical research. The use of Big Data can be one of the methods of assessing the post-war transformations of human capital. At the same time, the use of electronic governance will be integral, as public authorities will have the opportunity to accumulate large amounts of data using the capabilities of electronic governance. Thanks to this, a set of Big Data about citizens of Ukraine will be digitally created, which can be used in the future to determine human capital (Zhekalo, Zaiats, & Vakun, 2020).

Electronic governance will provide opportunities to combine state registers, statistics bureaus, as well as certain reporting information into a single entity. Thanks to this, there is an opportunity to properly analyze the available data, which is necessary to further determine the dynamics of changes in human capital. In addition, the assessment of post-war changes in human capital can be carried out using the method of artificial intelligence (AI), which will allow analyzing a large amount of data in a limited period of time and avoid the human factor, which can cause errors during the calculation of the HCI (Arkhypova, 2015).

2.3. Digitization as a component of post-war recovery

In order for the country to be able to assess human capital by various methods using ICTs, it is necessary to take into account such aspects of post-war recovery as digitization, security and defense potential in synergy with completed judicial, anti-corruption and other reforms (Mishchenko, 2022).

So, the digitization of Ukraine was actively taking place even before the start of military operations, primarily in the field of digitization of public services. Already today, large-scale changes in this plane can be observed. Taking into account the integration of modern technologies into various aspects of the life of society and the state, one can hope that digitalization will be one of the driving forces for proper post-war recovery of the country. After all, digitalization involves the use of digital platforms connected to the

Internet, acting as an improved form of organizing social relations, which helps to speed up the process of providing the necessary services and reduce the time for processing issues related to their provision. Accordingly, digitalization of the activities of state authorities and local self-government bodies involves the introduction of electronic governance into their activities as an integrated corporate system to increase their efficiency, openness and transparency with the possibility of communication with the population.

So, the introduction of electronic governance will, firstly, contribute to the development of electronic democracy, which is based on the involvement of public representatives (citizens, public organizations, industrial enterprises, scientific institutions, etc.) through ICTs to participate in the processes of public and administrative decision-making due to the provision of electronic support of their rights through the introduction of online communication tools with public authorities. After all, such decisions will primarily concern the solution of problems accumulated during the martial law regime, in particular, the restoration of infrastructure in Ukraine and social security of the population. Secondly, it will strengthen public control over the performance by public authorities of necessary tasks formulated in an officially approved document (order/protocol of assignments) as a result of public participation, thanks to providing members of the public with access to information resources that reflect the process and result of the implementation of relevant tasks. And this, in the end, will encourage the management staff of public authorities to improve the selection process and increase the level of professional competence of specialists whose powers are aimed at managing the development of human capital in a certain field of activity.

Along with the development of human capital, an important direction of the country's recovery should be the improvement of the state management system and various aspects of society's activities, that is, governance. Given the emphasis on digitalization in recent years, this phenomenon can be implemented in order to improve the governance system, which will encourage public authorities to purchase the latest ICTs for their gradual introduction, staff training and improvement of the process of public service provision. All this will make it possible to effectively control the process of improving the work of the system of public authorities, and therefore will contribute to the development of electronic governance aimed, among other things, at the gradual recovery of human capital in the country in the post-war period.

Conclusions

In Ukraine, one of the main strategies of post-war restoration is the strategy of human capital recovery, which can be closely intertwined with digitalization, one of the main manifestations of which is electronic governance.

An important role is played by the determination of the features of electronic governance in the context of the interaction of the principles of its

implementation, which reflects the creation of a single system of electronic governance aimed at restoring human capital in the post-war period thanks to effective investment in people and ICTs. After all, the presence of electronic governance in the country makes it possible to determine the dynamics of changes in human capital by calculating the HCI using various methods, including under the conditions of using specialized digital data on the country's population, which will contribute to the improvement of the general system of public administration.

The prospects for further research studies will be to study the possibilities of introducing the latest ICTs in public authorities and how to use them through training, retraining and advanced training of personnel, which is based on learning to analyze the peculiarities of the development of human capital in the country, taking into account the factors of influence in the war and post-war periods. It is important to pay attention to the study of the peculiarities of the post-war recovery of human capital in Ukraine, and, taking into account the further development of the relevant system, in perspective, electronic governance itself will allow to clearly monitor any changes related to the development of human capital in the country.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	**REFERENCE**
Kozhyna, A., Razina, T., Kravchenko, A., Kuprii, T., & Melnyk, T. (2022). Human Capital Development in the Context of Globalization Processes: Regulatory Aspect. *Economic Affairs*, *67*. https://doi.org/10.46852/0424-2513.4s.2022.22	Kozhyna, A., Razina, T., Kravchenko, A., Kuprii, T., & Melnyk, T. (2022). Human Capital Development in the Context of Globalization Processes: Regulatory Aspect. *Economic Affairs*, *67*. https://doi.org/10.46852/0424-2513.4s.2022.22
Nikolaescu, S. S., Florea, A., Kifor, C. V., Fiore, U., Cocan, N., Receu, I., & Zanetti, P. (2020). Human capital evaluation in knowledge-based organizations based on big data analytics. *Future Generation Computer Systems*, *111*. https://doi.org/10.1016/j.future.2019.09.048	Nikolaescu, S. S., Florea, A., Kifor, C. V., Fiore, U., Cocan, N., Receu, I., & Zanetti, P. (2020). Human capital evaluation in knowledge-based organizations based on big data analytics. *Future Generation Computer Systems*, *111*. https://doi.org/10.1016/j.future.2019.09.048
Our World in Data (2020). *Human Capital Index (HCI) (scale 0-1)*. https://ourworldindata.org/grapher/human-capital-index-in-2018?region=Europe	Our World in Data (2020). *Human Capital Index (HCI) (scale 0-1)*. https://ourworldindata.org/grapher/human-capital-index-in-2018?region=Europe
UIFuture.org (2021). Важливість розвитку людського капіталу у сучасному світі. Якою має бути стратегія України. https://uifuture.org/publications/vazhlyvist-rozvytku-lyudskogo-kapitalu-u-suchasnomu-sviti-yakoyu-maye-buty-strategiya-ukrayiny/	UIFuture.org (2021). The importance of human capital development in the modern world. What should be Ukraine's strategy. https://uifuture.org/publications/vazhlyvist-rozvytku-lyudskogo-kapitalu-u-suchasnomu-sviti-yakoyu-maye-buty-strategiya-ukrayiny/
Антонюк В. П. (2022). Ризики і втрати людського капіталу внаслідок війни. *Економічний вісник Донбасу.* Вип. 1(67). https://doi.org/10.12958/1817-3772-2022-1(67)-110-116	Antonyuk, V. P. (2022). Risks and losses of human capital as a result of war. *Economic Herald of the Donbass*. Vol. 1(67). https://doi.org/10.12958/1817-3772-2022-1(67)-110-116

Архипова Є. О. (2015). Електронне урядування як форма організації державного управління. *Державне управління: удосконалення та розвиток*, *5.* http://www.dy.nayka.com.ua/?op=1&z=855	Arkhypova, Ye. O. (2015). E-Government as a form of public administration. *Public Administration:Improvement and Development*, *5.* http://www.dy.nayka.com.ua/?op=1&z=855
Бойківська Г., & Саладяк К. (2022). Роль людського капіталу в забезпеченні ефективності розвитку підприємств. *Вісник Хмельницького національного університету.* Т. 1, 5. https://doi.org/10.31891/2307-5740-2022-310-5(1)-21	Boikivska, G., Saladiak, K. (2022). The role of human capital in ensuring effective development of enterprises. *Bulletin of the Khmelnytskyi National University*, *1*, 5. https://doi.org/10.31891/2307-5740-2022-310-5(1)-21
Грішнова О. А. (2001). *Людський капітал: формування в системі освіти і професійної підготовки*: монографія. Київ: Знання, 256 с.	Grishnova, O. A. (2001). *Human capital: formation in the system of education and professional training*. Kyiv: Znannia, 256 p.
Жекало Г. І., Заяць М. Я., & Вакун О. В. (2020). Сутність та зміст електронного урядування: концептуальний вимір. *Державне управління: удосконалення і розвиток*, *8*. https://doi.org/10.32702/2307-2156-2020.8.52	Zhekalo, G. I., Zaiats, M. Ya., & Vakun, O. V. (2020). Essence and content of e-government: a conceptual dimension. *Public Administration: Improvement and Development*, *8*. https://doi.org/10.32702/2307-2156-2020.8.52
Залознова Ю. С., & Азьмук Н. А. (2022). Людський капітал України в умовах війни: втрати та здобутки. *Економіка та суспільство.* Вип. 38. https://doi.org/10.32782/2524-0072/ 2022-38-59	Zaloznova, Yu. S., & Azmuk, N. A. (2022). Human capital of Ukraine in the conditions of war: losses and gains. *Economy and Society*, *38*. https://doi.org/10.32782/2524-0072/2022-38-59
Косарєв Т. В., Лазебна І. В., & Пасик-Косарєва Н. О. (2019). Забезпечення системи освіти елементами електронного урядування. *Публічне управління і адміністрування в Україні.* Вип. 10. http://www.pag-journal.iei.od.ua/archives/2019/10-2019/13.pdf	Kosariev, T. V., Lazebna, I. V., & Pasyk-Kosarieva, N. O. (2019). Supporting education system by elements of electronic governing. *Public Administration in Ukraine*, 10. http://www.pag-journal.iei.od.ua/archives/2019/10-2019/13.pdf
Міщенко В. С. (2022). Повоєнне відновлення України на засадах соціальної справедливості (економіко-правовий аспект). *Юридичний науковий електронний журнал, 10*. https://doi.org/10.32782/2524-0374/2022-10/63	Mishchenko, V. S. (2022). Post-war reconstruction of Ukraine on the basis of social justice (economic and legal aspect). *Juridical Scientific and Electronic Journal*, *10*. https://doi.org/10.32782/2524-0374/2022-10/63
Погрєбняк І. Є. (2014). Електронний уряд (E-government) і електронне урядування (E-governance): поняття і принципи функціонування. *Право та інновації, 3(7)*. https://www.pti.org.ua/index.php/ndipzir/article/view/158	Pogrebnyak, I. Ye. (2014). Electronic government (E-government) and E-governance (E-governance): concepts and principles of operation. *Law and Innovation*, *3(7)*. https://www.pti.org.ua/index.php/ndipzir/article/view/158
Прушківська Е. В., & Переверзєва А. В. (2007). Людський капітал: проблеми та перспективи. *Економічний вісник НГУ, 3*. https://ev.nmu.org.ua/docs/2007/3/EV20073_017-024.pdf	Prushkivska, E. V., & Pereverzieva, A. V. (2007). Human capital: problems and prospects. *The Economic Messenger of the NMU*, *3*. https://ev.nmu.org.ua/docs/2007/3/EV20073_017-024.pdf
Розпорядження Кабінету Міністрів України (2017). *Про схвалення Концепції розвитку електронного урядування в Україні*. https://zakon.rada.gov.ua/laws/show/649-2017-%D1%80#Text	Order of the Cabinet of Ministers of Ukraine (2017). *On approval of the Concept of E-governance development in Ukraine*. https://zakon.rada.gov.ua/laws/show/649-2017-%D1%80#Text
Урядовий портал (2020). Єдиний вебпортал виконавчої влади України. *Розвиток людського капіталу*. https://www.kmu.gov.ua/diyalnist/reformi/rozvitok-lyudskogo-kapitalu	Government portal (2020). Official website. *Human Capital Development*. https://www.kmu.gov.ua/diyalnist/reformi/rozvitok-lyudskogo-kapitalu

Фонарьова Т. А. (2017). Людський капітал як економічний, культурний і соціальний феномен. *Економіка і суспільство.* Вип. 9. https://economyandsociety.in.ua/journals/9_ukr/162.pdf	Fonaryova, T. A. (2017). Human capital assets as economic, cultural and social phenomenon. *Economy and Society*, *9*. https://economyandsociety.in.ua/journals/9_ukr/162.pdf
Фурашев В. М. (2012). Сутність та визначення поняття "електронне урядування". *Правова інформатика. 3(35).* http://ippi.org.ua/sites/default/files/12fvmpeu.pdf	Furashev, V. M. (2012). The essence and definition of the concept of "electronic governance". *Legal Informatics*, *3(35)*. http://ippi.org.ua/sites/default/files/12fvmpeu.pdf

Conflict of interest. The author certify that she dosn't have any financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that the author is affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution.

The author received no direct funding for this research.

Ilyina A. Electronic governance in the human capital assessment system. *Scientia Fructuosa*. 2023. № 5. S. 20-33. https://doi.org/10.31617/1.2023(151)02

Received by the editorial office 30.08.2023.
Sent for revision 20.09.2023.
Accepted for printing 27.09.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)03
UDC 004:[339.92:336.76=111

MELNYK Tetiana,
Doctor of Sciences (Economics),
Professor, Head of the Department of International Management
State University of Trade and Economics,
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0002-3839-6018
t.melnyk@knute.edu.ua

KLYM Oleh,
PhD Student
of the Department of International Management
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0003-3134-9558
o.klym@knute.edu.ua

VIRTUAL ASSETS IN THE CONTEXT OF GLOBAL ECONOMIC INSTABILITY

Virtual assets, such as crypto-currencies, have become the object of significant interest in the conditions of global economic instability, when people are looking for alternative investment opportunities and means of saving funds. One of the reasons for the growing popularity of virtual assets in such conditions is their independence from traditional financial markets and the potential for diversification of the investment portfolio. In times of economic instability, such traditional assets as stocks and bonds can be highly dependent on market fluctuations. Instead, virtual assets can be a way for investors to preserve their funds and even make a profit. At the same time, the market of virtual assets is extremely risky. It is known for its volatility, which can lead to significant losses for investors. Therefore, the investment strategy, which provides for the distribution of assets to reduce risk, is optimal in conditions of economic instability. Virtual assets can play an important role in diversifying an investment portfolio, reducing overall risk, as these assets

МЕЛЬНИК Тетяна,
д. е. н., професор, завідувач кафедри міжнародного менеджменту
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0002-3839-6018
t.melnyk@knute.edu.ua

КЛИМ Олег,
аспірант кафедри міжнародного менеджменту
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0003-3134-9558
o.klym@knute.edu.ua

ВІРТУАЛЬНІ АКТИВИ В УМОВАХ ГЛОБАЛЬНОЇ ЕКОНОМІЧНОЇ НЕСТАБІЛЬНОСТІ

Віртуальні активи, такі як криптовалюти, стали об'єктом значного інтересу в умовах глобальної економічної нестабільності, коли люди шукають альтернативні інвестиційні можливості та засоби збереження коштів. Однією з причин зростання популярності віртуальних активів у таких умовах є їх незалежність від традиційних фінансових ринків і потенціал у диверсифікації інвестиційного портфеля. За економічної нестабільності такі традиційні активи, як акції та облігації, можуть сильно залежати від коливань ринку. Натомість віртуальні активи можуть стати для інвесторів способом зберегти свої кошти та навіть отримати прибуток. Водночас ринок віртуальних активів є надзвичайно ризикованим. Він відомий своєю волатильністю, що може призвести до значних втрат для інвесторів. Відтак, інвестиційна стратегія, що передбачає розподіл активів для зменшення ризику, є оптимальною в умовах економічної нестабільності. Віртуальні активи можуть відіграти важливу роль у диверсифікації інвестиційного портфеля,

can respond to market events independently of traditional assets.

The aim of this research is to determine the possibilities of using virtual assets in conditions of global economic instability. General scientific and special methods are applied: observation, description, comparison, analysis and synthesis. Data on prices of virtual assets and stock indices in online environments TraadingView and CoinMarketCap were used. The benefits of using virtual assets based on blockchain technology (using bitcoin as an example) in conditions of global economic instability are considered. A comparative analysis of the price of bitcoin with leading stock indices affecting the global economy was carried out. The main advantages and disadvantages of using virtual assets as investment tools and the prospects for their use in this area are determined.

Keywords: recession, crisis, cryptocurrency, Bitcoin, blockchain.

зменшуючи загальний ризик, оскільки ці активи можуть реагувати на ринкові події незалежно від традиційних активів. Метою цього дослідження є визначення можливостей використання віртуальних активів в умовах глобальної економічної нестабільності. Застосовано загальнонаукові та спеціальні методи: спостереження, опис, порівняння, аналіз та синтез. Використано дані про ціни віртуальних активів та біржові індекси в онлайн середовищах TraadingView та CoinMarketCap. Розглянуто переваги використання віртуальних активів на основі технології блокчейн (на прикладі біткоїну) в умовах глобальної економічної нестабільності. Проведено порівняльний аналіз ціни біткоїну з провідними біржовими індексами, що впливають на глобальну економіку. Визначено основні переваги та недоліки використання віртуальних активів як інвестиційних інструментів та перспективи їх використання у цій сфері.

Ключові слова: рецесія, криза, криптовалюта, біткоїн, блокчейн.

JEL Classification: F20, F21, G11, G12.

Introduction

Virtual assets (VA) are electronic forms of money stored in digital wallets and used to carry out various transactions, mainly settlement transactions. Most of these assets are based on Distributed Ledger Technology (DLT), which is based on the blockchain concept. Blockchain is defined as a system where data is divided into blocks and connected in a sequential chain, creating a reliable and decentralized network without intermediaries.

VAs originated as a means of storage and exchange, and over time has evolved into complex financial instruments with various functions, including insurance and investment. They are gaining more and more popularity among users and investors. As of 2023, the number of cryptocurrency owners is 402 million people. Institutional bodies and large companies that were previously unfamiliar or skeptical of cryptocurrencies are investing in virtual assets. These include MicroStrategy (US software developer, owns 140.000 BTC, equivalent to USD 4.2 billion, Tesla (US electric car manufacturer, USD 1.5 billion investment in BTC in 2020, introduction of Dogecoin as a means of payment on the site), Block Inc. (American technology company, owns 8.027 BTC, equivalent to 241 million USD), etc. (Bitcoin treasuries, 2023).

The regulation of VA is becoming increasingly important, and many countries are adopting relevant laws and regulations to protect users and investors. Japan and Switzerland are examples of countries that have already regulated this sector, while the USA and the European Union are considering

regulatory options. In the US, federal regulators such as the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) treat VAs as securities and not as tangible assets. This means that virtual assets are subject to the same rules and regulatory requirements as other financial derivatives. The European Union is at the stage of developing its own draft law "Regulation on Markets in Crypto Assets" (MiCA), i.e. "Regulation of virtual asset markets" (Proposal for a regulation of the European parliament and of the council on Markets in Crypto-assets, 2020).

Along with the advantages of using VA, there are also certain risks: legal status in different countries, volatility of prices for these assets, as well as the risk of hacker attacks on exchange platforms. However, interest in them continues to grow, especially among large investors, which affects international economic activity.

Ukraine is also joining these processes, and VAs are increasingly spreading among the population as a means of investment and payment. In Ukraine, a regulatory system is being formed to ensure the protection of users and investors in the field of virtual assets. In particular, the Law of Ukraine No. 2074-IX "On Virtual Assets" (2022) was adopted, but its entry into force has been postponed until the Tax Code of Ukraine is amended. After the full-scale invasion of the Russian Federation, digital currencies, in particular cryptocurrencies became more widespread as both an investment instrument and a payment instrument. The main prerequisites for this are the fall of the hryvnia, NBU restrictions on transactions with foreign currency, as well as such advantages of using virtual assets as anonymity, the possibility of transactions without intermediaries, speed and security of transactions (Blockchain industry has a great future in Ukraine, 2023).

Under modern conditions, new and important challenges arise that require careful analysis and study. One of them is the aggravation of economic instability, which poses a threat at all levels of the economy. In this context, VAs such as cryptocurrencies and digital financial instruments gain additional relevance and attract the attention of global financial market players. They open up new opportunities for subjects of international economic activity to carry out settlement operations, optimize the execution of international contracts, as well as invest in conditions of growing financial risk and instability. The gradual increase in the interest rate in the US, which is used to reduce the level of inflation, is also causing an increase in interest in VA among large investors and ordinary citizens.

The issue of using VA as an investment tool is considered by such scientists as Ganne, E. (2018), Trimborn, S., (2018), Lucey, B., (2019) and others. The main areas of research include the study of the properties of virtual assets, their technical features and economic value, the impact of

virtual assets on the financial system and banking activities, the analysis of risks and challenges associated with the use of virtual assets, such as fraud, money laundering and cyber-attacks. However, most of the information on the use of VA as an investment tool is not systematized, in addition, there is no unified system of indicators.

Therefore, the aim of the research is to determine the possibilities of using virtual assets in conditions of global economic instability.

To achieve this aim, the following tasks have been set: to consider the prerequisites of global economic instability and the use of countercyclical investment assets, to determine the aspects of using bitcoin as an investment asset during global economic instability, to assess the prospects for the use of alternative financial institutions in conditions of global economic instability.

The set tasks in their totality should give an idea of whether it is appropriate to use bitcoin and other VA as a countercyclical investment asset.

The methodological basis of this study is general scientific and special methods of scientific knowledge. Using the methods of observation, description and comparison, the prerequisites of global economic instability, the main countercyclical assets, and the differentiation of virtual assets by generation are determined. The method of analysis and synthesis was applied to determine the main trends in the price of bitcoin relative to the main stock market indicators and the impact of the halving on the price of bitcoin. Data on prices of virtual assets and stock indices in online environments TraadingView and CoinMarketCap were used. Conclusions are formulated by the method of generalization. The main part of the article consists of three sections.

The first chapter highlights the signs of global economic instability, the main countercyclical investment assets, the advantages of the "classic" crisis asset – gold, and its price fluctuations during global financial crises.

In the second part, the aspects of using bitcoin as an investment asset during global economic instability are disclosed, the trends in the price of bitcoin relative to the main stock market indicators are analyzed, and the change in the price of bitcoin after halvings is highlighted.

The third one is devoted to the analysis of the expediency of using alternative financial institutions as investment vehicles during global economic instability.

1. Countercyclical investment assets in conditions of global economic instability

The beginning of this decade is characterized as a period of special destruction in the history of mankind. The return to the "new reality" after the COVID-19 pandemic was quickly disrupted by the full-scale russian

invasion of Ukraine, which caused a new series of crises in all spheres. The beginning of 2023 brought various risks. Such "classical" risks as inflation, cost-of-living crises, trade wars, capital outflows from emerging markets, large-scale social protests, geopolitical confrontations, and the threat of nuclear war are returning. These risks are exacerbated by relatively new phenomena in the global risk landscape: unproductive debt levels, a new era of low growth, low global investment and deglobalization, the decline of human development after decades of progress, the rapid and unlimited development of dual (civilian and military) technologies, and increasing pressures from climate change and ambitions in the shrinking window to transition to a world limiting temperature rise to 1.5°C (The Global Risks Report, 2023).

According to the World Economic Forum's Global Risks 2023 report, economic risks are one of the most influential groups of risks, along with environmental, geopolitical, social and technological (*Figure 1*).

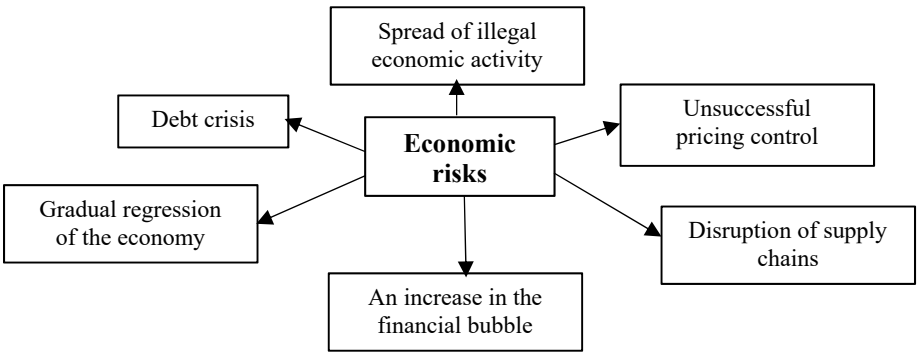


Figure 1. Global economic risks in the short and long term

Source: compiled by the authors based on data (Global Risks Report, 2023).

These risks, combined with other groups of risks, can cause global economic instability, which will have a wide range of consequences that affect various aspects of society and the economy. Under these conditions, the role of investment assets for the formation of an insurance reserve fund is growing.

Countercyclical investment assets are assets that are used for investment and move in opposite directions from the cyclical trends of economic development. In other words, these are assets that usually decrease in price or are stable during periods of economic strengthening and increase during periods of economic recession or crises.

According to the results of a Bloomberg survey, the main virtual asset – Bitcoin took the third place among the most attractive assets for hedging risks (*Figure 2*).

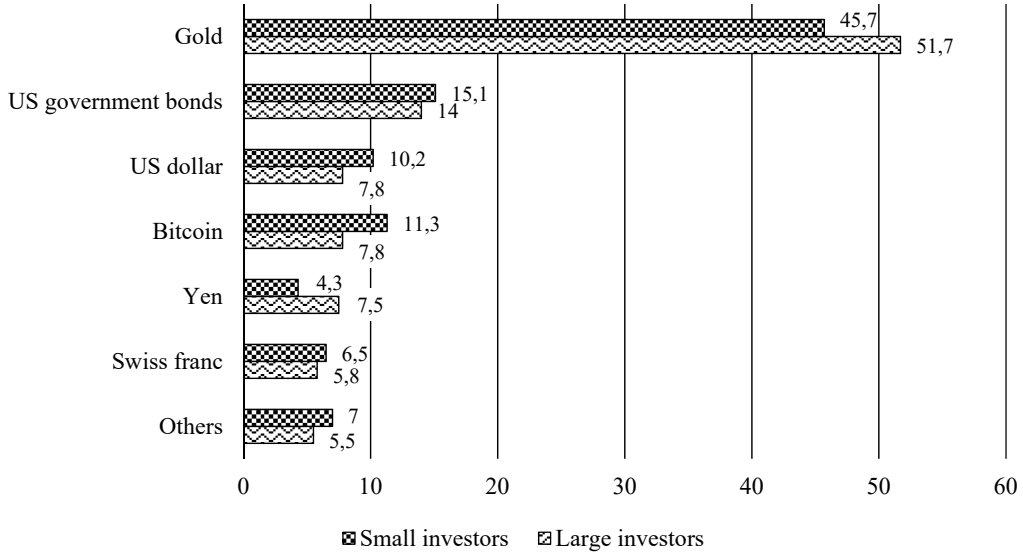


Figure 2. Poll results on the most attractive assets in the event of a US default

Source: (Partz, 2023).

First place was taken by gold, which has been used as a crisis asset for a long time, and US government bonds. Gold is often used as a means of hedging risks in the financial world (Mazaraki et al., 2022). There are several reasons why gold is a popular hedging tool:

- preservation of value;
- inverse fluctuation to the level of inflation;
- diversification of the investment portfolio.

As a result of the crisis of the 1970s, which was caused by the oil shock of 1973, rising inflation, as well as geopolitical tensions in the context of the Cold War, the price of a triple ounce of gold rose from US 35 dollars in 1970 to US 680 dollars in 1980. The global financial crisis caused the price to rise from US 924 dollars in January 2008 to US 1.823 dollars in 2011.

2. Aspects of using bitcoin as an investment asset in conditions of global economic instability

Bitcoin, which took the third place in this ranking, is often seen as one of the means of hedging risks in the financial world. This is explained by a number of factors.

Decentralization. Bitcoin is a digital cryptocurrency that works on the basis of blockchain technology. It does not depend on any central authority or government. Blockchain is a method of decentralized and distributed recording of data that is stored using cryptographic methods. Unlike traditional databases managed by a central authority, blockchain technologies rely on a peer-to-peer network that no one participant or outsider can fully

control. Transactions are authenticated using cryptographic means and a mathematical "consensus protocol" that defines the rules by which the database is updated and enables participants who may not trust each other to transact without relying on a third party to act as a guarantor fulfillment of obligations of the parties. The transparency, decentralization and stability of blockchain technology increases the interest of international companies and governments of countries to reveal the potential of using this technology in international economic activity, in particular to increase the efficiency of trade processes and create new concepts and projects using blockchain technology. This can provide a decentralized nature and independence from traditional financial markets, making Bitcoin a potential alternative for hedging risks. The first practical implementation of blockchain technology took place on January 3, 2009, when the first cryptocurrency Bitcoin was created and the first block in the chain was mined (A peer-to-peer electronic cash system). Since then, Bitcoin has remained the most famous cryptocurrency, which has opened up opportunities for the development of other projects based on blockchain technologies and virtual assets.

Diversification of the investment portfolio. Adding Bitcoin to your portfolio can help diversify your assets. Bitcoin has a slightly different correlation to traditional assets such as stocks or bonds, which can reduce overall portfolio risk *(Figure 3)*.

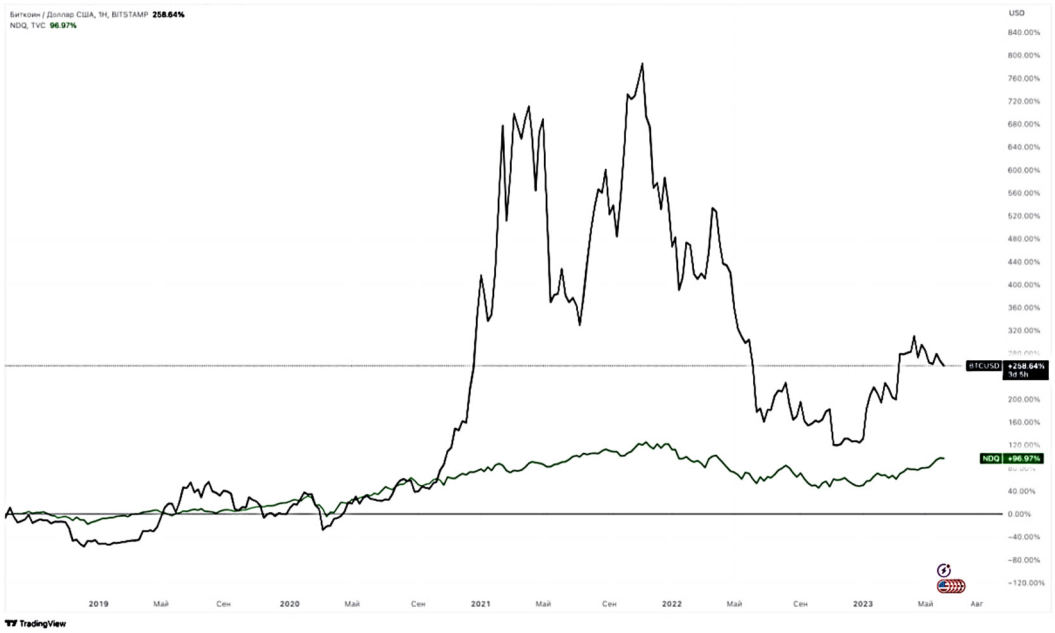


Figure 3. Comparative dynamics of the bitcoin price (black line) and the NASDAQ index (green line) for 2022-2023

Source: compiled by the authors in the TradingView environment, using BTCUSD, Bitstamp and NDQ charts, TVC (Livestock, index, futures, forex and bitcoin charts on TradingView, n.d.).

NASDAQ (National Association of Securities Dealers Automated Quotations) is one of the largest American stock indexes. It contains stocks of technology companies as well as companies from other sectors that are traded on the NASDAQ stock exchange. It is commonly used to measure market performance, which allows tracking and analysis of the impact of the technology sector on the market and offers a variety of technology solutions to increase trading efficiency. Bitcoin is only partially correlated with this index (Cheon et al., 2023).

The DXY dollar strength index is also an important indicator of market sentiment. This index measures the value of the US dollar against a basket of major world currencies, including the euro, Japanese yen, British pound, Canadian dollar, Swedish krona and Swiss franc. The DXY index is used to measure the strength of the US dollar relative to other world currencies. An increase in the DXY index indicates a strengthening of the dollar against other currencies, while a decrease in the index indicates a weakening of the dollar. Investors and traders use the DXY index to analyze currency market trends and identify potential risks and opportunities (*Figure 4).*

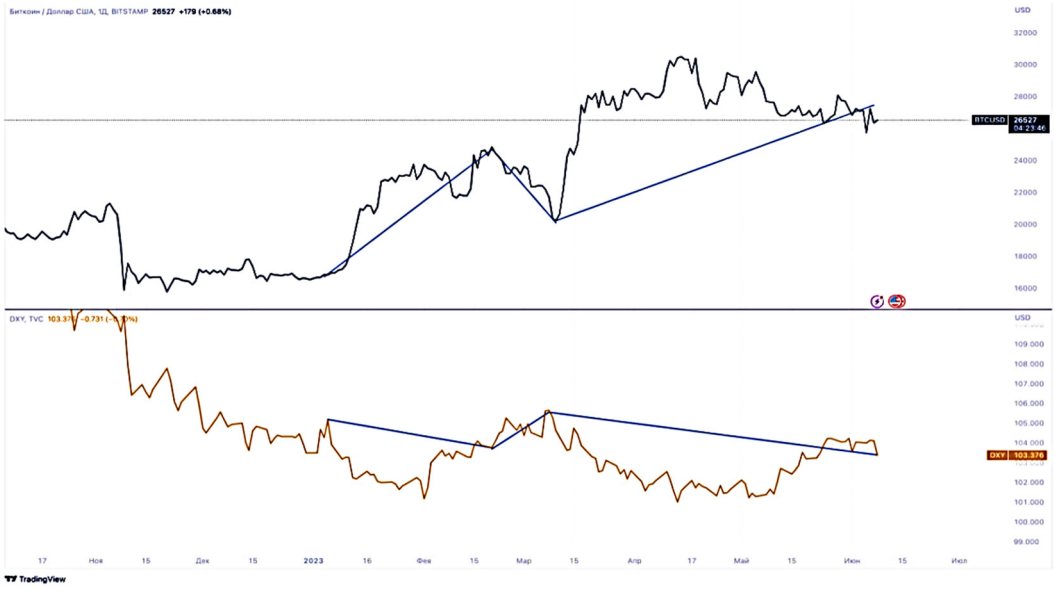


Figure 4. Comparative dynamics of the Bitcoin and DXY price for 2022 – 2023

Source: compiled by the author in the TradingView environment, using BTCUSD, Bitstamp and DXY charts, TVC (Livestock, index, futures, forex and bitcoin charts on TradingView, n.d.).

The chart shows the relative trend lines of both indicators with blue segments. The trends of Bitcoin and the Dollar Strength Index are inverse, indicating an increase in public and investor interest in cryptocurrencies and Bitcoin as the value of the US dollar declines. This makes a strong case for using Bitcoin as a hedge against global economic instability.

Projected cost growth. Bitcoin is known for its high volatility and can experience significant changes in value over a short period of time. This can

create opportunities to increase the value of the portfolio in conditions of risk or volatility in the financial markets. The asset's market capitalization peaked at USD 1.2 trillion in 2021 (*Figure 5*).

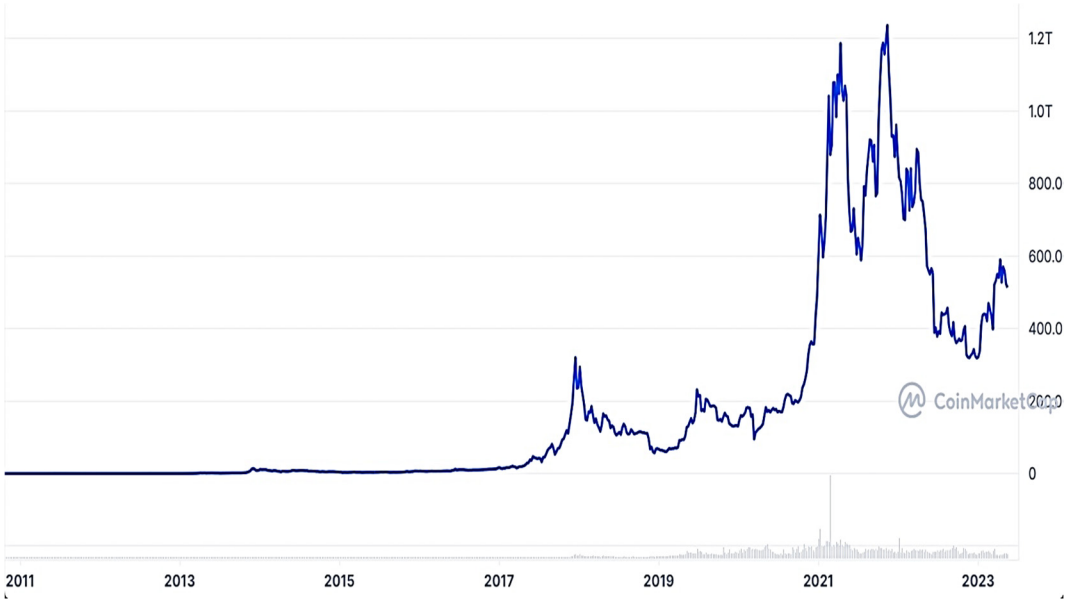


Figure 5. Dynamics of Bitcoin market capitalization in 2011–2023

Source: compiled by the authors in the CoinMarketCap environment, BTC Capitalization graph (Bitcoin price Today, BTC to USD live price, market cap and Chart. CoinMarketCap. (n.d.).

One of the main factors in the growth of the price of Bitcoin is the halving. A Bitcoin halving is an act where the block reward on the Bitcoin network is halved. This occurs when a block is reached approximately every 4 years. Halving limits the supply of Bitcoin in the market, which causes demand to increase and the price of this asset to increase (*Table 1*).

Table 1

The impact of halving on the Bitcoin price

Halving date	Price on the day of halving, USD	Price after one year, USD	Bitcoin price change, %
28.11.2012	12.35	127	931
09.06.2016	650.63	2526.63	288
11.05.2020	8725.84	57668.63	560

Source: compiled by the authors based on data from TradingView BTCUSD, Bitstamp (Livestock, index, futures, forex and bitcoin charts on TradingView, n.d.).

The increase in the Bitcoin price due to halving during the year is significant and systemic, but the exact growth rate is impossible to predict due to the significant volatility of this asset (Ciaian et al., 2015).

3. Prospects for using other virtual assets as an investment tool

Bitcoin uses the blockchain as a technological tool, and the number of cryptocurrencies and technologies that use this method of storing and exchanging information is constantly growing (*Table 2*).

Table 2

Dynamics of the number of active cryptocurrencies in the world for 2013–2023

Year	Number of active cryptocurrencies
2013	7
2015	501
2017	636
2019	2086
2021	4154
2022	8714
2023	8856

Sourse: (Howarth, 2023).

The results of the analysis of the given data indicate that the number of active cryptocurrencies is constantly growing, which leads to an increase in interest in these assets. But, despite the growing number, the total number of inactive or unsupported cryptocurrencies is 14.408, which demonstrates significant risks for investments in these assets.

The main advantage of using alternative VAs is the possibility of diversification. Virtual assets (Ethereum, Ripple, Litecoin, etc.) allow investors to expand their portfolios and reduce the risk of concentration of funds in one asset; improve the balance and stability of the investment basket. Alternative VAs may have their own price formation trends, which is especially important in conditions of fluctuations in global financial markets. Also, a significant factor in the use of alternative VAs as an investment tool is the technological aspect of the blockchain, namely the evolution of generations, which includes the creation of new and improvement of existing capabilities of technologies based on the blockchain (*Table 3*).

Table 3

Comparative characteristics of cryptocurrencies of different blockchain generations

Generation (examples)	Technological aspect	Advantages
First (BTC)	The first practical implementation of blockchain technology	BTC has the highest market capitalization and the highest degree of trust among investors
Second (Ethereum)	Added "smart contracts" and decentralized applications (DApps)	Opening up a wide range of opportunities for development and innovation. ETH is the second largest cryptocurrency in the world
Third (Cardano, ADA; Polkadot, DOT; Solana, SOL, so on)	Focused on overcoming the limitations of previous generations, including increasing the speed of transaction processing and scalability	Providing advanced opportunities for developing applications and protocols
Others (NFT-platfoms, DeFi and so on)	Creation of non-fungible tokens and decentralized financial instruments based on the blockchain of the second and third generations	The ability to create and trade digital artwork, exchange financial instruments without intermediaries, and more

Source: (Howarth, 2023).

Alternative VAs open up a wide range of opportunities for investors. These digital assets can be a portfolio diversification tool, have great technological potential and provide global market access. However, their use is also accompanied by significant risks and requires caution and awareness. Still, virtual assets have the potential to become an important investment tool in the future and deserve the attention of investors willing to explore this market.

Conclusions

Virtual assets (VA) are becoming an increasingly popular payment and investment tool. Every year, this area is rapidly expanding: the capitalization of VA is growing, their number is increasing, blockchain is gradually replacing the centralized system of information storage and exchange.

The decentralization, autonomy of the VA on the blockchain architecture, in particular the most popular cryptocurrency Bitcoin, implies consideration of this group of assets as a tool for hedging financial risks during global economic instability. The pandemic of the COVID-19 coronavirus since the beginning of 2020, and then the full-scale invasion of the russian Federation on the territory of Ukraine caused the largest recession of the world financial market since 2008. This period is characterized by a drop in the growth rates of the economic development of states, an increase in inflation within countries, and a reduction in investments.

This research has been showed that Bitcoin, like gold, can be used as a tool for hedging risks. The main prerequisites for this are the relative independence of bitcoin, which has a different price dynamics from traditional financial markets, which makes it possible to diversify the investor's portfolio as much as possible and reduce the risk of losing funds in the event of a further increase in the level of consumer prices. Also highlighted is the inverse relationship between the Bitcoin price and the DXY Dollar Strength Index. This shows the increasing interest of the public and investors in Bitcoin and all VAs in general when the US dollar, which is the leading traditional currency in the world, falls. The independence of VA and Bitcoin from any jurisdiction also allows for the distribution of risks associated with political instability or currency restrictions in certain regions, and technological progress favors investment in this area, making it more independent of traditional financial instruments.

The main risk of using virtual assets as a means of hedging risks is the significant volatility of the price of these assets compared to traditional ones such as gold and bonds. This factor reduces the attractiveness of VA as a risk hedging tool for large investors, but has less impact on retail investors. A factor that negatively affects both groups of investors is the legal uncertainty of some aspects of the use of VAs, as well as the desire of state financial regulators of the leading countries of the world to partially or completely limit transactions with them. An example is the ongoing lawsuits by the SEC (the US federal regulator responsible for overseeing and regulating financial markets, including securities, exchanges and brokerages) against cryptocurrency exchanges and issuers of virtual assets. Also, a significant number of inactive cryptocurrencies that have completely lost their intrinsic value is a possible negative factor, which limits the diversification of the investment portfolio by various VAs.

Therefore, virtual assets can be used as a method of hedging financial risks during global economic instability, but due to insufficient legal protection and significant price volatility, investments in these assets carry greater risks than traditional hedging assets, so their use is appropriate only as a component of a diversified investment portfolio.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	**REFERENCE**
Закон України № 2074-IX "Про віртуальні активи". (2022). https://zakon.rada.gov.ua/laws/show/2074-20#Text	Law of Ukraine No. 2074-IX "About virtual Assets". (2022). https://zakon.rada.gov.ua/laws/show/2074-20#Text
Proposal for a regulation of the european parliament and of the counciL on Markets in Crypto-assets, and amending Directive (EU) 2019/1937. (2020). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593	Proposal for a regulation of the european parliament and of the counciL on Markets in Crypto-assets, and amending Directive (EU) 2019/1937. (2020). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593
A peer-to-peer electronic cash system. Bitcoin. (n.d.). https://bitcoin.org/en/bitcoin-paper	*A peer-to-peer electronic cash system.* Bitcoin. (n.d.). https://bitcoin.org/en/bitcoin-paper

Мазаракі, А., Мельник, Т., & Демків, Ю. (2022). Золотоінвестиційна константа у світових економічних трансформаціях. *Вісник Київського національного торговельно-економічного університету*, *1*, 4-25. https://doi.org/10.31617/visnik. knute.2022(141)01	Mazaraki. A., Mel'nyk, T., & Demkiv, Ju. (2022). Goldinvestment constant in world economic transformations. *Herald of Kyiv National University of Trade and Economics*, *1*, 4-25. https://doi.org/ 10.31617/visnik.knute.2022(141)01
Cheon, M., Choi, H., Joo, H., & Lee, O. (2023). Disclosing the relationship between NASDAQ and Bitcoin via Artificial Intelligence Approach: Machine Learning and deep learning. *Artificial Intelligence and Communication Technologies,* 1053-1062. https://doi.org/10.52458/978-81-955020-5-9-100	Cheon, M., Choi, H., Joo, H., & Lee, O. (2023). Disclosing the relationship between NASDAQ and Bitcoin via Artificial Intelligence Approach: Machine Learning and deep learning. *Artificial Intelligence and Communication Technologies,* 1053-1062. https://doi.org/10.52458/978-81-955020- 5-9-100
Ciaian, P., Rajcaniova, M., & Kancs, d'Artis. (2015). The economics of Bitcoin Price Formation. *Applied Economics, 48*(*19*), 1799-1815. https://doi.org/10.1080/ 00036846.2015.1109038	Ciaian, P., Rajcaniova, M., & Kancs, d'Artis. (2015a). The economics of Bitcoin Price Formation. *Applied Economics, 48*(*19*), 1799-1815. https://doi.org/ 10.1080/00036846.2015.1109038
Corbet, S., Lucey, B., Urquhart, A., & Yarovaya, L. (2019). Cryptocurrencies as a financial asset: A systematic analysis. *International Review of Financial Analysis, 62,* 182-199. https://doi.org/ 10.1016/j.irfa.2018.09.003	Corbet, S., Lucey, B., Urquhart, A., & Yarovaya, L. (2019). Cryptocurrencies as a financial asset: A systematic analysis. *International Review of Financial Analysis*, *62*, 182-199. https://doi.org/ 10.1016/j.irfa.2018.09.003
Elendner, H., Trimborn, S., Ong, B., & Lee, T. M. (2018). The cross-section of crypto-currencies as financial assets 1 1Financial support from the Deutsche Forschungsgemeinschaft via CRC 649 "economic risk" and IRTG 1792 "high dimensional non stationary time series," Humboldt-Universität zu Berlin, is gratefully acknowledged. Handbook of Blockchain, Digital Finance, and Inclusion. Vol. 1, 145-173. https://doi.org/10.1016/b978-0-12-810441-5.00007-5	Elendner, H., Trimborn, S., Ong, B., & Lee, T. M. (2018). The cross-section of crypto-currencies as financial assets 1 1Financial support from the Deutsche Forschungsgemeinschaft via CRC 649 "economic risk" and IRTG 1792 "high dimensional non stationary time series," Humboldt-Universität zu Berlin, is gratefully acknowledged. Handbook of Blockchain, Digital Finance, and Inclusion. Vol. 1, 145-173. https://doi.org/10.1016/b978-0-12-810441-5.00007-5
Partz, H. (2023, May 15). Bitcoin a top 3 asset in the event of US debt default: Survey. Cointelegraph. https://cointelegraph.com/news/bitcoin-top-3-asset-in-us-debt-default-survey	Partz, H. (2023, May 15). Bitcoin a top 3 asset in the event of US debt default: Survey. Cointelegraph. https://cointelegraph.com/news/bitcoin-top-3-asset-in-us-debt-default-survey
Howarth, J. (2023, March 14). How many cryptocurrencies are there in 2023? Exploding Topics. https://explodingtopics.com/blog/number-of-cryptocurrencies	Howarth, J. (2023, March 14). How many cryptocurrencies are there in 2023? Exploding Topics. https://explodingtopics.com/blog/number-of-cryptocurrencies
Блокчейн індустрія має велике майбутнє в Україні – CEO Whitepay Гліб Удовиченко. European Business Association. https://eba.com.ua/ blokchejn-industriya-maye-velyke-majbutnye-v-ukrayini-seo-whitepay-glib-udovychenko/	Blockchain industry has a promisisng future in Ukraine – CEO Whitepay Hlib Udovichenko. European Business Association. https://eba.com.ua/ blokchejn-industriya-maye-velyke-majbutnye-v-ukrayini-seo-whitepay-glib-udovychenko/
Bitcoin treasuries. (2023, August 12). 59 Biggest Companies Holding (Public/Priv). https://buybitcoinworldwide.com/treasuries/	Bitcoin treasuries. (2023, August 12). 59 Biggest Companies Holding (Public/Priv). https://buybitcoinworldwide.com/treasuries/
The global risks report 2023 – World Economic Forum. (n.d.). https://www3.weforum.org/docs/WEF_The_ Global_Risks_Report_2022.pdf. The global risks report 2022 – World Economic Forum. (n.d.). https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf	The global risks report 2022 – World Economic Forum. (n.d.). https://www3.weforum.org/docs/WEF_The_ Global_Risks_Report_2022.pdf . The global risks report 2022 – World Economic Forum. (n.d.). https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf

Ganne, E. (2018). Can blockchain revolutionize international trade? World Trade Organization.	Ganne, E. (2018). Can blockchain revolutionize international trade? World Trade Organization.
Live stock, index, futures, forex and bitcoin charts on TradingView. TradingView. (n.d.). https://www.tradingview.com/chart/?symbol=CRYPTO%3ABTCUSD	Live stock, index, futures, forex and bitcoin charts on TradingView. TradingView. (n.d.). https://www.tradingview.com/chart/?symbol=CRYPTO%3ABTCUSD
Bitcoin price Today, BTC to USD live price, marketcap and Chart. CoinMarketCap. (n.d.). https://coinmarketcap.com/currencies/bitcoin/	Bitcoin price Today, BTC to USD live price, marketcap and Chart. CoinMarketCap. (n.d.). https://coinmarketcap.com/currencies/bitcoin/

Conflict of interest. The authors certify that they have no financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that one of the authors is affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution.

The authors received no direct funding for this research.

The contribution of the authors is equal.

Melnyk T., Klym O. Virtual assets in the context of global economic instability. *Scientia fructuosa*. 2023. № 5. S. 34-47. https://doi.org/10.31617/1.2023(151)03

Received by the editorial office 15.09.2023.
Sent for revision 22.09.2023.
Accepted for printing 03.10.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)04
UDC 659.126:615.012=111

BONDARENKO Olena,
Doctor of Sciences (Economics), Professor,
Head of the Department of Marketing
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0002-5990-2522
o.bondarenko@knute.edu.ua

MELNYCHENKO Oleksandr,
PhD Student
of the Department of Marketing
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0001-8642-0388
o.v.melnychenko@knute.edu.ua

BRAND MANAGEMENT OF PHARMACEUTICAL ENTERPRISES UNDER A LARGE-SCALE CRISIS

With the beginning of hostilities, all pharmaceutical companies were forced to suspend their marketing activities. But from April-May 2022, promotional activities began to resume. The presented analysis of the pharmaceutical market of Ukraine for 2022 using the example of two groups of drugs – prescription and over-the-counter (according to the analytical system of market research PharmXplorer"/ "Pharmstandard") shows that significant opportunities have opened up for those pharmaceutical companies that have timely resumed marketing activities with brand promotion. Under these conditions, timely response to new challenges, promptness and flexibility in making marketing decisions become the main tasks of the functioning of the brand management system. It is those brands whose managers realize that promotion in wartime is both a risk and an opportunity at the same time, will become trendy, will be able to optimize efforts and find non-standard solutions for positioning and promotion. The aim of the research was to analyze whether the military situation affected the development of the pharmaceutical market of Ukraine and to determine the main strategic decisions in the brand management system to increase the efficiency of the functioning of pharmaceutical business enterprises. Using

БОНДАРЕНКО Олена,
д. е. н., професор, завідувач кафедри маркетингу
Державного торговельно-економічного
університету
вул. Кіото, 19, Київ, 02156, Україна

ORCID: 0000-0002-5990-2522
o.bondarenko@knute.edu.ua

МЕЛЬНИЧЕНКО Олександр,
аспірант кафедри маркетингу
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0001-8642-0388
o.v.melnychenko@knute.edu.ua

БРЕНД-МЕНЕДЖМЕНТ ФАРМАЦЕВТИЧНИХ ПІДПРИЄМСТВ ЗА МАСШТАБНОЇ КРИЗИ

З початком воєнних дій усі фармацевтичні компанії були вимушені призупинити свої маркетингові активності. Проте вже з квітня-травня 2022 р. промоційна діяльність почала відновлюватися. Результати аналізу фармацевтичного ринку України за 2022 р. на прикладі двох груп препаратів – рецептурних та безрецептурних (за даними аналітичної системи дослідження ринку "PharmXplorer"/"Фармстандарт") свідчать про те, що суттєві можливості відкрилися перед тими фармацевтичними компаніями, які вчасно відновили маркетингові активності з просування брендів. За цих умов вчасне реагування на нові виклики, оперативність та гнучкість у прийнятті маркетингових рішень стають основними завданнями функціонування системи бренд-менеджменту. Саме ті бренди, менеджери яких усвідомлюють, що промоція у воєнний час це і ризики, і можливості одночасно, стануть у тренді, зможуть оптимізувати зусилля та знаходити нестандартні рішення з позиціювання та просування. Метою дослідження є оцінка впливу військового стану на розвиток фармацевтичного ринку України та обґрунтування основних стратегічних рішень у системі бренд-менеджменту для підвищення ефективності функціонування підприємств

such methods as generalization, analysis and synthesis, comparison, tabular and graphic representation, it was found that despite the negative impact of the war, the demand for medicines remains high. However, the efficiency of enterprises is determined by the chosen marketing strategy. Therefore, correction, adaptation and rapid response to market needs are important for pharmaceutical business enterprises in wartime. For this, it is important for pharmaceutical companies to take a clear social position and adjust their promotional efforts according to changes in consumer priorities. At the same time, it is advisable to constantly plan and implement marketing activities for the promotion of brands. This also applies to drugs – almost every brand can be replaced by another generic drug. Timely restoration and continuation of promotional activity of brands in the conditions of martial law is, on the one hand, a marketing challenge, but, as the results of last year show, it is also a great opportunity to gain a leadership position and strengthen the brand's consumer loyalty.

Keywords: pharmaceutical market, brand, prescription (Rx) and over-the-counter (OTC) drugs, consumer demand, promotional activity, brand management.

фармацевтичного бізнесу. З використанням методів узагальнення, аналізу і синтезу, порівняння, табличного та графічного зображення встановлено, що попри негативний влив війни, попит на лікарські засоби залишається високим. Проте ефективність діяльності підприємств визначається обраною маркетинговою стратегією. Тому важливим для підприємств фармацевтичного бізнесу у воєнний час є корекція, адаптація та швидке реагування на потреби ринку. Фармацевтичним компаніям важливо зайняти чітку соціальну позицію та корегувати свої промоційні зусилля згідно зі змінами пріоритетів споживачів. При цьому маркетингові активності для просування брендів доцільно постійно планувати та впроваджувати. Це стосується і ліків – практично кожен бренд можна замінити іншим препаратом-генериком. Своєчасне відновлення та продовження промоційної активності брендів в умовах воєнного стану – це маркетинговий виклик, але, як показують результати минулого року, це й великі можливості завоювати лідерську позицію та посилити лояльність споживачів бренду.

Ключові слова: фармацевтичний ринок, бренд, рецептурні та безрецептурні препарати, споживчий попит, промоційна активність, управління брендом.

JEL Classification: I10, I11, M30, M31, M37.

Introduction

The pharmaceutical market of Ukraine in the pre-war period was a very complex, multi-level system that was constantly developing and growing. Even in 2021, in the conditions of quarantine restrictions related to the COVID-19 pandemic, the Ukrainian pharmaceutical market showed double digit growth in money compared to 2020 (Kirsanov, 2022). The key characteristics of the pharmaceutical market of Ukraine in the last pre-war years were a high level of competition, a fierce struggle for the consumer, a high level of import dependence, specific promotion technologies and a strong level of state regulation with a low level of state funding.

The full-scale invasion of the Russian Federation on the territory of Ukraine on February 24, 2022, led to an economic and humanitarian crisis, active migration of the population, a decrease in income, and a rapid increase in unemployment. The war dealt a devastating blow to Ukraine's economy. Of course, it also has led to a slowdown in the development of the pharmaceutical market. That is why changes in brand management strategy in the conditions of war become one of the decisive tools for strengthening the positions and competitiveness of pharmaceutical enterprises. Marketing and brand management, in turn, play a key role among the effective tools for the recovery and development of the pharmaceutical market of Ukraine.

Theoretical and methodological aspects of marketing research and principles of brand management were laid down by such outstanding classics as D. Aaker, T. Ambler, D. Atkin, M. Porter, K. Keller, F. Kotler, J. Kapferer, D. Trout, P. Drucker, etc. Modern Ukrainian and foreign scientists also pay considerable attention to the study of the features of brand management in new conditions. T. Heading, K. Knudzen and M. Bjer (2020), in Brand Management: Mastering Research, Theory, and Practice, highlight the importance of brand management in today's environment and emphasize that a new era is soon upon us when a deeper understanding of different brand aspects is needed, and businesses to strengthen their competitive advantage must make brand management a top priority. Professor K. Baumgarth (2020), in his study of the behavior of brands during a crisis, came to the conclusion that strong brands do not just survive crises, but thrives. The right brand management strategy can help brands emerge from any crisis stronger than ever before. T. Kunkel and R. Biscaia (2020) analyzed the current state of branding research on the example of sports brands and paid special attention to the relationships between related brands and the study of consumer buying behavior. M. Fetscherin and A. Sampedro (2019), investigating the concept of brand "forgiveness", made a conclusion that about 50 % of consumers are unlikely to ever forgive a brand for serious violations, and among those who do, they are more likely to forgive performance failures but never will forgive if the violation concerns the image or values of the brand.

Many studies by domestic scientists are devoted to the study of brand management in ensuring the competitiveness of businesses. In their researches of N. Shmatko, M. Panteleev, M. Karminska-Bielobrova and T. Myroshnyk (2022) it was found that when developing a company's strategy, it is necessary to take into account the value of one's brand and find its key advantages (2020). V. Tytykalo, S. Nevmerzytska in their works conducted a study of modern approaches to evaluating the effectiveness of brand management of the business. A. Mogylova and O. Shershneva (2023) studied the peculiarities of brand management under conditions of economic crisis when demand decreases and competition between brands increases. M. Lyshenko (2023) investigated the problem of forming effective brand management as a means of marketing activities of enterprises. O. Melnychenko and M. Melnychenko (2022). In their research studied and identified effective brand strategies in brand management in wartime conditions using the examples of the activities of 10 leading Ukrainian brands.

The studies of many domestic scientists and practitioners are devoted to applied aspects of branding in the activities of pharmaceutical enterprises. A. Razyk (2020) conducted a study in which they presented the trends and directions of development, the peculiarities of the pharmaceutical market of European countries, and also presented the possibilities of the pharmaceutical market of Ukraine and the strategic directions of its development.

O. Harmatyuk (2022) analyzed the dynamics of the turnover of pharmaceutical products and established the trend of growth of wholesale and retail turnover of these products during the last 5 pre-war years. O. Penkova, I. Korman and O. Semenda (2022) segmented the pharmaceutical market in order to plan the marketing activities of the business and search for investments. A. Fedorchenko, A. Kulyk, and I. Ponomarenko (2023) conducted a study of the use of cluster analysis to identify groups of pharmaceutical enterprises in the pharmaceutical market of Ukraine based on the use of a unified system of performance indicators. There are also the first works in which the development of the pharmaceutical market of Ukraine in the first months was analyzed. For example, S. Lyholat and M. Levitska (2022) evaluated the impact of the war on the pharmaceutical market, presented their forecasts for the further development of the pharmaceutical market of Ukraine and pointed out risk zones for drug manufacturers. L. Shymanovska-Dianych, O. Lozova and I. Yurko (2023), having analyzed the impact of the war on the domestic pharmaceutical market, noted a significant reduction in activity, a decrease in revenues and profits of pharmaceutical companies, which led to the searches for new alternative sources of increasing revenues. However, marketing tools of brand management and adaptive brand strategies under wartime conditions require further detailed analysis.

The aim of this research is to analyze the influence of the state of war on the development of the pharmaceutical market of Ukraine and to justify the main strategic decisions in the brand management system in order to increase the efficiency of the functioning of pharmaceutical enterprises.

To realize the aim, a hypothesis was formed that the state of war in Ukraine negatively affects the development of the pharmaceutical market, and quick response to new challenges and the use of the most effective marketing solutions become the main tasks of brand management in these conditions.

The following general scientific methods as generalization, analysis and synthesis, comparison, tabular and graphic representation were used to test the proposed hypothesis. The information base of the research was legislative and regulatory acts of the Verkhovna Rada of Ukraine, the Cabinet of Ministers of Ukraine, the Ministry of Health of Ukraine, and data from analytical studies of the pharmaceutical market by Proxima Research.

The main part of the article highlights internal and external problems of the pharmaceutical business under martial law, changes in demand on the pharmaceutical market with an analysis of the structure of drug consumption, changes in the demand for categories of medicines and dynamics of the average cost of 1 package of imported and domestically produced medicines, marketing activities of brand promotion at the pharmaceutical market such as visits by medical representatives, remote communication, conferences, advertising on television and on the Internet.

1. Marketing problems of pharmaceutical business enterprises

Since the beginning of the war, the marketing environment of pharmaceutical business enterprises has changed significantly. The marketing management systems of pharmaceutical enterprises have faced new problems and challenges due to the influence of internal and external factors.

Internal problems of the pharmaceutical business include the following:

Infrastructure losses. Warehouses with finished goods of pharmaceutical companies and distributors, big pharmacy chains, small retail pharmacies which were located in the occupied territories and in the front-line regions, were lost or underwent significant damage.

Lack of qualified personnel. National migration to Western regions and abroad, the mobilization of men led to problems with personnel.

Issues with the availability of some groups of medicines. Problems with imported raw materials at national drug manufacturers and shortage of imported drugs at distributors' warehouses led to the absence of some groups of medicines, including vital ones. As a result, such crucial medicines for the treatment of diabetes, thyroid diseases, etc. disappeared from the shelves of pharmacies (Weekly Pharmacy online, 2022, June 27).

The main external problems were:

Logistics issues. The increase in fuel prices has led to an increase in the cost of logistics, and, as a result, an increase in the price of medicines. Destruction of logistics routes, the impossibility of delivery to frontline regions and temporarily occupied territories.

The increase in the price of foreign-made raw materials due to the increase in the exchange rate and energy prices in Europe, which also led to an increase in the prices of medicines.

Reduction in the number of consumers. According to the UN, about 6 million Ukrainians remain abroad (Mind, 2022, October 20), and this is about 16 % of the customers-consumers of the pharmaceutical industry in the pre-war period.

Decrease in the purchasing power of the population. According to the State Statistics Service, inflation in Ukraine for 2022 is 26.6 %. According to the NBU, the unemployment rate reached 30 %. In fact only about 60 % of working age people has a job in Ukraine. The employment situation for IDPs is more complicated, only 40 % of them have a job (Zanuda, 2022).

Occupation of 1/5 of the territory of Ukraine. The population of the occupied territories is deprived of access to any medicines and pharmaceutical products, and the de-occupied territories are so destroyed that the opening of pharmacies does not become a priority task.

Significant volumes of humanitarian medical aid. This factor especially had an impact on the pharmaceutical market in the first months of the war, because charitable companies tried to provide medicines not only for the military, but also for civil Ukrainians, providing, first of all, vital medicines.

All these factors, of course, have a negative impact on the further development of the pharmaceutical market of Ukraine.

2. Changes in demand on the pharmaceutical market

At the beginning of the war, Ukrainians were not sure about the possibility of obtaining the necessary medicines whenever needed. This was confirmed by the buying boom at pharmacies in the country at the end of February – beginning of March, when people, especially those with chronic diseases, bought medicines to make their own stock for several months. However since April 2022, a sharp decline in the pharmaceutical market has been observed – almost twice as much as in February 2022 (*Figure 1*).

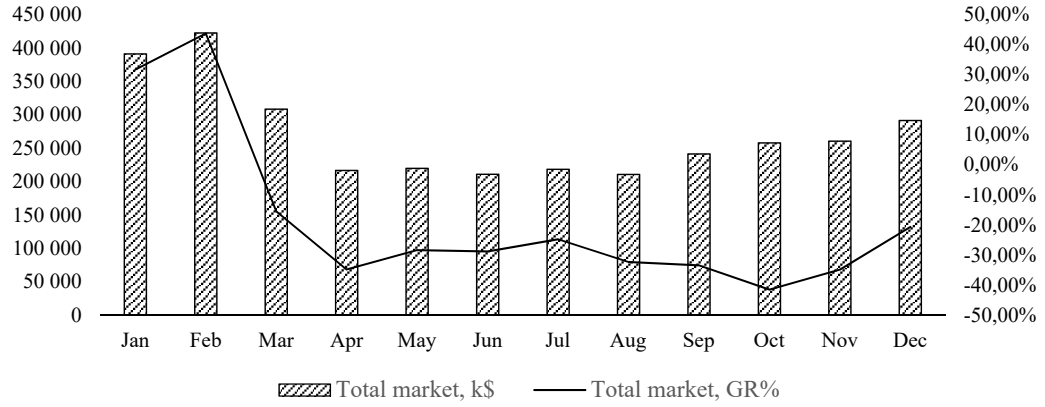


Figure 1. Dynamics of the pharmaceutical market of Ukraine in 2022

Source: compiled by the authors from the data of Proxima Research (2023).

Analytical evidence also suggests that during the wartime pharmaceutical companies with diversified portfolios and a greater share of prescription (Rx) drugs have greater opportunities as compared to over-the-counter (OTC) (Weekly Pharmacy online, 2022, June 27).

The analysis of the sales structure of Rx and OTC drugs for 2022 is presented in *Figure 2*.

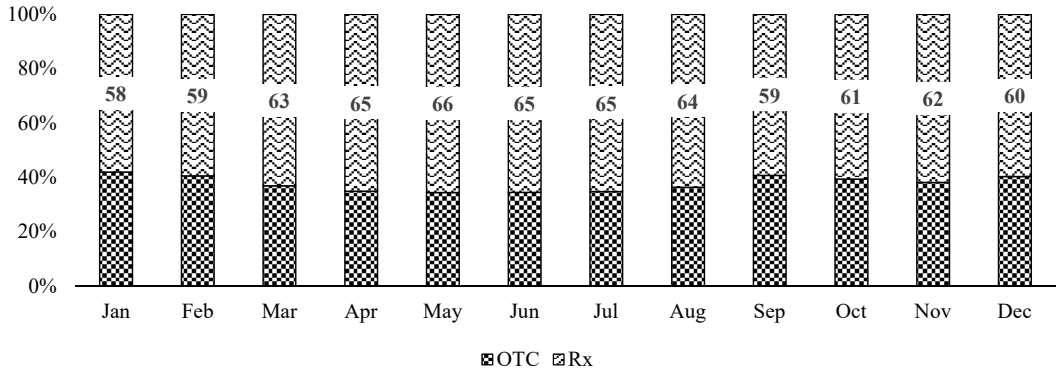


Figure 2. Sales trend of OTC and Rx drugs (%) in 2022 in Ukraine

Source: compiled by the authors from the data of Proxima Research (2023).

As we can see, the war affected the structure of drug consumption. At the beginning of the war, there was a decrease in demand for OTC drugs, as the population was more concerned with the treatment of chronic diseases (Rx drugs). The share of OTC drugs in June-July is 35 % (vs. 43 % before the war, in January 2022). This segment begins to increase at the end of the year and reaches 40 % in December, which is confirmation that the pharmaceutical market of Ukraine started recovering from September 2022.

At the beginning of the war, there was also a shift in consumption towards domestic medicines (*Figure 3*), which is associated with a decrease in the population's income and the choice of lower-cost medicines, i.e. medicines of domestic production. Thus, according to Proxima Research, in March-August 2022, 75 % of the pharmaceutical market (in packages) was shared by the Ukrainian manufacturers. Although the market share of drugs of foreign manufacturers (in packages) began to increase at the end of the year and reached 29 % in December (this was equal to the pre-war level in January 2022), which was a confirmation of the gradual recovery of the pharmaceutical market of Ukraine from September 2022.

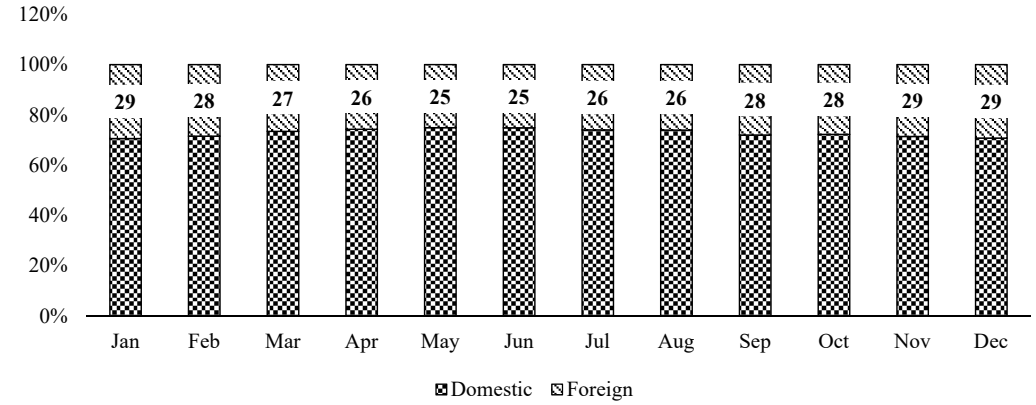


Figure 3. Sales trend of domestic and foreign drugs (%) in Ukraine (2022)

Source: compiled by the authors from the data of Proxima Research (2023).

There have also been changes in the demand for categories of medicines. Thus, if compared to 2022, the demand for painkillers and neurological drugs (sedatives), cardioprotectors, anti-inflammatory and anti-rheumatic drugs has remained at the same high level. On the contrary, the demand for vitamins, dietary supplements and anti-covid drugs (anti-thrombotic drugs, antibiotics) decreased, the consumption of which had increased significantly in previous years – especially the years of the COVID-19 pandemic (Mind, 2022).

This data is confirmed by the analysis of such an indicator as the evolutionary index (EI). EI demonstrates the increase in the share of the investigated category of drugs in the selected period in the market in relation to the same period last year, multiplied by 100. The increase in demand demonstrates EI significantly higher than 100, and, conversely, EI significantly lower than

100 is characteristic of its decrease. Thus, it can be stated that an EI significantly higher than 100 characterizes the growth in 2022 of the demand for dermatological (ATC class D), neurological (ATC class N), cardiovascular drugs (ATC class C) and drugs that affect the musculoskeletal system device (ATC class M) (*Table 1*). Conversely, the EI significantly less than 100 characterizes a decrease in the demand for antibiotics (ATC class J) and antithrombotic drugs (ATC class B).

Table 1

Dynamics of medicinal products sales according to the ATC classification in Ukraine, 2022

ATC class (code)	ATC class	Sales, k. of units	Growth, 2022/2021, %	EI
TOTAL pharmaceutical market		845 105	–20.87	100
N	Nervous system	162 887	–14.48	108
A	Alimentary tract and metabolism	153 652	–21.25	100
C	Cardiovascular system	134 633	–15.48	107
R	Respiratory system	115 094	–24.28	96
D	Dermatological	68 514	–13.55	109
M	Musculo-sceletal system	65 047	–15.22	107
J	General antiinfectives for systemic use	53 500	–37.66	79
B	Blood and blood forming organs	43 860	–34.74	82
G	Genito urinary system and sex hormones	17 778	–19.15	102
S	Sensory organs	15 746	–21.47	99
H	Systemic hormonal preparations, excl. sex hormones	6 502	–23.65	96
P	Antiparasitic products, insecticides and repellents	3 733	–24.80	95
L	Antineoplastic and immunomodulating agents	2 472	–30.95	87
V	Various	1 686	–45.44	69

Source: constructed by the authors from the data of Proxima Research (2023).

The average price of a drug package at the end of 2022 increased by more than 30 % as compared to the price at the beginning of 2022. Moreover, the prices of both imported drugs and drugs of domestic manufacturers have risen. And if the increase in prices for imported medicines was connected with a change (increase) in the official exchange rate of the hryvnia to the US dollar by 25 % in July 2022, the increase in prices for domestic medicines can be explained by the fact that most of the substances from which they are made have foreign origin, so their value also depends on the exchange rate.

As a result of such a price increase, the value of the brand (the original drug) decreases, and the first thing that worries both consumers and medical professionals is the optimal price/quality ratio (What pharmacists are talking about: the results of a "military" study, 2022). And in this case, domestic manufacturers have an advantage, because domestically produced medicinal goods are more than 2.5 times more affordable compared to foreign ones (*Table 2*).

Table 2

Dynamics of the average cost of 1 package of imported and domestic produced medicines in Ukraine, 2022

Medicines	Average price of a drug package, UAH	
	Jan 2022	Dec 2022
Foreign	195.91	254.65
Domestic	74.23	97.37

Source: constructed by the authors from the data of Proxima Research (2023).

Consequently, in the conditions of martial law, the structure of drug consumption changed, the share of consumption of domestically produced drugs and the average cost of drug package increased.

3. Marketing activities of brand promotion in the pharmaceutical business

At the beginning of hostilities, almost all companies suspended their promotional activities – visits of medical representatives to doctors and pharmacies, conferences and advertising. But from April-May 2022, pharmaceutical companies began to restore such promotion channels as visits by medical representatives, remote communication, conferences, advertising on television and on the Internet, and other marketing activities.

Promotion channels are slightly different for prescription and over-the-counter drugs. Let us analyze them using the example of 2 groups of drugs. Diosmin and combinations of diosmin with hesperidin, that is, drugs for the treatment of chronic venous diseases and hemorrhoids, were taken as an example of an over-the-counter group of drugs. And among the prescription drugs are drugs for the treatment of glaucoma (a dangerous eye disease that eventually leads to vision loss).

The drug group of diosmin and combinations of diosmin with hesperidin includes 9 brands registered as medicinal products, including 4 foreign brands and 5 domestic brands. The market leader in this group is the drug Detralex (Servier, France). As can be seen from *Table 3*, the group of these drugs shows a drop according to the results of 2022 which is 16.4 % in packages, but this is a less significant drop than that shown by the entire pharmaceutical market of Ukraine, namely 29.1 % (Kirsanov, 2023).

Table 3

Sales results of diosmin, diosmin+hesperidin drug in packages in 2022 in Ukraine

Brand+Market Organisation	Sales, kpcs	GR, %	EI	MS, %
Total	2 331.7	–16.4	100	100.0
DETRALEX Servier (France)	1 490.8	–11.2	106	63.9
NORMOVEN Kiev vitamin factory JSCo (Ukraine, Kyiv)	510.7	–23.2	92	21.9
PHLEBODIA Innotech (France)	187.9	–27.3	87	8.1
FLEBAVEN KRKA (Slovenia)	63.5	–14.4	102	2.7
DIOFLAN Arterium Corporation OJSC (Ukraine, Kyiv)	32.1	–35.6	77	1.4
AVENUE Farmak OJSC (Ukraine, Kiev)	24.5	–40.0	72	1.0
VASOKET UCB Pharma Sector (Belgium)	11.2	5.6	126	0.5
VENOSMIN Fitofarm PrJSC (Ukraine, Kyiv)	7.0	–32.7	80	0.3
VENORM Unipharma LLC (Ukraine, Kyiv)	4.1	26.0	151	0.2

Source: compiled by the authors from the Proxima Research Data (2023).

If you analyze the results by brands, you can see that there are brands that have demonstrated a better result than the group and the market as a whole, including the market leader in this group – the drug Detralex. The results of the analysis indicate a direct relationship between the sales volume of the drug and the recovery of promotional activity. As can be seen from *Figure 4* and *Figure 5*, the first of the brands that began to resume visiting activity of medical representatives from April 2022, and other marketing activities from July is Detralex. While other drugs were included in the active promotion later: Normoven (Kyiv Vitamin Plant) – from May, Phlebodia (Inotek, France) – from June, Phlebaven (KRKA, Slovenia) – from July. If we analyze the dynamics of promotion channels in 2022 (*Figure 6*), it can be seen that Detralex, starting from June, even shows an increase in activity (advertising on the Internet, on radio, television, in specialized press and conferences) compared to the previous period, i.e. from 2021.

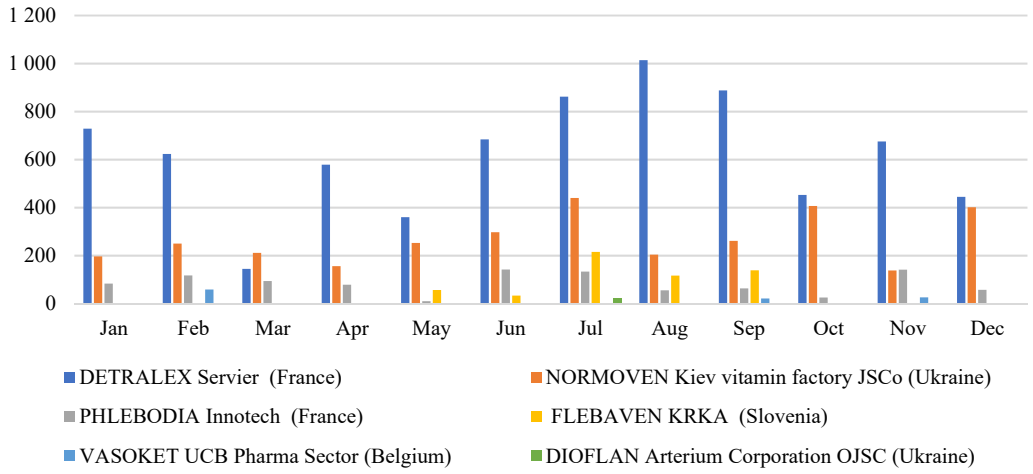


Figure 4. Dynamics of visiting activity of medical representatives in Ukraine (2022), Rec. Cnt. (group of drugs diosmin, diosmin+hesperidin)

Source: (Proxima Research, 2023).

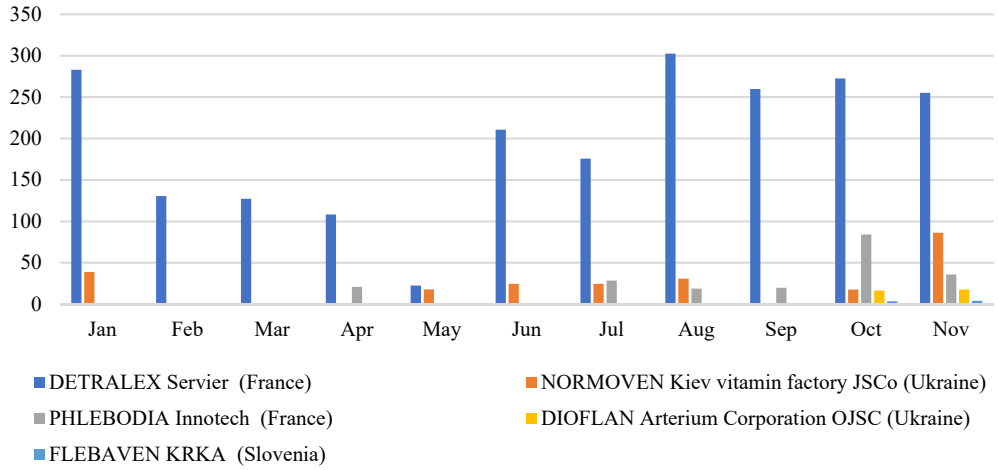
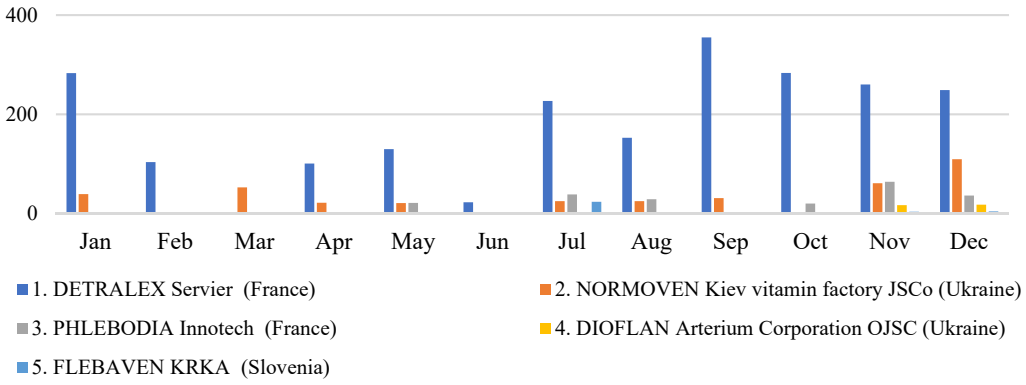
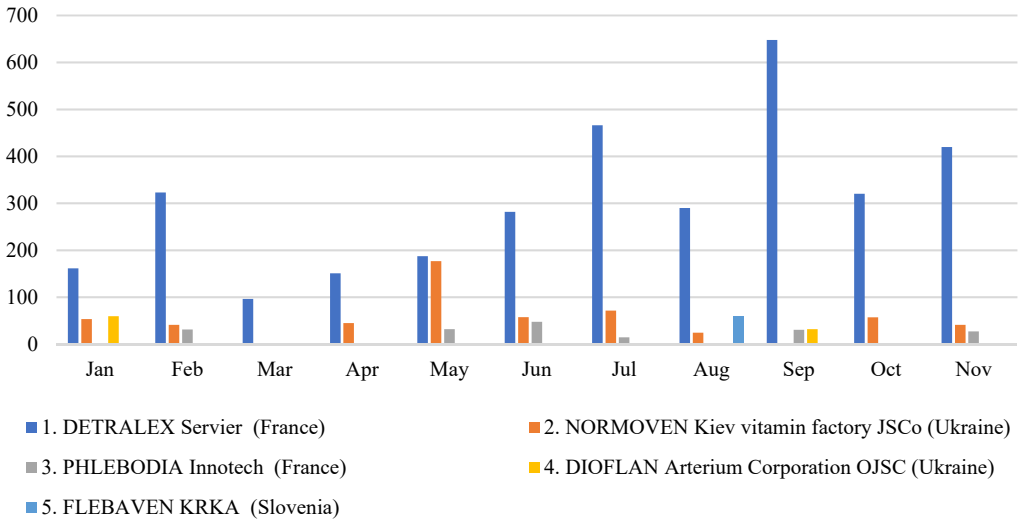


Figure 5. Dynamics of marketing activity in Ukraine (2022), Rec.Cnt (diosmin group, diosmin+hesperidin)

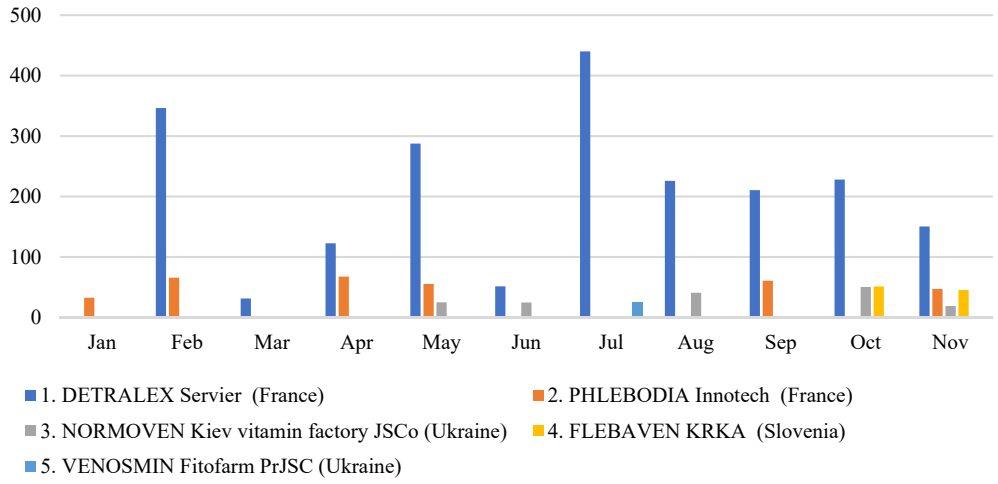
Source: (Proxima Research, 2023).



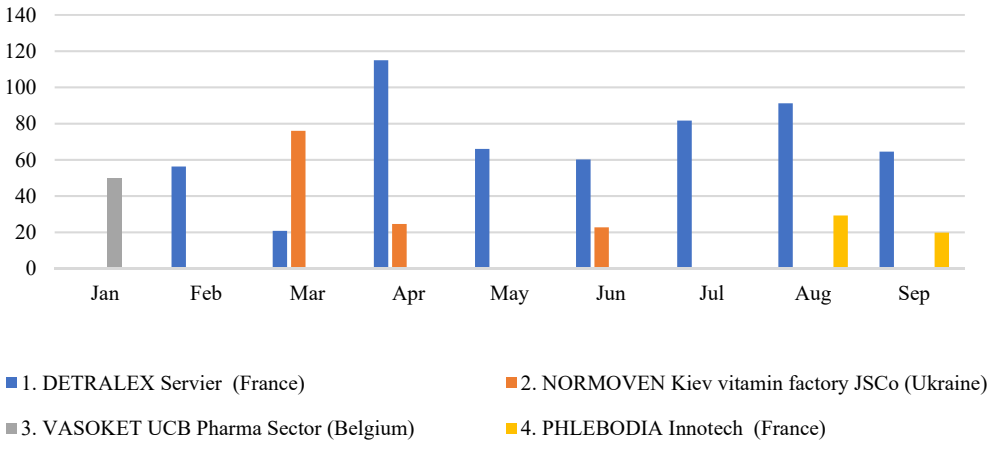
a)


700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
1. DETRALEX Servier (France)
2. NORMOVEN Kiev vitamin factory JSCo (Ukraine)
3. PHLEBODIA Innotech (France)
4. DIOFLAN Arterium Corporation OJSC (Ukraine)
5. FLEBAVEN KRKA (Slovenia)

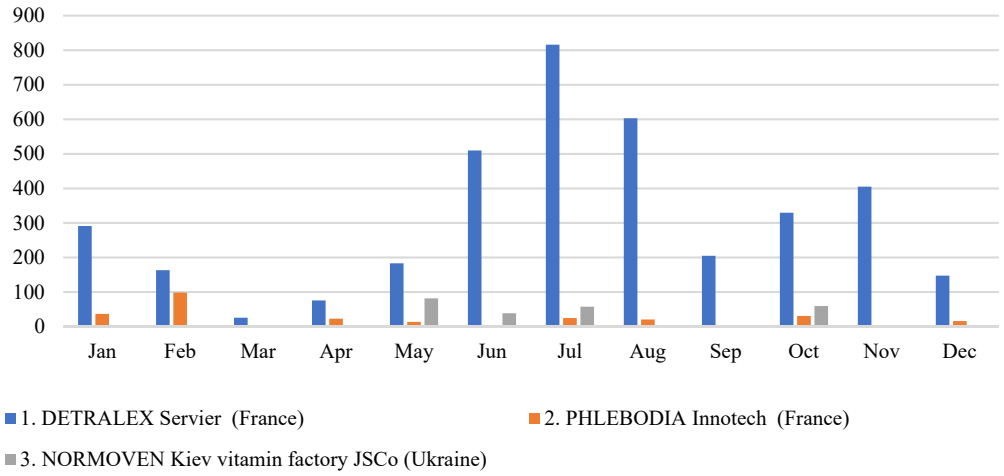
b)


500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
1. DETRALEX Servier (France)
2. PHLEBODIA Innotech (France)
3. NORMOVEN Kiev vitamin factory JSCo (Ukraine)
4. FLEBAVEN KRKA (Slovenia)
5. VENOSMIN Fitofarm PrJSC (Ukraine)

c)


140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
1. DETRALEX Servier (France)
2. NORMOVEN Kiev vitamin factory JSCo (Ukraine)
3. VASOKET UCB Pharma Sector (Belgium)
4. PHLEBODIA Innotech (France)

d)



e)

Figure 6. Dynamics of promotion channels in Ukraine, 2022
Rec.Cnt. (diosmin, diosmin+hesperidin drug group). a) – conferences; b) – advertising in the specialized press; c) – advertising on the Internet; d) – advertising on the radio; e) – advertising on television

Source: (Proxima Research, 2023).

The dynamics of promotional activity is fully correlated with the dynamics of drug sales (*Figure 7*). Therefore, the timely and fully recovered promotional activity enabled the Detralex brand to maintain a leading position in the group and show a better result than the group and the pharmaceutical market as a whole in 2022.

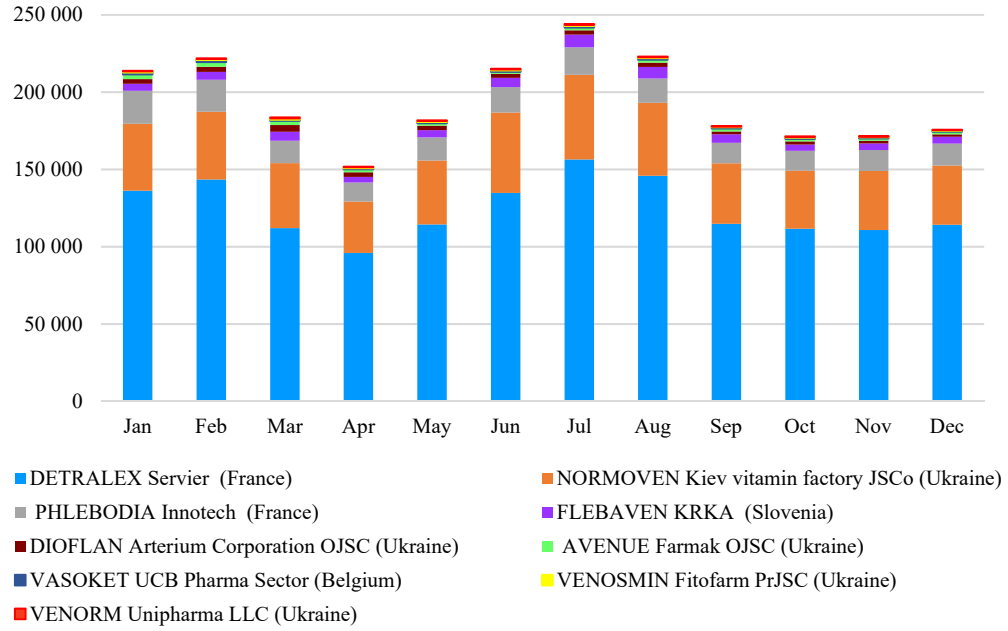


Figure 7. Sales dynamics of diosmin, diosmin+hesperidin in packages in Ukraine (2022)

Source: (Proxima Research, 2023).

The situation is different with prescription drugs, especially with drugs that are vital for the patients with chronic diseases and must be taken on a permanent basis. Let's analyze the market of antiglaucoma drugs, which includes 18 registeredbrands. This group of drugs shows a drop of less than 2 % compared to last year (*Table 4*), which confirms that the drugs are vital. But the analysis of brands shows a 25 % drop in sales of the leader of the group – the original drug Azarga (Novartis, Alcon, Belgium) and drugs of the domestic manufacturer Farmak. And if the significant drop in the drugs Brizol and Brizoton (Farmak) can be explained by the fact that at the beginning of the war, Farmak lost its warehouses with finished goods that caused the drugs disappearance from pharmacies for a while, the situation with Azarga is different.

Table 4

Results of antiglaucoma drugs sales in packages in Ukraine (2022)

Brand+Market Organisation	Sales. kpcs	GR, %	EI	MS,%
Total	963.06	–1.8	100	100.0
AZARGA Novartis Pharma (Switzerland)	232.80	–25.1	76	24.2
MARDOZIA Sona-Pharmexim LLC (Ukraine, Kyiv)	154.86	57.4	160	16.1
DORZAMED World Medicine (Great Britain)	126.71	–0.4	101	13.2
AZOPT Novartis Pharma (Switzerland)	99.44	3.7	106	10.3
DORZITIM Kiev vitamin factory JSCo (Ukraine, Kyiv)	86.35	8.3	110	9.0
DORZOPTIK Polpharma (Poland)	84.75	18.9	121	8.8
ROZACOM Adamed Pharma S.A. (Poland)	54.01	31.4	134	5.6
BRISAL Farmak OJSC (Ukraine, Kiev)	30.35	–47.4	54	3.2
BRIZOTON Farmak OJSC (Ukraine, Kyiv)	24.25	–20.2	81	2.5
COSOPT Santen (Finland)	14.20	0.8	103	1.5
ROZALIN Adamed Pharma S.A. (Poland)	14.00	–12.3	89	1.5
DORZOTYMOL Jadran (Croatia)	12.54	–47.0	54	1.3
REZLOD Sona-Pharmexim LLC (Ukraine, Kyiv)	7.26	59.4	162	0.8
DORSOL Jadran (Croatia)	7.26	1.1	103	0.8
BRINEX Sentiss Pharma (India)	5.23	1 141.6	1 264	0.5
BRINERA Sentiss Pharma (India)	5.11	5 690.4	5 897	0.5
DORZOPT Rompharm Company Georgia LLC (Georgia)	3.91	68.7	172	0.4

Source: compiled by the authors from the data of Proxima Research (2023).

As can be seen from *Figure 8*, Azarga disappeared from pharmacies in June-August 2022, and then reappeared. This indicates shortage of the drug in the warehouse of the company and distributors in Ukraine and problems with logistics from the country of production in the first months of the war. The result is a loss of sales and, that is most important, patients who were forced to switch to other drugs and will not return. The situation with the absence of Azarga was taken as advantage by other players on the market who had sufficient warehouses, thought out logistics in time and ensured the availability of such necessary drugs in pharmacies in the regions. This primarily applies to the Mardozia brand (Sona-Pharmexim, Pharmaten, Greece), which showed a growth of +57 % compared to 2021.

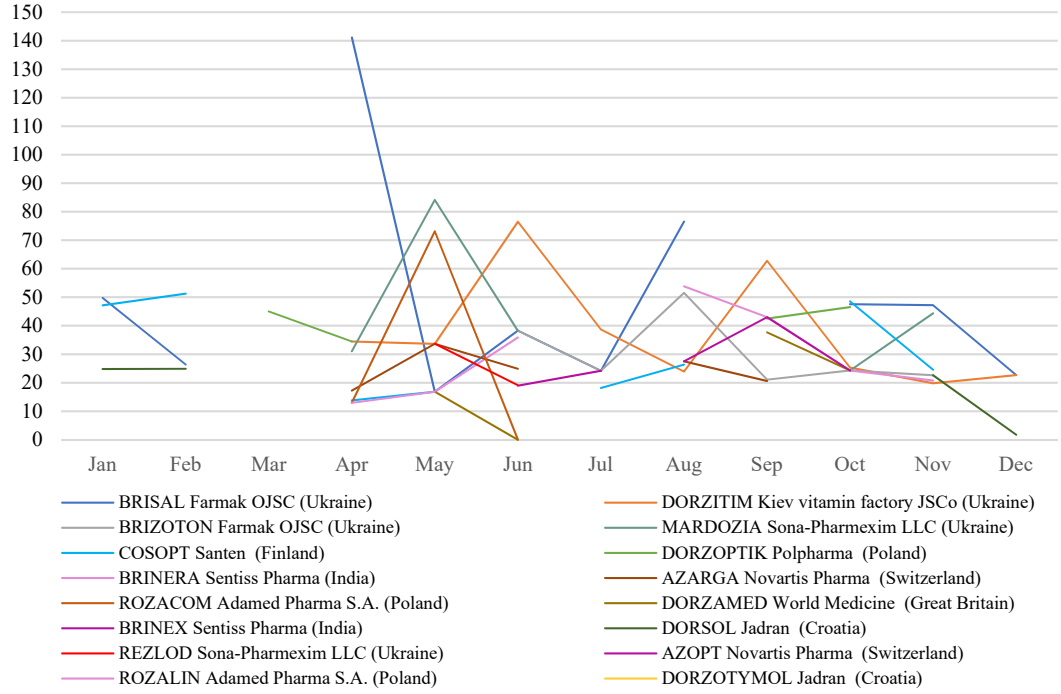


Figure 8. Dynamics of sales of antiglaucoma drugs in packages in 2022 in Ukraine

Source: (Proxima Research, 2023).

If we analyze the promotional activity, namely the visits of medical representatives (*Figure 9*), we do not see a particular difference between the brands or any extraordinary activity, but we clearly see issues with the penetration (that is, the presence of the drug in pharmacies) of Azarga and drugs produced by Farmak (*Figure 10*) and at the same time increase in the penetration of Mardozia. Another factor that played on Mardozia's side in this situation is the price (*Figure 11*). Glaucoma patients are elderly people, so the price of the drug has a very important role in the consumer's choice of the drug. And as we can see from *Figure* 11, the price of Mardozia is almost half the price of the original drug Azarga. This is another confirmation for the statement that in wartime the value of the original drug falls, and patients choose the drug with the best price/quality ratio.

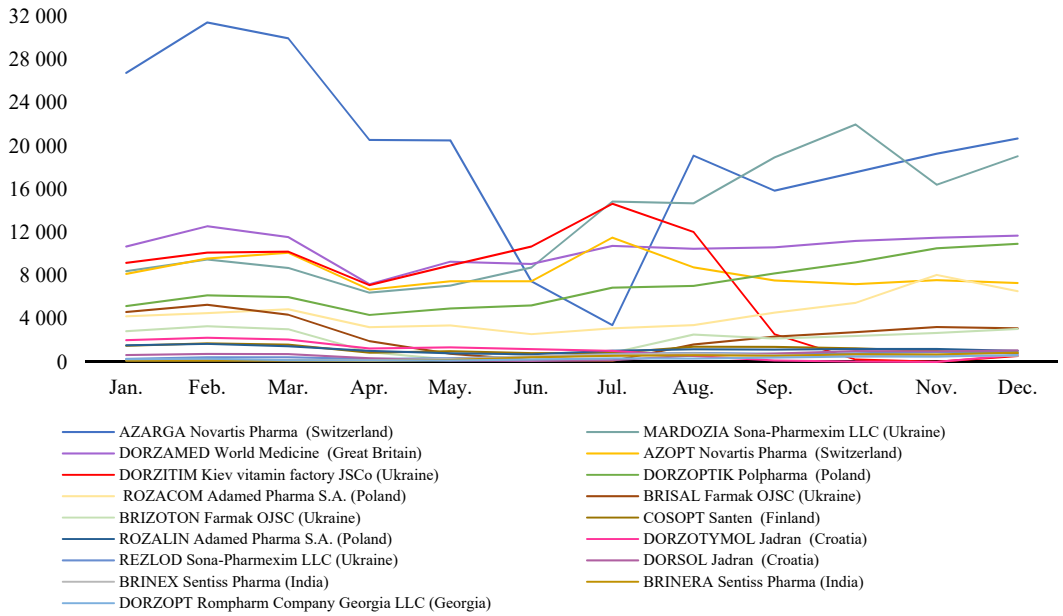


Figure 9. Dynamics of visiting activity of medical representatives in 2022 (group of anti-glaucoma drugs) in Ukraine

Source: (Proxima Research, 2023).

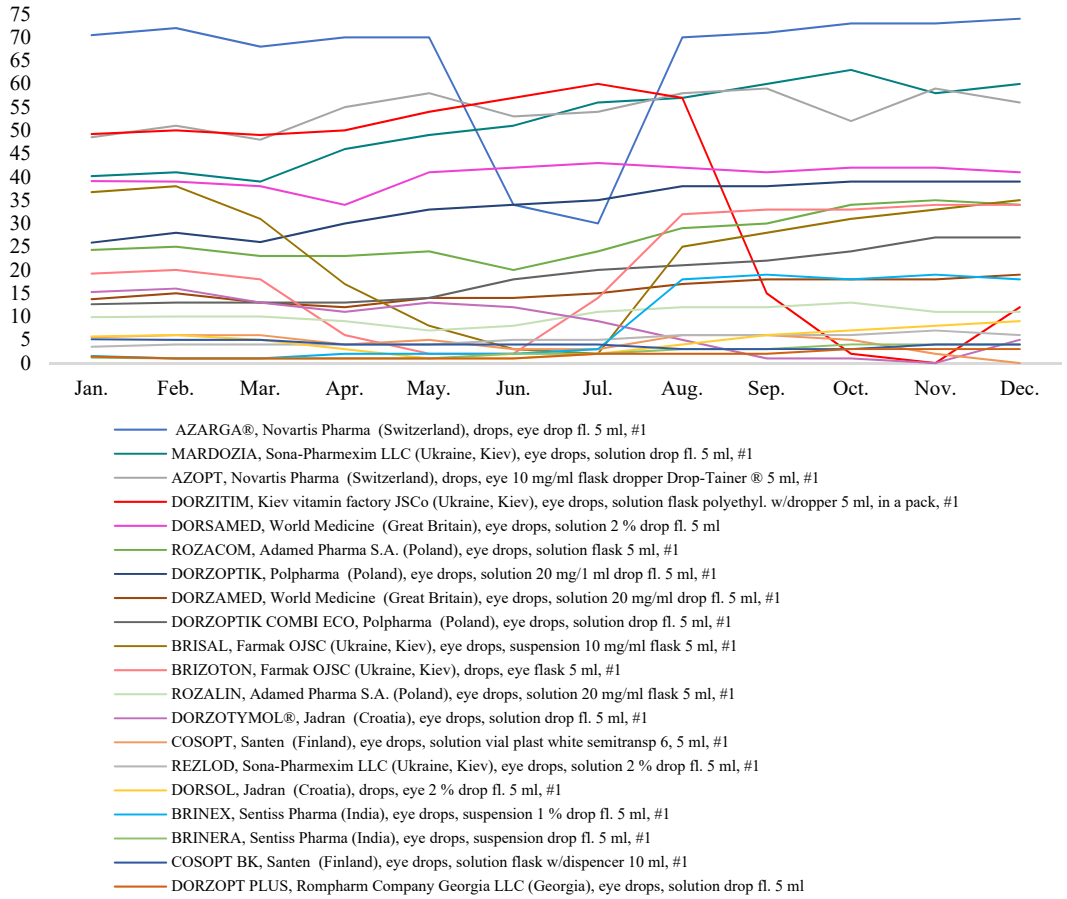


Figure 10. Dynamics of antiglaucoma drugs penetration in pharmacies in Ukraine (2022)

Source: (Proxima Research, 2023).

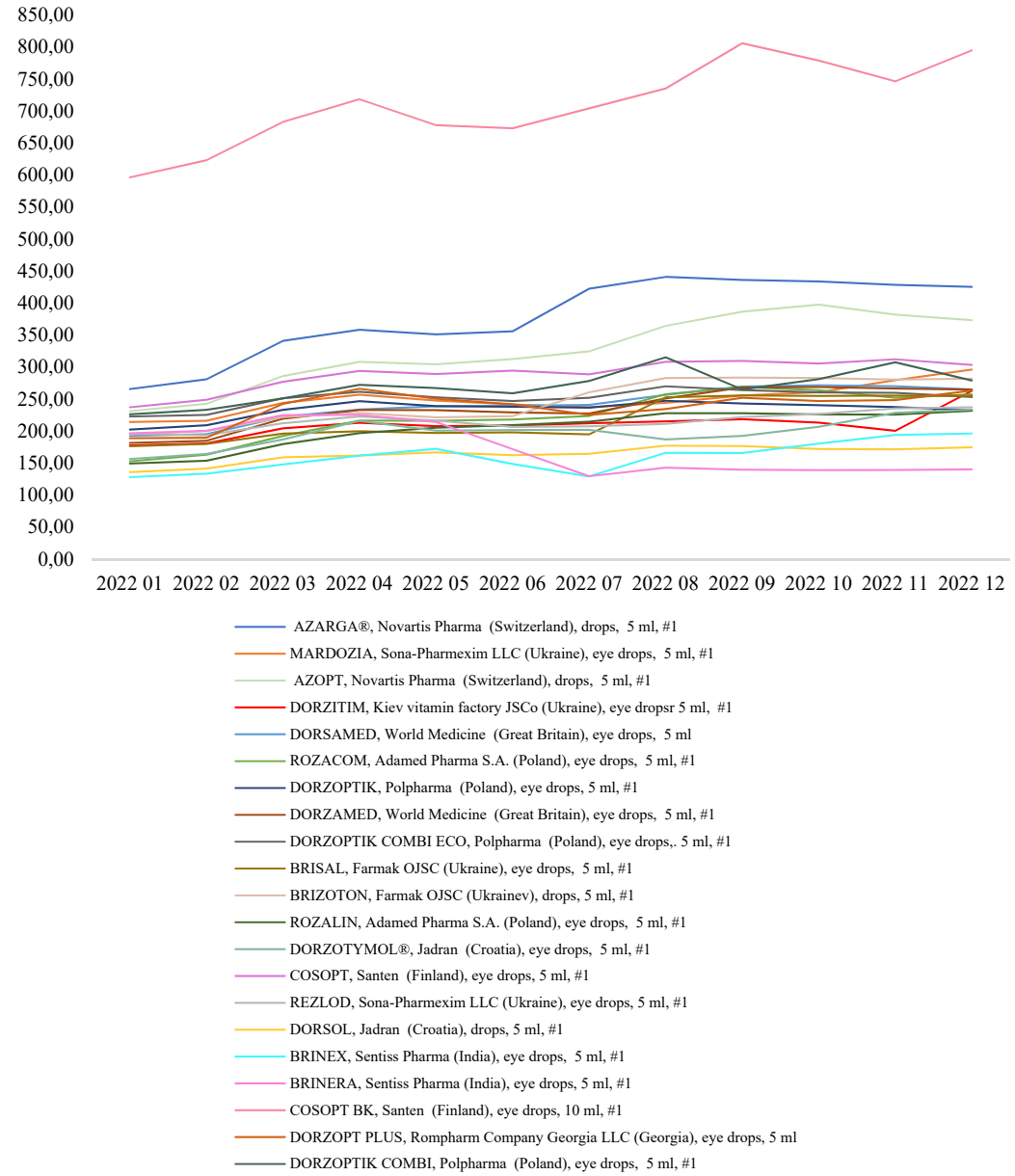


Figure 11. Dynamics of antiglaucoma drugs prices in hryvnias in Ukraine (2022)

Source: (Proxima Research, 2023).

Based on the analysis, it is advisable to draw the following conclusions:

- despite the negative impact of the war, some pharmaceutical manufacturers were able to use the opportunities that opened up to them. The winners were those companies that had sufficient stocks of drugs and thought out the logistics of their drugs to pharmacies in time, which were able to keep the market prices for vital drugs;
- the advantage was given to pharmaceutical companies that did not stop marketing activity in order to promote brands;

- constant monitoring of consumer needs determines the possibilities of rapid reorientation of production (for example, reorientation to the production of drugs for military needs);
- compliance with the principles of socially responsible marketing, the presence of a clear political position in the company, which is confirmed by real actions, is the basis of strengthening consumer loyalty to the brand;
- pharmaceutical companies with a diversified portfolio of drugs had greater opportunities (Rx and OTC drugs, different target audiences, different ATC categories of drugs and promotion in other pharmaceutical markets – Kazakhstan, Moldova, etc.);
- companies with a flexible marketing strategy won, which had the opportunity to respond to market indicators and adjust promotion tactics and strategy quickly.

Therefore, timely restoration and continuation of promotional activity of brands in the conditions of martial law is a great opportunity to gain a leadership position and strengthen the brand's consumer loyalty.

Conclusions

Thus, the pharmaceutical industry in wartime is a strategically important industry, because medicines are needed by both military at the front and by civilians, especially vital medicines and medicines for patients with chronic diseases. Obstacles to the sufficient functioning of pharmaceutical enterprises in the conditions of war are the loss of production capacity of warehouses with final goods, issues with logistics, damage to critical iinfrastructure, the need to stop production during the air raids and curfews, insufficient number of qualified personnel due to mobilization and migration abroad. All these reasons lead to an increase in the cost of production of medicines and to an increase in their prices.

As a result of the research, it was established that despite the negative impact of the war, the demand for medicines remains high. The effectiveness of pharmaceutical business enterprises is directly correlates with the chosen marketing strategy. Therefore, correction, adaptation and quick response to market needs are important for such enterprises in wartime. Aiming this, it is important for pharmaceutical companies to take a clear social position and adjust their promotional efforts according to changes in consumer priorities. At the same time, it is advisable to constantly plan and implement marketing activities for the promotion of brands. This also applies to drugs – almost every brand can be replaced by another generic drug. Timely restoration and continuation of promotional activity of brands in the conditions of war is, on the one hand, a marketing challenge, but, as the last year results have shown that it is also a great opportunity to gain a leadership position and strengthen the brand's consumer loyalty.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	REFERENCE
Baumgarth, C. (2020). Brand values in times of crisis: The brand work manifesto and the Corona pandemic. *Real Estate Brand Book*, 2020, 32-39.	Baumgarth, C. (2020). Brand values in times of crisis: The brand work manifesto and the Corona pandemic. *Real Estate Brand Book*, 2020, 32-39.
Fetscherin, M., & Sampedro, A. (2019). Brand forgiveness. *Journal of Product & Brand Management*, 28(5), 633-652.	Fetscherin, M., & Sampedro, A. (2019). Brand forgiveness. *Journal of Product & Brand Management*, 28(5), 633-652.
Heding, T., Knudtzen, C. F., & Bjerre, M. (2020). Brand management: Mastering research, theory and practice. Routledge.	Heding, T., Knudtzen, C. F., & Bjerre, M. (2020). Brand management: Mastering research, theory and practice. Routledge.
Kunkel, T., & Biscaia, R. (2020). Sport brands: Brand relationships and consumer behavior. *Sport Marketing Quarterly*, 29(1), 3-17.	Kunkel, T., & Biscaia, R. (2020). Sport brands: Brand relationships and consumer behavior. *Sport Marketing Quarterly*, 29(1), 3-17.
Mind. (2022, 20 жовтня). *Фарма під час війни: переорієнтація з антиковідних на кровоспинні, зруйновані склади та міграція провізорів.* https://mind.ua/publications/20248405-farma-pid-chas-vijni-pereorientaciya-z-antikovidnih-na-krovospinni-zrujnovani-skladi-ta-migraciya-pro	Mind. (2022, October 20). *Pharma during the war: reorientation from anti-covid to hemostatic drugs, destroyed warehouses and migration of pharmacists.* https://mind.ua/publications/20248405-farma-pid-chas-vijni-pereorientaciya-z-antikovidnih-na-krovospinni-zrujnovani-skladi-ta-migraciya-pro
Proxima Research. (2023). *Дані аналітичної системи дослідження ринку "PharmXplorer"/ "Фармстандарт".* https://pharmxplorer.com.ua/	Proxima Research. (2023). *Data of the analytical system of market research "PharmXplorer"/ "Pharmstandard".* https://pharmxplorer.com.ua/
Гарматюк, О. (2022). Аналіз сучасних тенденції товарообороту фармацевтичної продукції. *Економічні горизонти*, *2(20),* 125-132. https://doi.org/10.31499/2616-5236.2(20).2022. 275008	Harmatyuk, O. (2022). Analysis of modern trends in the turnover of pharmaceutical products. *Economic Horizons*, *2(20),* 125-132. https://doi.org/10.31499/2616-5236.2(20).2022.275008
Зануда, А. (2022, 24 грудня) *Як українська економіка пережила 2022 рік.* BBC News. Україна. https://www.bbc.com/ukrainian/ features-64008306	Zanuda, A. (2022, December 24). *How the Ukrainian economy survived 2022.* BBC News. Ukraine. https://www.bbc.com/ukrainian/features-64008306
Кірсанов Д. (2023, 16 січня). *Бриф-аналіз фармринку: попередні підсумки 2022 р. Щотижневик Аптека онлайн.* https://www.apteka.ua/article/655830	Kirsanov, D. (2023, January 16). *Brief analysis of the farmaceutical market: preliminary results of 2022. Weekly Pharmacy online.* https://www.apteka.ua/article/655830
Кірсанов, Д. (2022, 17 січня). *Бриф-аналіз фармринку: попередні підсумки 2021 р.* Щотижневик Аптека онлайн. https://www.apteka.ua/article/624759	Kirsanov, D. (2022, January 17). *Brief analysis of the farmaceutical market: preliminary results of 2021.* Weekly Pharmacy online. https://www.apteka.ua/article/624759
Лихолат, С.М., & Левицька, М.Є. (2022). Дослідження впливу війни на ринок лікарських засобів України. *Наукові записки Львівського університету бізнесу та права, 35*, 203-209. http://dx.doi.org/10.5281/zenodo.7765286	Lyholat, S.M., & Levitska, M.E. (2022). Study of the impact of the war on the market of medicinal products of Ukraine. *Scientific Notes of the Lviv University of Business and Law*, *35*, 203-209. http://dx.doi.org/10.5281/zenodo.7765286
Лишенко, М. (2023). Бренд-менеджмент як інструмент маркетингової діяльності підприємств. *Економіка та суспільство*, *48*.	Lyshenko, M. (2023). Brand management as a tool of marketing activities of enterprises. *Economy and society*, *48*.
Мельниченко, О., & Мельниченко, М. (2022). Управління брендами в сучасних умовах: виклики воєнного часу та перспективи. *Вісник Хмельницького національного університету, 2*, 24-29.	Melnychenko, O., & Melnychenko, M. (2022). Brand management in modern conditions: wartime challenges and prospects. *Bulletin of the Khmelnytskyi National University*, *2*, 24-29.
Могилова, А. Ю., & Шершнєва, О. О. (2023). Особливості управління брендом за умов економічної кризи. *Редакційна колегія*, 194.	Mohylova, A. Yu., & Shershnieva, O. O. (2023). Peculiarities of brand management under conditions of economic crisis. *Editorial Board*, 194.
Пенькова, О.Г., Корман, І.І., & Семенда О.В. (2022). Маркетинговий аналіз фармацевтичного ринку України. *Економічна наука, 9-10*, 16-23. http://www.investplan.com.ua/pdf/9-10_2022/5.pdf	Penkova, O.G., Korman, I.I., & Semenda, O.V. (2022). Marketing analysis of the pharmaceutical market of Ukraine. *Economic science*, *9-10*, 16-23. http://www.investplan.com.ua/pdf/9-10_2022/5.pdf

Ражик, А. В. (2020) Тенденція розвитку вітчизняного фармацевтичного ринку і країн ЄС. Т. А. Пальчевська (Ред.) *Innovative development of science and education: abstracts of II International scientific and practical conference*, *Athens, Greece* (с. 135-142). ISGT Publishing House.	Razyk, A. V. (2020) Development trend of the domestic pharmaceutical market and EU countries. T. A. Palchevska (Ed.) *Innovative development of science and education: abstracts of II International scientific and practical conference, Athens, Greece* (p. 135-142). ISGT Publishing House.
Титикало, В. С., & Невмержицька, С. М. (2022). Оцінка ефективності бренд-менеджменту компанії. *In Інноватика в освіті, науці та бізнесі: виклики та можливості*. Київський національний університет технологій та дизайну.	Tytykalo, V. S., & Nevmerzhitska, S. M. (2022). Evaluation of the effectiveness of the company's brand management. *In Innovation in Education, Science and Business: Challenges and Opportunities*. Kyiv National University of Technology and Design.
Федорченко, А.В., Кулик, А.Б., & Пономаренко, І.В. (2023). Особливості застосування методу кластеризації в маркетингових дослідженнях фармацевтичного ринку України. *Маркетинг і цифрові технології*, *7 (1),* 7-28. https://www.mdt-opu.com.ua/index.php/mdt/article/view/285	Fedorchenko, A.V., Kulyk, A.B., & Ponomarenko, I.V. (2023). Peculiarities of the application of the clustering method in marketing research of the pharmaceutical market of Ukraine. *Marketing and Digital Technologies, 7 (1),* 7-28. https://www.mdt-opu.com.ua/index.php/mdt/article/view/285
Шимановська-Діанич, Л.М., Лозова, О.В., & Юрко, І.В. (2023). Ринок фармацевтичних товарів України: проблеми та перспективи розвитку. *Вісник Львівського торговельно-економічного університету. Економічні науки, 71*, 13-20. https://doi.org/10.32782/2522-1205-2023-71-02	Shymanovska-Dianych, L.M., Lozova, O.V., & Yurko, I.V. (2023). The market of pharmaceutical products of Ukraine: problems and prospects for development. *Bulletin of the Lviv University of Trade and Economics. Economic Sciences, 71*, 13-20. https://doi.org/10.32782/2522-1205-2023-71-02
Шматько, Н., Пантелєєв, М., Кармінська-Бєлоброва, М., & Мирошник, Т. (2020). Брендменеджмент в стратегічному управлінні підприємством. *Вісник Національного технічного університету" Харківський політехнічний інститут"(економічні науки), 1*, 110-115.	Shmatko, N., Pantelieiev, M., Karminska-Belobrova, M., & Myroshnyk, T. (2020). Brand management in strategic enterprise management. *Bulletin of the National Technical University "Kharkov Polytechnic Institute" (economic sciences), 1*, 110-115.
Щотижневик Аптека online. (2022, 27 червня). *Фармринок під час війни: проблеми, виклики та шляхи їх подолання.* https://www.apteka.ua/article/639203	Weekly Pharmacy online. (2022, June 27). *Farmaceutical market during the war: problems, challenges and ways to overcome them*. https://www.apteka.ua/article/639203

Conflict of interest. The authors certify that don't they have any financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that one of the authors is affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution.

The authors received no direct funding for this research.

The contribution of the authors is equal.

Bondarenko O., Melnychenko O. Brand management of pharmaceutical enterprises under a large-scale crisis. *Scientia fructuosa*. 2023. № 5. S. 48-67. https://doi.org/10.31617/1.2023(151)04

Received by the editorial office 13.09.2023.
Sent for revision 27.09.2023.
Accepted for printing 29.09.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)05
UDC 339.138:338.439(477)=111

YAHELSKA Kateryna,
Doctor of Sciences (Economics), Professor,
Professor of the Department of Marketing
State University of Trade
and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0002-3760-003X
k.yahelska@knute.edu.ua

VASYLYSHYNA Liubov,
PhD in Economics,
Associate Professor of the Department of Marketing
State University of Trade
and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0001-8025-7786
l.vasylyshyna@knute.edu.ua

MARKETING POLICY OF FARMS IN UKRAINE

Unequal conditions for the functioning of farms as a part of agricultural sector require strategic thinking and marketing orientation from farmers. The limited use of marketing tools in the management activities of farmers is associated with insufficiently adapted marketing provision for the specifics of farming. The aim of the article is to substantiate the marketing provision of the strategic development of farming based on a rational combination of optimal elements of modification models of the marketing mix. The theoretical and methodological basis of the research was made up of the fundamental positions of the general economic theory, the system-structural analysis of economic processes, the results of the scientists' work on the researched issues. Monographic, abstract-logical, graphic methods, analysis and synthesis, analogy, theory of rational choice, methods of points, expert evaluations, combining, analytical hierarchy, and statistical processing of information were used in the research process. Prerequisites of the marketing type of farm management are determined. Based on the generalization of the problems of farming in modern conditions, the expediency of using strategic marketing tools in the process of its activity is argued. The meaning and significance

ЯГЕЛЬСЬКА Катерина,
д. е. н., професор,
професор кафедри маркетингу
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0002-3760-003X
k.yahelska@knute.edu.ua

ВАСИЛИШИНА Любов,
к. е. н., доцент
кафедри маркетингу
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0001-8025-7786
l.vasylyshyna@knute.edu.ua

МАРКЕТИНГОВА ПОЛІТИКА ФЕРМЕРСЬКИХ ГОСПОДАРСТВ В УКРАЇНІ

Нерівні умови функціонування фермерських господарств у складі аграрного сектора вимагають від фермерів стратегічного мислення і маркетингової орієнтації. Обмеженість застосування маркетингового інструментарію в управлінській діяльності пов'язана з недостатньо адаптованим маркетинговим забезпеченням специфіки фермерського господарства. Метою статті є обґрунтування маркетингового забезпечення стратегічного розвитку фермерського господарства на основі раціонального поєднання оптимальних елементів модифікаційних моделей маркетинг-мікс. Теоретико-методологічну основу дослідження становили фундаментальні положення загальної економічної теорії, системно-структурний аналіз економічних процесів, результати напрацювань науковців з досліджуваної проблематики. Під час дослідження використано методи: монографічний, абстрактно-логічний, графічний, аналізу та синтезу, аналогії, теорія раціонального вибору, балів, експертних оцінок, комбінування, аналітичної ієрархії, статистичної обробки інформації. Визначено передумови маркетингового типу управління фермерськими господарствами. На основі узагальнення проблематики фермерства в сучасних умовах аргументовано доцільність застосування інструментів стратегічного маркетингу в процесі його діяльності. Розкрито зміст і

of marketing provision in the development of farming is revealed. A model of the farm marketing complex has been created. The marketing support of farming is substantiated, within which examples of the use of strategic tools are given. Farms that use strategic marketing have the advantages of successful adaptation to the market, different from their competitors. The application of reasonable marketing provision for the development of farming on the basis of a marketing mix adapted to the specifics of farming expands its possibilities and strategic horizons as a progressive business form.

Keywords: development strategy, marketing mix, farming, strategic marketing, marketing strategy, marketing tools.

значущість маркетингового забезпечення у розвитку фермерського господарства. Сформовано модель комплексу маркетингу фермерського господарства. Обґрунтовано маркетингове забезпечення фермерського господарства, в межах якого наведено приклади застосування стратегічного інструментарію. Встановлено, що фермерські господарства, що застосовують стратегічний маркетинг, володіють відмінними від конкурентів перевагами успішної адаптації до ринку. Застосування обґрунтованого маркетингового забезпечення розвитку фермерського господарства на основі адаптованих до специфіки фермерства моделей маркетинг-мікс розширює його можливості та стратегічні горизонти як прогресивної форми господарювання.

Ключові слова: стратегія розвитку, маркетинг-мікс, фермерство, стратегічний маркетинг, маркетингова стратегія, маркетинговий інструментарій.

JEL Classification: D21, M31, Q13.

Introduction

The importance of the study of strategic development models and the marketing type of management in agriculture is determined by the importance of the latter in the structure of the national economy on the one hand, and its acute problems on the other. Thus, agriculture provides a significant contribution to economic growth, in the process of its formation, next to gross accumulation jobs are indirectly created through the consumption of goods and services of other industries by agriculture. At the same time, the imperfect structure of the domestic economy, economic losses from the war in Ukraine, insufficient attention to marketing as an element of the market mechanism of management, and the limited use of scientific and methodological tools for strategic management of agricultural business entities leave an impression not only on the competitiveness and state of agriculture, but also on the macroeconomic stability of the country as a whole, inhibiting sustainable economic growth and solving many socio-economic issues. The outline requires solving a fairly wide range of research tasks, in particular, ensuring the development of agriculture in the marketing aspect.

The problem is becoming particularly acute for farms, which not only act as equal participants in agricultural production, but also form the basis of sustainable development of communities and territories, ensure the development of a driving cooperative force, act as an important element of the competitive environment and even a way of life, but at the same time function in extremely complex competitive conditions. The presence of structural deformations in the agricultural sector of Ukraine significantly

affects the activities of small-scale producers of agricultural products. Thus, the polarized structure of domestic agriculture concentrates agricultural holdings on one "pole", and farms with "economically unprofitable food" on the other (Borodina & Prokopa, 2015). In turn, the technical rearmament of the corporate sector leads to the release of workers and the formation of monoculturalization of production, and, accordingly, an increase in the man-made load on ecosystems. In such conditions, farmers are relegated to the low-profit informal sector of the economy, which restrains the development of the peasantry and deepens the degradation of human capital. The compensatory possibilities of farming in these conditions can be seen precisely in the marketing support of strategic management, which through the implementation of the basic market principle "produce what is sold, not sell what is produced" within reasonable strategic guidelines will allow farming to strengthen its market position and enter a new stage of development.

The issue of unequal conditions for the functioning of farming is investigated within two directions – improvement of structural policy and the actual development of farming. Within the framework of our research, scientific achievements in the second direction are of particular interest, primarily those that contributed to the formation of the conceptual foundations of the development of farming, touch on the issues of ensuring its competitiveness (Vasylkivskyi, 2018; Yeremenko, 2019; Melnyk & Grabchuk, 2020), formation of marketing provision and justification of marketing strategies (Bochko, 2009; Zemliakov, 2015; Sviridova, & Tolstova, *2017*).

Among the developments of recent years, the conceptual approach to the construction and implementation of management of the development strategy of farms with the use of foresight technology, proposed by Gorikhovskyi (2017), is of particular interest. Zbarska (2013) studied the issue of ensuring the competitiveness of farms and identified ways to achieve the most effective use of their resource potential. Zintso (2018) offers a theoretical and methodological approach to the development of the management system for the marketing activities of farms, which is based on an expanded complex of marketing at the expense of "5 P" (where the fifth element is "personal") and provides for the formation of an infrastructure for managing the marketing activities of farming. However, insufficient attention has been paid to the marketing support of farming in recent years. For the most part, farms are studied rather superficially as part of groups of agricultural enterprises. For example, Kovbas (2013) investigates marketing provision for the activities of agricultural processing enterprises. Skrynkovskyy (2014) proposes a mechanism for the formation of marketing support for the activities of agricultural enterprises; Rosola (2020) researches the marketing activities of agricultural enterprises in the region. In addition, regardless of the importance of the results of scientific research on marketing

provision, in general, they are often quite superficial and not sufficiently adapted to farming due to its specificity, for example, (Korzh & Chunikhina, 2019; Herasymyak, Kovalchuk, & Datsenko, 2018; Poltorak, 2016), which partially explains the limited use of marketing tools by farms, along with the low level of information provision and insufficient human capital. The issues of strategic development of farms today also remain insufficiently disclosed and require further research.

The aim of the research is to substantiate the marketing provision of the strategic development of farming based on a rational combination of optimal elements of modification models of the marketing mix.

The theoretical and methodological basis of the research was made up of the fundamental positions of the general economic theory, the system-structural analysis of economic processes, the results of the scientists' work on the researched issues. Monographic, abstract-logical, graphic methods, analysis and synthesis, analogy, theory of rational choice, methods of points, expert evaluations, combining, analytical hierarchy, and statistical processing of information were used in the research process. The data of the State Statistics Service of Ukraine, Food and Agriculture Organization of the United Nations, agricultural statistics of Ministry of Agrarian Policy and Food of Ukraine, the author's own research related to marketing provision for the development of enterprises and competitiveness served as the information base of the study.

1. Prerequisites for the implementation of strategic marketing in the farms' activities

The prerequisites for implementing strategic management based on marketing in the activities of farms are the market features and difficulties in which domestic farms function.

First, small farms, having a much lower level of technical equipment compared to large agricultural enterprises, always have lower efficiency indicators, including yield. Therefore, a serious problem of farmers is the lack of own working capital. In the composition of the resource problem, a special place is occupied by the difficult legal mechanism of obtaining land plots for the creation of a farm and the uncertainty of the subjective composition of the legal relationship of private value to land. A separate problem is human capital, which for small commodity producers of agricultural products is a necessary condition for achieving sustainable intensification. It is the knowledge of the specifics of agricultural crops and animal husbandry, as well as the work of farmers and their ability to effectively use the factors of agar production and methods of farming, that determine the competitiveness of their business. However, in the agrarian sector of the economy of Ukraine, human capital has such features as seasonality of use, difficult working conditions, low level of development of

the social sphere, uneven distribution of human capital across the country, low level of human capital development, which is confirmed by the insufficient degree of qualification of employees, and the increase in the level of unemployment in rural areas, outflow of youth from the field of agricultural production, low level of wages (Zapukhlyak, 2017).

Secondly, in the conditions of increased pressure of transformations in the global food system and supply chains, farms cannot organize cooperation with wholesalers and supermarket chains as effectively as large enterprises do, thereby forming vertical integration and increasing the use of standards requirements. In addition, it is easier for large enterprises to attract investment and work with complex supply chains.

Thirdly, such problems as the reduction of cultivated areas due to hostilities and occupation, mining of fields, lack of fuel, destruction of agricultural machinery, logistical obstacles, including the closure of sea routes for the export of products, did not escape the farms. According to Food and Agriculture Organization of the United Nations, by December 2022, every fourth of the surveyed farmers in Ukraine reduced or stopped agricultural production due to the war. In the regions most affected by the war, more than 40 % of households stopped producing agricultural products (FAO, 2022).

Fourth, in addition to other external factors, such as the complexity and instability of the domestic taxation system, the instability of land relations and state support, social and psychological pressure due to the use of plant protection products, the lack of agrarian logistics, obstacles to the effective functioning and development of farms are also imperfect the structure of production with its inefficient material and technical support, low level of product processing, low diversification, neglect of marketing tools, which complicate economic activity on the market of agricultural products under the pressure of large competitors.

At the same time, a number of competitive advantages, such as quality and environmental friendliness, fairly quick adaptation to market conditions and flexible response to market conditions and specialization of economic activity allow farms to occupy their niche and work with a certain segment of consumers.

In these biased and ambiguous conditions, the imperatives of farming are formed, which is mostly forced to function unsystematically. In this regard, the issue of defending the economic interests of farming as part of the agricultural sector on the basis of increasing its competitiveness, as well as the development of interrelationships between farming and the elements of the industry and other sectors of the economy are being updated. A partial solution to the outlined problems can be seen in the implementation of modern strategic tools in the management of farms and their marketing provision.

2. Marketing mix formation of the farm

In a broad sense, the marketing support of an enterprise means the process of applying marketing tools and ways of combining them based on the marketing concept in order to strengthen the competitive position of the enterprise. The role of strategic marketing in today's economic activity reveals new opportunities for marketing support, in particular, management of enterprise development.

Analysis of the content of marketing support (Kovbas, 2013; Skrynkovskyy, 2014; Korzh & Chunikhina, 2019; Lebedynskyy, 2002; Bahorka & Bilotkach, 2010) confirms that this process is complex, applies to all areas of the enterprise, consists of a number of stages that are not unambiguously consecutive, and involves measures that change according to the main conditions and goals of the enterprise. The basis of marketing support is the marketing mix, at the same time, the increase in the variety of its modifications gradually complicates the choice of a certain model for a specific enterprise. Because of this, scientists justify the use of one or another model for enterprises of various industries or economic spheres, for example (Romaniv, 2017; Moklyak & Radchenko, 2017).

Researches (Shevchenko, 2018; Mamalyha & Loyik, 2012; Fomishyna & Fedorova, 2015) show that, on the one hand, despite the large number of variations of models of the marketing complex, "4P" remains optimal, because the supplemented models actually return to the detailing that E. J. McCarthy generalized to four. On the other hand, modernity has actualized some elements presented in other models, for example, digitalization, changes in consumer behavior, emphasis on customer orientation have conditioned such an element as personalization. However, the "2P+2C+3S" model itself, which includes this element, is quite limited, because it focuses only on the field of electronic marketing.

Based on the above, it can be said with confidence that the specifics of farming and the modern conditions of its operation complicate the choice of a marketing complex and the practical application of marketing tools by farmers. In modern conditions, the choice of the latter as part of marketing support should be made in the strategic context of farm management. That is, farming, like any other enterprise, regardless of its scale, needs a defined direction of activity, long-term development goals and management of the achievement of these goals. Marketing provision is improved in the process of overcoming contradictions between external conditions and internal capabilities of the enterprise, which emphasizes the feasibility of using strategic marketing tools in the process of activity.

Taking into account the strategic context of farming management as a current prerequisite for its development, as well as the specifics of farming and the conditions of its operation, we will form a marketing mix for farming by reasoned selection of elements from the main sets of the marketing complex. The formation of the marketing mix methodology is presented in *Figure 1*.

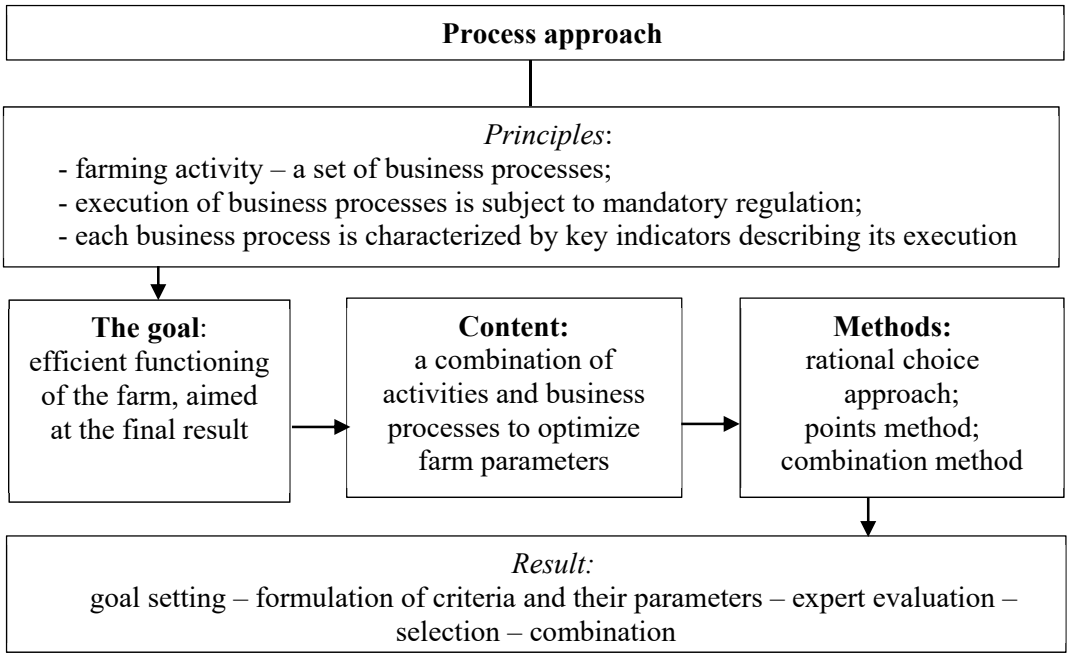


Figure 1. The formation of the marketing mix methodology

Source: compiled by the authors.

So we will formulate the criteria that the elements of this marketing mix must meet, based on the generally accepted content of the marketing mix and its basic principles (Kotler & Armstrong, 2011) and the general criterion of optimality as the main indicator of work quality.

Such criteria include:

A: effectiveness (an element that is always acceptable and rational for use; expected to produce an economic effect);

B: relevance (the element meets the requirements of the time and conditions of the external environment);

C: creation of values (the level of awareness of benefits by the consumer);

D*:* congruence (consistency of elements among themselves);

E*:* uniqueness (absence of contradictions due to similarity and duplication of functions by other elements of the mix; is not a component of another element)*;*

F*:* the possibility of creating competitive advantages.

We offer an expert assessment of the compliance of the model elements with the selected criteria on a simplified scale: 1 – fully corresponds; 0.5 – partially (sometimes) corresponds; 0 – does not respond. The sum of the points will allow to systematize the elements according to the degree of compliance with the criteria: 5.5–6 – the optimal element; 4.5–5 – suitable under certain conditions; 3.5–4 – involved under certain conditions, including case of impossibility of implementation of better options; 0–2.5 is mostly a wasted direction in this model.

Accordingly, the marketing mix of a farm will represent a balanced combination of controlled elements that, on the one hand, are subordinate to its marketing goal, on the other hand, contribute to its achievement, are directed to the target market and are flexibly combined (*Table 1*).

Table 1

Choosing of marketing mix elements for farming

Model	Model element and its main task	Compliance with the criterion						Total
		A	B	C	D	E	F	
12P	Product (product policy)	1	1	1	1	1	1	6
	Price (price policy)	1	1	1	1	1	1	6
	Place (distribution model)	1	1	0.5	1	1	1	5.5
	Promotion (promotion policy)	1	1	1	1	1	1	6
	Public Relations (management of public opinion)	1	1	1	0.5	0	0	3.5
	People, Personnel (motivation programs)	1	1	1	0.5	0.5	0.5	4.5
	Process (B2B, service area: interoperability, such as speed)	0.5	1	0.5	0.5	1	1	4.5
	Participation (consumer engagement, scripted contacts with the brand)	0.5	1	0	0.5	0.5	0.5	3
	Packaging (structure, design, material, packaging)	0.5	1	0.5	1	0	0.5	3.5
	Purchasing, Programs of loyalty (purchase promotion)	0.5	1	0.5	0.5	0	0	2.5
	Physical Premises (B2B, the sphere of services: creating an environment, atmosphere during a purchase)	0	0.5	0.5	0.5	0	0.5	2
	Politic of social responsibility (social responsibility)	1	1	1	0.5	1	1	6
5C	Customer needs and wants (the focus is on consumer needs)	1	1	1	1	1	1	6
	Cost to the customer (reduction of direct and indirect costs of the consumer (financial ones and effort)	1	1	1	1	1	1	6
	Communication (increasing consumer awareness)	1	1	1	1	0	0.5	4.5
	Convenience (availability of goods/services and satisfaction of additional needs)	1	1	0.5	1	0.5	1	5
	Congruence (programs to influence consumer impressions)	1	1	0	1	0	0	3
4A	Acceptability (inclination of the consumer to purchase the product, creating a need)	0.5	1	0	1	0	0	2.5
	Affordability (ensuring the consumer's ability to make the first and the subsequent purchase)	1	1	0.5	0.5	0	0	3
	Availability (ensuring availability, product availability)	1	1	0.5	1	0	0.5	4
	Awareness (formation of consumer awareness)	1	1	0.5	0.5	0	0	3
4D	Strategic design (strategic direction of marketing activity)	1	1	1	1	1	0.5	5.5
	Differentiation	0.5	1	1	1	0	1	4.5
	Data base management	1	0.5	0.5	1	0	0	3
	Direct marketing (detailing of Promotion)	0.5	1	0.5	1	0	0	3
SIVA	Solution (determination of the degree of solving the problem of consumer satisfaction)	0.5	0.5	0	1	0.5	0.5	3
	Information (informing the consumer about the problem solution)	0.5	0.5	0.5	1	0	0.5	3
	Value (informing the consumer about the value of the transaction)	0.5	0.5	0	1	0	0	2
	Access	1	0.5	0.5	1	0	0.5	3.5

Completion table 1

Model	Model element and its main task	Compliance with the criterion						Total
		A	B	C	D	E	F	
2P +2C +3S (digital)	Personalization	1	1	0	1	0.5	0.5	4
	Privacy (policy of access to information in the process of identification, decisions on confidentiality)	0.5	1	0	1	0	0	2.5
	Customer Service (can relate to any aspect of a product, price, promotion, location)	1	1	1	0.5	0	1	4.5
	Community development	1	1	0.5	1	0.5	0	4
	Site (creation of interactions in all directions of relational exchange)	1	1	0.5	1	0	0	3.5
	Security (data and transaction security)	1	1	0.5	0.5	0	0.5	3.5
	Sales Promotion	1	1	1	1	0	0.5	4.5
4 V	Variation (differentiation (product, market, brand)	0.5	1	1	1	0	1	4.5
	Versatility (a combination of offer functions)	1	1	0	0.5	0	0	2.5
	Value (demonstration of values)	0.5	0.5	0	1	0	0	2
	Vibration (communication with consumers through e-commerce platforms)	1	1	1	1	0	0.5	4.5

Source: built by the authors on (Shevchenko, 2018; Mamalyha & Loyik, 2012; Fomishyna & Fedorova, 2015; Tang, Wan, & Liu, 2020; Otlacan, (2017); Dev & Schultz, 2005; Möller, 2006).

Thus, the complex marketing model for the farm can be represented as:

Product + Price + Place + Promotion + Politic of social responsibility + + Customer needs and wants + Cost to the customer + Strategic design.

Moreover, its submission as "5P+2C+1S" will require clarification, because the fixed "5th P" element is people (including personnel). The resulting model does not mean neglecting other elements, for example, the site, but many of them are components of others, that is, this model is basic and variable, while the element "S" is the core.

3. Marketing provision of farm development

The universally recognized marketing provision adapted to farming, taking into account the formed marketing-mix model (*Figure 2*), represents a systematized process of achieving long-term goals and strategic guidelines within the selected areas of development through the use of a set of marketing tools.

Thus, marketing provision for the development of farming consists of three blocks: understanding market processes, choosing a strategy and determining the mechanism of its implementation. The key factor of the first one is "Customer needs and wants". "Politics of social responsibility" is considered separately from the rest of the elements of the second block, because it expands the horizons of marketing, implemented by solving socially significant problems in social, economic and environmental aspects through food products, social policy, economic profitability of farming, environmental safety of production and products.

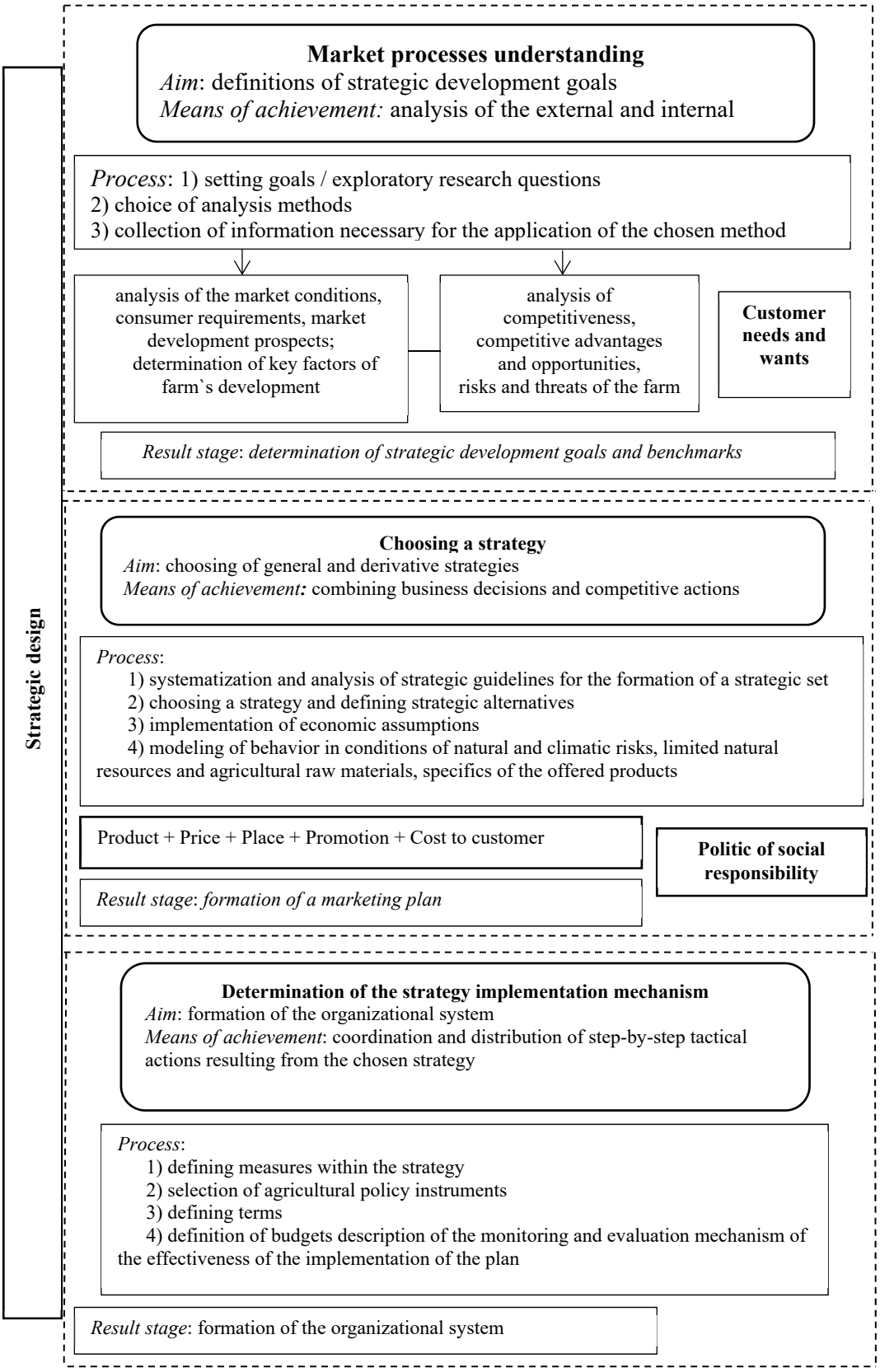


Figure 2. Marketing provision of farming

Source: compiled by the authors.

Thus, marketing provision for the development of farming consists of three blocks: understanding market processes, choosing a strategy and determining the mechanism of its implementation. The key factor of the first one is "Customer needs and wants". "Politics of social responsibility" is considered separately from the rest of the elements of the second block, because it expands the horizons of marketing, implemented by solving socially significant problems in social, economic and environmental aspects through food products, social policy, economic profitability of farming, environmental safety of production and products.

The main strategic goals of agricultural development may be the following:

- ensuring sustainable development (increasing economic potential, strengthening competitiveness);
- movement in new directions of development (introduction of new technology, development of information systems);
- ensuring optimal profitability (increasing rates of growth in sales volume and profit, etc.).

Strategies for family farms, medium-sized farms, and large farms are usually different. The first group mostly focuses on less capital-intensive, labor-intensive, energy-intensive and science-intensive products aimed at the domestic market. The second group, in conditions of limited attraction of additional land plots, chooses strategies that involve deepening specialization and increasing the concentration of production, cooperation and integration with processing enterprises, participation in the sale of products on domestic and foreign markets. The third group can apply strategies that provide for ensuring competitiveness on the basis of the creation of high-tech production, processing, storage and sales facilities, the establishment of ancillary industries, cooperation and integration with industrial and other formations, and are also focused on domestic and foreign markets.

The issue of long-term coordination of farming with the market situation is solved by the marketing strategy.

4. Choice and features of the methodical tools application in the of strategic marketing process

The most difficult part in the practical implementation of marketing provision for farming seems to be the choice of methods, tools and information collection, so it is logical to turn to variable or least information-demanding methods, for example, SWOT analysis. At the same time, we consider it possible to use also some methods of portfolio analysis, which can help to make strategic decisions, despite the simple structure of the farm. Even the selective application of methods summarized in the *Table* 2 will allow the farmer to make balanced strategic decisions.

Table 2

Methodical toolkit of marketing analysis and strategic decision-making by farm

Purpose of application	Method / tool	Result
Determining the market conditions and development trends	Economic system-wide analysis	Market parameters, competitors in the industry, level of competition, needs, demand and degree of consumer satisfaction
Determination of the degree of maturity of the market or segment and the stability of the position of the farm	ADL	Conclusion on the competitive position and definition of the economic development vector
Definition of growth strategy	Ansoff matrix	Choosing a growth strategy option and identifying key sources of growth
Analysis of the existing implicit strategy of the economy	SPACE	Choosing more attractive competitive strategies
Determination of the main areas of development of the farm	SWOT analysis	Systematization of available information about the strengths and weaknesses of the farm, about potential opportunities and threats
Formation of the assortment development strategy	GE / McKinsey model	The direction of business development, the need to increase the competitiveness of a certain product, promotion priorities and effective allocation of resources

Source: summarized by the authors.

As an example of the use of marketing tools by a farm, let's turn to the Perspektiva Farm (EDRPOU 30790630), the actual activity of which is the production (cultivation) of grain and technical crops (wheat, barley, corn, rapeseed, peas, sunflower) with the help of own and leased facilities. The farm did not stop its activities, despite the military events and the territorial location – the village of Horikhove, Donetsk region (on the territory under the control of the Ukrainian government). The main share of the farm's income is formed by sunflower (sunflower 56 %, barley 18 %, wheat 26 %). That is, the farm is highly specialized with a production direction – sunflower, which can be explained by the most favorable natural conditions for growing sunflower and stable demand for sunflower in the domestic market among the processing sector. The farm specialization with this production direction can be explained by the most favorable natural conditions for growing sunflower and stable demand for sunflower in the domestic market among the processing sector. Perspektiva Farm operates in the market of perfect competition, characterized by low barriers to market entry, which, in turn, determines the presence of many competitors such as S-KOLOS Farm, Donetsk Step Family Farm, Veres Farm, Don Farm, Taras Shevchenko Agricultural Society and others. None of the sellers and buyers in this market has a noticeable influence on the market price and quantity of the product, but they have complete and reliable information about the price, quantity of the product, costs and demand in the market. Each seller in this market

produces a homogeneous product that does not differ from the product of other sellers, at the same time, some competitors, in addition to the cultivation of grain and industrial crops, have expanded additional activities, for example, the production of oils and fats, products of the flour and grain industry and etc.

So, with the help of I. Ansoff's "goods-market" matrix, it can be concluded that for Perspektyva Farm which primary product is sunflower, two growth strategies are acceptable (*Table* 3).

Table 3

Choosing a growth strategy for Perspektiva farm based on I. Ansoff's matrix

Market	Product			
	Existing		*New*	
Existing	Strategy of deep market penetration		Product development strategy	
	Seed market. The product is sunflower		*Seed market. The product is corn*	
	The sunflower market is growing slowly	+	Market dynamics are unstable	-
	The level of product consumption among the target audience and the level of distribution of the product in the market at the level of average market indicators	+/-	The current product of the farm is not obsolete, has no defects and is at the last stage of the product's life cycle	-
	The level of knowledge of the farm's brand (name) is lower than the market average	-	Excess supply over demand; increase in price volatility; decrease in global domestic consumption	-
	There are currently no economies of scale	-	A general decrease in supply is expected, which will create promising medium-term conditions	+
	There is no competitive advantage in the current market	-	The size of the current market for farm business is average	+/-
	There are no opportunities for a high level of investment	-	Intra-industry competition is moderate	+/-
New	Market development strategy		Diversification strategy	
	Seed market. The product is sunflower		*Berry market. The new product is strawberries*	
	The farm is successful, but there are minor flaws	+/-	The growth of current farm markets has slowed down	+/-
	The level of market saturation is average	+/-	Competition in the current markets is moderate	+/-
	Entry barriers are practically absent	+	The farm has enough free resources for the development of this business in the new market	+
	There are no unique properties of the product	-	The farm has a certain level of competence for conducting business in a new market	+
	Remains of unsold goods	+	High profitability, quick payback of costs	+
	Additional capital for investing in the development of new markets is not enough	-	Growth opportunities in current markets with current products are small	+

Source: compiled by the authors based on data (State statistics service of Ukraine, 2023; Ministry of Agrarian Policy and Food of Ukraine, 2023; Agribusiness Today, 2023).

For the sample object of the study, a strategy of diversification with a new product – strawberries – is quite possible. Although it makes sense to analyze the prospects of "niche crops" for further improvement of the specialization of farming activities within the limits of the defined direction of agricultural development. The strategy of diversification, along with the strengthening of specialization, in particular, smart specialization, as well as the application of the F2F strategy, will contribute to the economic development of farming through updating the assortment, increasing the quality of products and reducing the cost price due to the use of new technologies, diversifying the types of activities and improving the product range, reducing dependence on suppliers, minimizing dependence on seasonal production, thereby creating new competitive advantages and additional benefits. That is, farming can apply both technological diversification (diversification of technology, for example, tillage) and marketing (expansion of sales markets).

The strategy of market development is also likely, because sunflower remains a promising direction of business. First, the total volume of seeds produced in Ukraine has halved due to the loss of acreage due to the war – this means a reduction in production by competitors alongside stable demand. Thus, only in the first half of the 2022/23 marketing year, about 69 % of the export potential of the Ukrainian sunflower market and 63 % of the sunflower oil market have already been realized ("Overview of the Ukrainian sunflower and sunflower oil market – 2022/23", 2023). Although the unstable situation in Ukraine leads to a reorientation of sunflower oil markets, the potential of the oil and fat industry remains stable for now. So it makes no sense to abandon sunflower production. At the same time, experts expect an increase in the market share of local mid-level players whose assets are located in relatively safe regions (State statistics service of Ukraine, 2023). Within the framework of the implementation of this strategy, it is advisable to focus attention first of all on "Place" and "Promotion".

The review of the sales strategy of the Perspective Farm includes the choosing of optimal methods and sales channels, for the implementation of which the analytical hierarchy method (developed by Thomas L. Saaty) can be applied, which suggests conducting pairwise comparisons of objects using subjective ones judgments numerically evaluated on a defined scale. Probable sales channels will be presented as alternatives (A_n), while the sales criteria (X_n) will be the basis of pairwise comparisons (*Table* 4).

Omitting the intermediate matrices of pairwise comparisons according to the defined criteria (formation of which is obvious according to the analytical hierarchy method), we apply the principle of synthesis to determine global priorities of level 4 elements (*Table* 5).

Table 4

Alternative sales channels of the Perspektiva farm and choice criteria

Alternatives		Criteria	
A_1	Direct sales to consumers through a network of stores, sales cooperatives under a common brand in pavilions owned by manufacturers; telemarketing; network of online stores	X_1	Sales control
A2	Sale to representatives of wholesale trade and processing enterprises through trade organizations, grain traders, processing enterprises	X_2	Contact of the farm with the consumer
A3	Direct deliveries through the restaurant chain of specialized stores	X_3	Market coverage
A4	Sales cooperatives for the sale of products under a common brand	X_4	Reliability in the execution of agreements
A5	Exports that cover new sales markets and increase the awareness of consumers of organic products	X_5	Ease to organize
A6	Supermarkets that provide an opportunity to present a wide range of own products and reach a wide range of consumers	X_6	Recognition (trademark)

Source: formed by the authors.

Table 5

Definition of the vector of global priorities

Alternatives	Vectors of priorities of alternatives with respect to criteria						
	X_1	X_2	X_3	X_4	X_5	X_6	Global vector
w	0.446	0.246	0.121	0.123	0.029	0.035	–
A1	0.384	0.034	0.493	0.459	0.140	0.398	**0.314**
A2	0.094	0.118	0.052	0.078	0.470	0.046	0.103
A3	0.167	0.039	0.035	0.066	0.071	0.037	0.099
A4	0.236	0.301	0.303	0.285	0.095	0.398	**0.267**
A5	0.046	0.206	0.025	0.034	0.026	0.054	0.081
A6	0.074	0.301	0.091	0.078	0.198	0.068	0.136

Source: calculated by the authors according to the analytical hierarchy method.

It is advisable to use the criteria with the greatest values of importance when developing a strategy. Therefore, the optimal distribution channels for the Perspektiva Farm are currently direct sales to consumers through a chain of stores, sales cooperatives under a common brand in pavilions owned by producers, telemarketing, a network of online stores, as well as sales cooperatives for sales under a common brand.

The formation of marketing communication strategies of the farm within the marketing mix should be preceded by the definition of the positioning strategy based on STP-marketing. Analysis of well-known positioning strategies as part of STP-marketing suggests that, the specificity of farming somewhat narrows its diversity in this sphere as for the Perspektiva farm and for most farms (*Table* 6).

Table 6

Positioning strategies for farming

Strategy	Content	Example	Disadvantages
Positioning based on the excellent quality (property) of the product	Uses "unlike competitors, our product..."	Organic products, selected seeds, fried in chocolate, etc.	A large budget for communication; in the long run all the advantages will be copied
Positioning based on benefits	It is based on logical arguments or emotions	Sales promotion ("1+1=3"), theatrical play at fairs, etc.	Being copied quickly
Associative positioning (when there is no clear difference from other goods)	Image formation; associating the product with a thing, place, specific person, situation	Dairy products perceived as rural, natural, tasty (as in childhood)	A large budget for promotion and form creation; being copied quickly
Positioning according to the "price-quality" ratio	Emphasis on rational choice, bringing to the consumer's mind the optimal combination of price and quality	Selected potatoes or washed carrots at the average market price	Additional costs; being copied quickly

Source: compiled by the authors based on (Tkachuk, Stakhurska, & Stakhurskyy, 2021; Prymak, 2012).

The choice of a specific positioning strategy for the Perspektiva Farm will be determined by the results of the analysis of its marketing environment and the general concept of positioning, which is usually reduced in practice to a simplified formula: *"[Product category] [name of brand / organization], intended for [functional purpose], best suited for [target consumer group], because he [main advantage] in comparison with [competing product / product category/averaged product / substitute product / artificial comparison]"* (Petropavlovska & Radchenko, 2017).

The portrait of the consumer (rural resident, wholesale consumer from the city, retailer, manufacturer, etc.) will allow to more accurately defining the main idea of the advertising campaign and its form.

Thus, all the strategic steps taken by the farmer in the direction of the development of his farm should be supported by marketing provision, the importance of which today is difficult to overestimate.

Conclusions

Farms, adapting to the instability of the external environment in competition with stronger competitors, should not rely on the coincidence of circumstances, justifying difficulties with the specifics of the activity and the size of the business, but should think strategically and plan resources to achieve the goal. Contrary to the views of many farmers, in the modern conditions of the market economy, it is marketing that is the basis of strategic management, regardless of the size of the farm. Businesses that effectively apply strategic marketing have excellent advantages of successful adaptation to the market, based on a systematic and continuous analysis of the needs and

requests of the main groups of consumers, a forecast of market development trends, an assessment and selection of priority areas of development and defined strategic guidelines.

Marketing provision of the strategic development of farming based on a rational combination of optimal elements of modification models of the marketing mix is substantiated. The application of the proposed marketing provision will contribute to the development of farming in conditions of intense competition and uncertainty of the external environment with the rational use of the budget.

On the basis of the defined marketing mix of the farm, the marketing provision for its development is substantiated, which means the systematized process of achieving long-term goals and strategic guidelines within the selected areas of development through the use of a set of marketing tools. The developed marketing provision will allow the farmer-businessman to check and weigh his strategic intentions, plan marketing activities with the aim of increasing efficiency and competitiveness, and also contribute to the optimization and coordination of management processes.

Further research will be devoted to methodical approaches to evaluating the effectiveness of marketing provision for farming.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	**REFERENCES**
Агробізнес сьогодні. (2023). http://agro-business.com.ua/	Agribusiness Today: official site. http://agro-business.com.ua (date of application: 12.04.2023).
Багорка, М. О. & Білоткач, І. А. (2010). Маркетингове забезпечення функціонування фермерських господарств. *Економіка АПК, 21*, 18-23. http://www.agrosvit.info/pdf/21_2010/5.pdf	Bahorka, M. O., & Bilotkach I. A. (2010). Marketing ensuring the functioning of farms. *The economy of the agriculture, 21*, 18-23. http://www.agrosvit.info/pdf/21_2010/5.pdf
Бочко, О. Ю. (2009). *Маркетингове забезпечення функціонування сільськогосподарських підприємств*. [Автореф. дис. канд. екон. наук, Львівський національний аграрний університет]. Львів. http://www.irbis-nbuv.gov.ua/cgi-bin/ irbis64r_81/cgiirbis_64.exe?Z21ID=&I21DBN=ARD&P21DBN=ARD&S21STN=1&S21REF=10&S21FMT=fullwebr&C21COM=S&S21CNR=20&S21P01=0&S21P02=0&S21P03=A=&S21COLORTERMS=1&S21STR=%D0%91%D0%BE%D1%87%D0%BA%D0%BE%20%D0%9E.%D0%AE.$	Bochko, O. Yu. (2009). *Marketing support for the functioning of agricultural enterprises*. (Candidate's thesis). Lviv. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis64r_81/cgiirbis_64.exe?Z21ID=&I21DBN=ARD&P21DBN=ARD&S21STN=1&S21REF=10&S21FMT=fullwebr&C21COM=S&S21CNR=20&S21P01=0&S21P02=0&S21P03=A=&S21COLORTERMS=1&S21STR=%D0%91%D0%BE%D1%87%D0%BA%D0%BE%20%D0%9E.%D0%AE.$
Бородіна, О., & Прокопа, І. (2015). Подолання структурних деформацій в аграрному секторі України: інституціалізація і модернізація малотоварного сільськогосподарського виробництва. *Економіка України*, *4,* 88-96. http://nbuv.gov.ua/UJRN/EkUk_2015_4_12	Borodina, O., & Prokopa, I. (2015). Overcoming structural deformations in the agrarian sector of Ukraine: institutionalization and modernization of low-commodity agricultural production. *Economy of Ukraine, 4,* 88-96. http://nbuv.gov.ua/UJRN/EkUk_2015_4_12
Dev, C. S., & Schultz, D. E. (2005). A customer-focused approach can bring the current marketing mix into the 21 st century. *Marketing Management*, *14*(1), 18-24. https://www.econbiz.de/ Record/in-the-mix-a-customer-focused-approach-can-bring-the-current-marketing-mix-into-the-21st-century-dev-chekitan/10007228365	Dev, C. S., & Schultz, D. E. (2005). A customer-focused approach can bring the current marketing mix into the 21 st century. *Marketing Management*, *14(1)*, 18-24. https://www.econbiz.de/Record/in-the-mix-a-customer-focused-approach-can-bring-the-current-marketing-mix-into-the-21st-century-dev-chekitan/ 10007228365

FAO. (2022). *Ukraine: Impact of the war on agriculture and rural livelihoods in Ukraine – Findings of a nation-wide rural household survey*. https://doi.org/10.4060/cc3311en	FAO. (2022). *Ukraine: Impact of the war on agriculture and rural livelihoods in Ukraine – Findings of a nation-wide rural household survey*. http://doi.org/10.4060/cc3311en
Фомішина, В. М. & Федорова, Н. Є. (2015). Трансформація складових класичного «комплексу маркетингу підприємства» у сучасний «комплекс маркетингу споживача». *Науковий вісник НЛТУ України*, *25.2*, 288-293. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP meta&C21COM=S&2_S21P03=FILA=&2_S21STR=nvnltu_2015_25.2_50	Fomishyna, V. M., & Fedorova N. Ye. (2015). Transformation of the components of the classic "enterprise marketing complex" into a modern "consumer marketing complex". *Scientific Bulletin of National Technical University of Ukraine, 25.2*, 288-293. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&2_S21P03=FILA=&2_S21STR=nvnltu_2015_25.2_50
Горіховський, М. В. (2017). Використання форсайт-технологій в управлінні фермерським господарством. *Науковий вісник Ужгородського національного університету*, *11,* 24-27. https://dspace.uzhnu.edu.ua/jspui/bitstream/lib/13803/1/%D0%92%D0%98%D0%9A%D0%9E%D0%A0%D0%98%D0%A1%D0%A2%D0%90%D0%9D%D0%9D%D0%AF%20%D0%A4%D0%9E%D0%A0%D0%A1%D0%90%D0%99%D0%A2-%D0%A2%D0%95%D0%A5%D0%9D%D0%9E%D0%9B%D0%9E%D0%93%D0%86%D0%99%20%D0%92%20%D0%A3%D0%9F%D0%A0%D0%90%D0%92%D0%9B%D0%86%D0%9D%D0%9D%D0%86%20%D0%A4%D0%95%D0%A0%D0%9C%D0%95%D0%A0%D0%A1%D0%AC%D0%9A%D0%98%D0%9C%20%D0%93%D0%9E%D0%A1%D0%9F%D0%9E%D0%94%D0%90%D0%A0%D0%A1%D0%A2%D0%92%D0%9E%D0%9C.pdf	Gorikhovskyi, M. V. (2017). The use of foresight technologies in the management of farming. *Scientific Bulletin of the Uzhhorod National University*, *11,* 24-27. https://dspace.uzhnu.edu.ua/jspui/bitstream/lib/13803/1/%D0%92%D0%98%D0%9A%D0%9E%D0%A0%D0%98%D0%A1%D0%A2%D0%90%D0%9D%D0%9D%D0%AF%20%D0%A4%D0%9E%D0%A0%D0%A1%D0%90%D0%99%D0%A2-%D0%A2%D0%95%D0%A5%D0%9D%D0%9E%D0%9B%D0%9E%D0%93%D0%86%D0%99%20%D0%92%20%D0%A3%D0%9F%D0%A0%D0%90%D0%92%D0%9B%D0%86%D0%9D%D0%9D%D0%86%20%D0%A4%D0%95%D0%A0%D0%9C%D0%95%D0%A0%D0%A1%D0%AC%D0%9A%D0%98%D0%9C%20%D0%93%D0%9E%D0%A1%D0%9F%D0%9E%D0%94%D0%90%D0%A0%D0%A1%D0%A2%D0%92%D0%9E%D0%9C.pdf
Герасимяк, Н. В., Ковальчук О. В., & Даценко, В. В. (2018). Методичний підхід до оцінювання ефективності маркетингового забезпечення діяльності підприємства. *Економіка і суспільство*, *19,* 331-336. https://economyandsociety.in.ua/journals/19_ukr/50.pdf	Herasymyak, N. V., Kovalchuk, O. V., & Datsenko V. V. (2018). Methodical approach to performance evaluation marketing support of the enterprise. *Economy and society, 19,* 331-336. https://economyandsociety.in.ua/journals/19_ukr/50.pdf
Корж, М. В. & Чуніхіна, Т. С. (2019). Теоретико-методичні засади маркетингового забезпечення господарюючого суб'єкта. *Науковий вісник Ужгородського національного університету*, *24(3),* 119-124. http://nbuv.gov.ua/UJRN/ Nvuumevcg_2019_24(3)__24	Korzh, M. V., & Chunikhina, T. S. (2019). Theoretical and methodological principles of marketing support of the economic entity. *Scientific Bulletin of the Uzhhorod National University*, *24(3),* 119-124. http://nbuv.gov.ua/UJRN/Nvuumevcg_2019_ 24(3)__24
Kotler, Ph., & Armstrong, G. (2011). Principles of marketing. 14th ed. New Jersey: Prentice Hall. https://nit-edu.org/wp-content/uploads/2021/09/Principles-of-Marketing-Kotler-Armstrong.pdf.	Kotler, Ph., & Armstrong, G. (2011). *Principles of marketing. 14th ed. New Jersey: Prentice Hall.* https://nit-edu.org/wp-content/uploads/2021/09/Principles-of-Marketing-Kotler-Armstrong.pdf
Ковбас, І. (2013). Маркетингове забезпечення діяльності переробних підприємств АПК. *Науковий вісник Ужгородського університету*, *1 (38),* 172-176. https://dspace.uzhnu.edu.ua/jspui/handle/lib/14665	Kovbas, I. (2013). Marketing support for the activity of agricultural processing enterprises. *Scientific Bulletin of the Uzhhorod University, 1 (38),* 172-176. https://dspace.uzhnu.edu.ua/jspui/handle/lib/14665
Лебединський, О. І. (2002). Формування механізму маркетингового забезпечення діяльності підприємств АПК. *Наукові праці Полтавської державної аграрної академії*, *1(4), 1,* 170-175. https://www.pdau.edu.ua/sites/default/files/nppdaa/4.1/170.pdf	Lebedynskyy, O. I. (2002). Formation of a marketing support mechanism for the activities of agro-industrial complex enterprises. *Scientific works of the Poltava State Agrarian Academy, 1(4), 1,* 170-175. https://www.pdau.edu.ua/sites/default/files/nppdaa/4.1/170.pdf

Мамалига, С. В., & Лоїк І. І. (2012). Сучасні підходи до трактування маркетинг-міксу. *Збірник наукових праць ВНАУ. 4 (70), 2*, 144-149.	Mamalyha, S. V., & Loyik I. I. (2012). Modern approaches to the interpretation of the marketing mix. *Collection of scientific works of VNAU, 4 (70), 2*, 144-149.
Мельник, Л., & Грабчук, І. (2020). Зростання конкурентоспроможності фермерського господарства. *Інфраструктура ринку*, *49,* 112-117. http://www.market-infr.od.ua/journals/2020/49_2020_ukr/23.pdf	Melnyk, L., & Hrabchuk, I. (2020). Increasing the competitiveness of farms. *Market infrastructure*, *49,* 112-117. http://www.market-infr.od.ua/journals/2020/ 49_2020_ukr/23.pdf
Міністерство аграрної політики та продовольства України. (2023). https://minagro.gov.ua/	Ministry of Agrarian Policy and Food of Ukraine: official site. https://minagro.gov.ua (date of application: 12.04.2023).
Мокляк, М. В., & Радченко, А. Ю. (2017). Маркетинг-мікс підприємства швейної промисловості. Глобальні та національні проблеми економіки, *16*, 385-389. http://global-national.in.ua/issue-16-2017/24-vipusk-16-kviten-2017-r/2946-moklyak-m-v-radchenko-a-yu-marketing-miks-pidpriemstva-shvejnoji-promislovosti	Moklyak, M. V., & Radchenko, A. Yu. (2017). Marketing mix of the enterprises of the garment industry. *Global and national economic problems, 16*, 385-389. http://global-national.in.ua/issue-16-2017/24-vipusk-16-kviten-2017-r/2946-moklyak-m-v-radchenko-a-yu-marketing-miks-pidpriemstva-shvejnoji- promislovosti
Möller, K. (2006). The Marketing Mix Revisited: Towards the 21st Century Marketing. *Journal of Marketing Management, 22*, 407-438. https://www.researchgate.net/publication/247494939_The_Marketing_Mix_Revisited_Towards_the_21st_Century_Marketing_by_E_Constantinides	Möller, K. (2006). The Marketing Mix Revisited: Towards the 21st Century Marketing. *Journal of Marketing Management, 22*, 407-438. https://www.researchgate.net/publication/247494939_The_Marketing_Mix_Revisited_Towards_the_21st_Century_Marketing_by_E_Constantinides
Огляд українського ринку соняшнику та соняшникової олії 2022/23. (2023). http://shareuapotential.com/ru/BE/ukrainian-podsolnechnik-maslo-2023.html	*Overview of the Ukrainian sunflower and sunflower oil market 2022/23*. http://shareuapotential.com/ru/BE/ukrainian-podsolnechnik-maslo-2023.html (date of application: 12.04.2023)
Otlacan, O. (2017). e-Marketing Strategy: 7 Dimensions to Consider (the e-Marketing Mix). https://www.marketingspeakerauthor.com/e-marketing-strategy-7-dimensions-to-consider-the-e-marketing-mix/	Otlacan, O. (2017). *e-Marketing Strategy: 7 Dimensions to Consider (the e-Marketing Mix)*. https://www.marketingspeakerauthor.com/e-marketing-strategy-7-dimensions-to-consider-the-e-marketing-mix (date of application: 10.04.2023).
Петропавловська, С. & Радченко, О. (2017). Стратегії позиціонування бренду. *Інфраструктура ринку, 7,* 187-191. http://www.market-infr.od.ua/journals/2017/7_2017_ukr/33.pdf	Petropavlovska, S., & Radchenko, O. (2017). Brand positioning strategies. *Market infrastructure*, *7*, 187-191. http://www.market-infr.od.ua/journals/2017/7_2017_ukr/33.pdf
Полторак, А.С. (2016). Маркетингова складова забезпечення конкурентоспроможності підприємств-виробників насіння соняшнику. *Економіка і суспільство*, *7,* 429-432. https://economyandsociety.in.ua/ journals/7_ukr/71.pdf	Poltorak, A. S. (2016). Marketing component ensuring competitiveness enterprises producing sunflower seeds. *Economy and society, 7,* 429-432. https://economyandsociety.in.ua/journals/7_ukr/71.pdf
Примак, Т. О. (20123). Стратегії позиціонування у теорії маркетингу. *Маркетинг і менеджмент*, *1*, 13-20. https://mmi.fem.sumdu.edu.ua/sites/default/files/mmi2012_1_13_20.pdf	Prymak, T. O. (2012). Positioning strategies in marketing theory. *Marketing and innovation management*, *1*, 13-20. https://mmi.fem.sumdu.edu.ua/sites/default/files/mmi2012_1_13_20.pdf
Романів, А. С. (2017). Сучасні модифікації моделі маркетинг-мікс та особливості їх застосування у туризмі. *Вісник Хмельницького національного університету*, *2(2),* 251-256. http://nbuv.gov.ua/UJRN/Vchnu_ekon_2017_2(2)__53	Romaniv, A. S. (2017). Modern modifications of the marketing mix model and features of their application in tourism. *Bulletin of the Khmelnytskyi National University, 2(2),* 251-256. http://nbuv.gov.ua/UJRN/Vchnu_ekon_2017_2(2)__53

Росола, У. В. (2020). *Формування і розвиток маркетингової діяльності сільськогосподарських підприємств регіону*. [Дис. д-ра екон. наук, Мукачівський державний університет]. https://msu.edu.ua/wp-content/uploads/2020/10/%D0%94%D0%B8%D1%81%D0%B5%D1%80%D1%82%D0%B0%D1%86%D1%96%D1%8F%D0%A0%D0%BE%D1%81%D0%BE%D0%BB%D0%B0-%D0%A3..pdf	Rosola, U. V. (2020). *Formation and development of marketing activity of agricultural enterprises of the region.* (Doctor's thesis). Mukachevo. https://msu.edu.ua/wp-content/uploads/2020/10/%D0%94% D0%B8% D1%81%D0%B5%D1%80%D1%82%D0%B0%D1%86%D1%96%D1%8F-%D0%A0%D0%BE%D1%81%D0%BE%D0%BB% D0% B0-%D0%A3..pdf
Шевченко, М. М. (2018). Місце комплексу маркетингу в системі маркетингового стратегічного управління. *Вісник НТУ "ХПІ", 37(1313),* 107-111. https://repository.kpi.kharkov.ua/items/6b3eac4c-51f2-46df-8a9c-371c5ad0ecd3	Shevchenko, M. M. (2018). The place of the marketing complex in the system of marketing strategic management. *Bulletin of NTU "KhPI", 37(1313),* 107-111. https://repository.kpi.kharkov.ua/items/6b3eac4c-51f2-46df-8a9c-371c5ad0ecd3
Скриньковський, Р. М. (2014). Маркетингове забезпечення діяльності сільськогосподарських підприємств (на прикладі Львівської області). *Ефективна економіка, 11*. http://www.economy.nayka.com.ua/?op=1&z=3567	Skrynkovskyy, R. M. (2014). Marketing support for the activities of agricultural enterprises (on the example of Lviv region). *Effective Economy, 11*. http://www.economy.nayka.com.ua/?op=1&z=3567
Державна служба статистики України. (2023). https://ukrstat.gov.ua/	State statistics service of Ukraine: official site. https://ukrstat.gov.ua (date of application: 12.04.2023).
Свірідова, С., & Толстова, С. (2017). Сучасні інструменти стратегічного управління сільськогосподарськими підприємствами. *Економіка: реалії часу, 2(30),* 109-116. https://economics.net.ua/files/archive/2017/No2/109.pdf	Sviridova, S., & Tolstova, S. (2017). Modern tools of strategic management of agricultural enterprises. *Economics: realities of time, 2(30),* 109-116. https://economics.net.ua/files/archive/2017/No2/109.pdf
Tang, J., Wan, D., & Liu, S. (2020). Research on Product Marketing Strategy of Camellia Oil Enterprises in Hunan Province Based on the 4V Theory. *Advances in Economics, Business and Management Research: Fifth International Conference on Economic and Business Management, 159*, 733-739. https://www.atlantis-press.com/proceedings/febm-20/125948403	Tang, J., Wan, D., & Liu, S. (2020). Research on Product Marketing Strategy of Camellia Oil Enterprises in Hunan Province Based on the 4V Theory. *Advances in Economics, Business and Management Research: Fifth International Conference on Economic and Business Management, 159*, 733-739. https://www.atlantis-press.com/proceedings/febm-20/125948403
Ткачук, С. В., Стахурська, С. А., & Стахурський, В. О. (2021). Формування стратегії STP-маркетингу в сфері ритейл-послуг. *Формування ринкових відносин в Україні, 3,* 76-83. https://dspace.nuft.edu.ua/jspui/bitstream/123456789/34563/1/STP%20retail%20str.pdf	Tkachuk, S. V., Stakhurska, S. A., & Stakhurskyy, V. O. (2021). Formation of STP-marketing strategy in the field of retail services. *Formation of market relations in Ukraine, 3,* 76-83. https://dspace.nuft.edu.ua/jspui/bitstream/123456789/34563/1/STP%20retail%20str.pdf
Васильківський, Д. (2018). Формування системи стратегічного управління конкурентоспроможністю фермерських господарств. *Вісник Хмельницького національного університету*, *3(1),* 11-14. http://nbuv.gov.ua/UJRN/Vchnu_ekon_2018_3%281%29__4	Vasylkivskyi, D. (2018). Formation of the system of strategic management of the competitiveness of farms. *Bulletin of Khmelnytskyi National University*, *3(1),* 11-14. http://nbuv.gov.ua/UJRN/Vchnu_ekon_ 2018_3%281%29__4
Єременко, Д. В. (2019). *Забезпечення конкурентоспроможності фермерських господарств України*. [Дис. д-ра екон. наук. Національний університет біоресурсів і природокористування України]. https://nubip.edu.ua/sites/default/files/u145/dis_ieremenko.pdf	Yeremenko, D. V. (2019). Ensuring the competitiveness of Ukrainian farms. (Doctor's thesis). Kyiv. https://nubip.edu.ua/sites/default/files/u145/dis_ieremenko.pdf

Запухляк, В. М. (2017). Людський капітал як чинник підвищення конкурентоспроможності аграрного сектора економіки України. *Агросвіт*, *3,* 40-44. http://nbuv.gov.ua/UJRN/agrosvit_2017_3_7.	Zapukhlyak, V. M. (2017). Human capital as a factor increasing the competitiveness of the agricultural sector of Ukraine's economy. *Agroworld*, *3,* 40-44. http://nbuv.gov.ua/UJRN/agrosvit_2017_3_7
Збарська, А. В. (2013). Забезпечення конкурентоспроможності фермерських господарств сільського регіону. *Вісник Сумського національного аграрного університету. Фінанси і кредит, 1,* 142-150. http://nbuv.gov.ua/UJRN/Vsnau_2013_1_27	Zbarska, A. V. (2013). Ensuring the competitiveness of farms in the rural region. *Bulletin of the Sumy National Agrarian University. Finance and Credit, 1,* 142-150. http://nbuv.gov.ua/UJRN/Vsnau_2013_1_27
Земляков, І. (2015). Маркетинг фермерського господарства. *Ефективна економіка*, *3*. http://www.economy.nayka.com.ua/?op=1&z=3890	Zemlyakov, I. (2015). Marketing of farming. *Efficient economy*, *3*. http://www.economy.nayka.com.ua/?op=1&z=3890
Зіньцьо, Ю. В. (2018). *Управління маркетинговою діяльністю фермерських господарств України*.[Автореф. дис. канд. екон. наук, Львівський національний університет імені Івана Франка]. https://lnu.edu.ua/thesis/zintso-yuliya-volodymyrivna/	Zintso, Yu. V. (2018). *The Marketing Management of Ukraine's Farms*. (Candidate's thesis*)*. Lviv. https://lnu.edu.ua/thesis/zintso-yuliya-volodymyrivna

Conflict of interest. The authors certify that they have no financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that the authors are affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution.

The authors received no direct funding for this research.

The contribution of the authors is equal.

Yahelska K., Vasylyshyna L. Marketing policy of farms in Ukraine. *Scientia fructuosa*. 2023. № 5. S. 68-88. https://doi.org/10.31617/1.2023(151)05

Received by the editorial office 09.05.2023.
Send for revision 19.05.2023.
Accepted for printing 24.05.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)06
UDC 355.01:338.4=111

TRUBEI Oksana,
PhD in Economics, Associate Professor, Associate Professor of the Department of Economics and Business Finance
State University of Trade and Economics
19, Kyoto St., Kyiv, Ukraine, 02156

ORCID: 0000-0003-4882-5813
o.trubey@knute.edu.ua

HANECHKO Iryna,
PhD in Economics, Associate Professor, Associate Professor of the Department of Economics and Business Finance
State University of Trade and Economics
19, Kyoto St., Kyiv, Ukraine, 02156

ORCID: 0000-0002-1918-3164
i.ganechko@knute.edu.ua

AFANASYEV Kostyantyn,
PhD in Economics, Associate Professor of the Department of Management and Marketing
Kyiv National Linguistic University
73, Velyka Vasylkivska St., Kyiv, Ukraine, 03150

ORCID: 0000-0002-4613-3525
kostyantyn.afanasyev@knlu.edu.ua

ТРУБЕЙ Оксана,
к. е. н., доцент, доцент кафедри економіки та фінансів підприємства
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0003-4882-5813
o.trubey@knute.edu.ua

ГАНЕЧКО Ірина,
к. е. н., доцент, доцент кафедри економіки та фінансів підприємства
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0002-1918-3164
i.ganechko@knute.edu.ua

АФАНАСЬЄВ Костянтин,
к. е. н., доцент кафедри менеджменту і маркетингу Київського національного лінгвістичного університету
вул. Велика Васильківська,73,
м. Київ, 03150, Україна

ORCID: 0000-0002-4613-3525
kostyantyn.afanasyev@knlu.edu.ua

RETAIL IN TIMES OF WAR: RESUMPTION OF BUSINESS ACTIVITY

Retail trade, as the final stage of the movement of goods, plays a crucial role in ensuring the efficiency of the state's economy and the well-being of its population. In the conditions of war, the uninterrupted operation of retail enterprises has become the foundation for the survival and further development of manufacturing enterprises in the FMCG market and a guarantee of food security in Ukraine. During the war, domestic retail underwent specific stages of survival and development, responding to external challenges in unique ways and employing unconventional approaches and solutions to overcome them. The aim of the article is to determine the life trajectory of retail during the war, systematize the approaches of domestic retailers to adaptation and business activity recovery. In the research general

РИТЕЙЛ В УМОВАХ ВІЙНИ: ВІДНОВЛЕННЯ ДІЛОВОЇ АКТИВНОСТІ

Роздрібна торгівля як завершальна ланка товароруху відіграє ключову роль у забезпеченні ефективності функціонування економіки держави та добробуту її населення. В умовах війни безперебійна діяльність підприємств роздрібної торгівлі стала базисом для виживання та подальшого розвитку підприємств-виробників на ринку FMCG та запорукою продовольчої безпеки в Україні. За час війни вітчизняний ритейл пройшов певні стадії виживання та розвитку, специфічно реагуючи на зовнішні виклики, використовуючи нестандартні підходи та рішення щодо їх подолання. Метою статті є визначення життєвої траєкторії ритейлу під час війни, систематизація підходів вітчизняних ритейлерів до адаптації й відновлення ділової активності. В процесі

scientific methods, including theoretical generalization, systematization, and grouping; abstraction, analysis, and synthesis; statistical method; deduction and induction methods were used. The main challenges of retail in various spheres of activity were considered, and survival and recovery methods under heightened political risks were generalized. A life trajectory of the trading business in times of war has been constructed, encompassing four main stages driven by the dynamics and contradictions of changes in the trading business's external environment. Ways to overcome (reduce the negative impact) retail challenges in the conditions of martial law were systematized. It has been established that the key principles of survival and development for retail in the context of full-scale war in Ukraine are flexibility, maneuverability, adaptability, and the use of a situational approach to overcome unforeseen challenges. Systematizing the positive experience of restoring business activity in retail during times of war allows its direct application or adaptation for various market segments, industries, and individual enterprises in the dynamic nature of changes.

Keywords: retail, retail challenges, life trajectory of trading business in times of war, adaptation, business activity recovery.

дослідження використано загальнонаукові методи: теоретичного узагальнення, систематизації та групування; абстрагування, аналізу та синтезу; статистичний; дедукції та індукції. Розглянуто основні виклики ритейлу в різних площинах діяльності та узагальнено методи виживання й відновлення в умовах підвищених політичних ризиків. Побудовано життєву траєкторію торговельного бізнесу в умовах війни, яка містить чотири основних етапи, зумовлені динамікою та суперечностями змін зовнішнього середовища торговельного бізнесу. Систематизовано способи подолання (зниження негативного впливу) викликів ритейлу в умовах воєнного стану. Встановлено, що ключовими принципами виживання та розвитку ритейлу в умовах повномасштабної війни в Україні стали гнучкість, маневровість, адаптивність, використання ситуативного підходу для подолання неочікуваних викликів. Систематизація позитивного досвіду відновлення ділової активності ритейлу в умовах війни дає змогу прямо його використовувати або адаптувати для різних сегментів ринку, галузей та окремих підприємств у мінливих умовах.

Ключові слова: ритейл, виклики ритейлу, життєва траєкторія торговельного бізнесу в умовах війни, адаптація, відновлення ділової активності

JEL Classification: D81; L81; M29.

Introduction

It is difficult to define a more significant obstacle to the normal development of the economic system than war. In contrast to the traditional causes and factors causing crisis phenomena in the economy, war can generate a systemic crisis as a chain reaction of negative consequences affecting, if not all, then most spheres of social and economic life of society. Retail trade during the war became a kind of outpost of the national economy; it largely ensured its survival and played an extremely important social and economic role.

The full-scale war unleashed by russia against Ukraine has become quite a test for domestic business. A number of adverse factors, exogenous and endogenous, simultaneously affected the system of business activities and caused severe and sometimes catastrophic consequences. This fully applies to retail, which is very sensitive to any crisis processes. The relevance of research on the mentioned subject is confirmed by the fact that retail trade has a critical impact on the socio-economic state of the country, creates

a resource for its development, and provides the most basic needs of the population.

The results of the analysis of the latest scientific publications showed that the issue of the impact of the war on business is very important and concerns various aspects of the activities of domestic enterprises. At the same time, the authors mostly focus on certain aspects of business activity as a whole, without focusing on specific areas or industries.

The advantages of using a process approach to management in general and the management of business processes of an enterprise in war conditions are revealed by Kotlyk A., & Gres G. (2022).

Vatchenko B. and Sharanov R. (2022) considered the theoretical, methodological and practical principles of anti-crisis management of an enterprise in war conditions. The authors defined the differences between a traditional crisis and a wartime crisis at the enterprise, characterized the main elements of the mechanism of anti-crisis management of the enterprise in the wartime period; four phases of the operation of the enterprise during the war are defined and the features of anti-crisis management in each of them are indicated.

Kostenko Yu. and Korolenko O. (2022) analyzed the factors of financial stability of enterprises under martial law and defined new criteria for its assessment. Neskorodeva I. and Yan Buyun (2022) focused on the analysis of the business environment in Ukraine during the war and post-war period, the assessment of the impact of threats to the recovery of entrepreneurial activity.

With regard to scientific research on the problems of Ukrainian retail during the war, individual issues are considered in the article by Pavlova V. (2022), which characterizes the state of activity of trade enterprises during the war, shows the dynamics of changes in March-May 2022, and analyzes changes in the product profile in the studied period.

The issue of retail development under the conditions of martial law in Ukraine in the context of modern threats and opportunities, strong and weak aspects of activity is considered in the work (Biliavska & Mykytenko, 2023). Modern retail trends are characterized from the point of view of consumer behavior research.

The research of Proskurnina N. (2018) deserves special attention, which examines the development of retail trade in the conditions of the dynamic nature of changes, which may well be adapted to the retail challenges associated with war.

Scientific work aimed at studying the conditions of retail operation during the war, factors of its adaptation and recovery, is still being formed. The continuation of martial law in Ukraine actualizes the need to research the stages of retail development, non-standard models, and methods of adaptation to new challenges, scaling and growth.

The aim of the article is to determine the life trajectory of retail during the war, to systematize the approaches of domestic retailers to adaptation and restoration of business activity.

During the study of the main problems and challenges of retail during the war, general scientific methods were used: theoretical generalization, grouping and systematization; abstraction – to highlight the most significant factors of stability of Ukrainian retail; analysis and synthesis – to build the life trajectory of retail; statistical method of collecting and processing information on the state and trends of retail trade in Ukraine during the martial law; deductions and inductions – to form the conclusions of scientific research.

A hypothesis is put forward about the existence of a specific life trajectory of retail during the war, which includes separate stages formed under the influence of relevant events and in response to them.

Scientific publications of domestic researchers, statistical data of the Association of Retailers of Ukraine, the State Statistics Service of Ukraine, and other open sources of information served as the information base of the study.

The main part of the article contains three subsections. In the first subsection, a study of the main challenges and problems of retail during the war was conducted; the most relevant business risks were systematized and grouped within five planes: asset ownership, logistics and supply, personnel, market conditions (industries), financial support, government regulation. The second is devoted to a comprehensive analysis of the external environment, which made it possible to build a model of the trajectory of the life cycle of retail during the war. In the third, the key factors of the stability of Ukrainian retail as a set of methods that contributed to its adaptation, restoration and development are highlighted.

1. The main challenges and problems of trade business during the war are a combination of external and internal processes

Ukrainian retail has demonstrated considerable vitality, anti-crisis and adaptability to negative changes caused by military aggression on the part of Russia, restoring business activity. In this article, retail business activity is considered as a complex characteristic of the industry, associated with a wide range of efforts of companies in this field of activity aimed at survival, functioning and development in the conditions of dynamic changes in the external environment.

Analyzing the stage already passed, it is possible to highlight and systematize the main problems and challenges faced by retailers during the full-scale war (*Figure 1*).

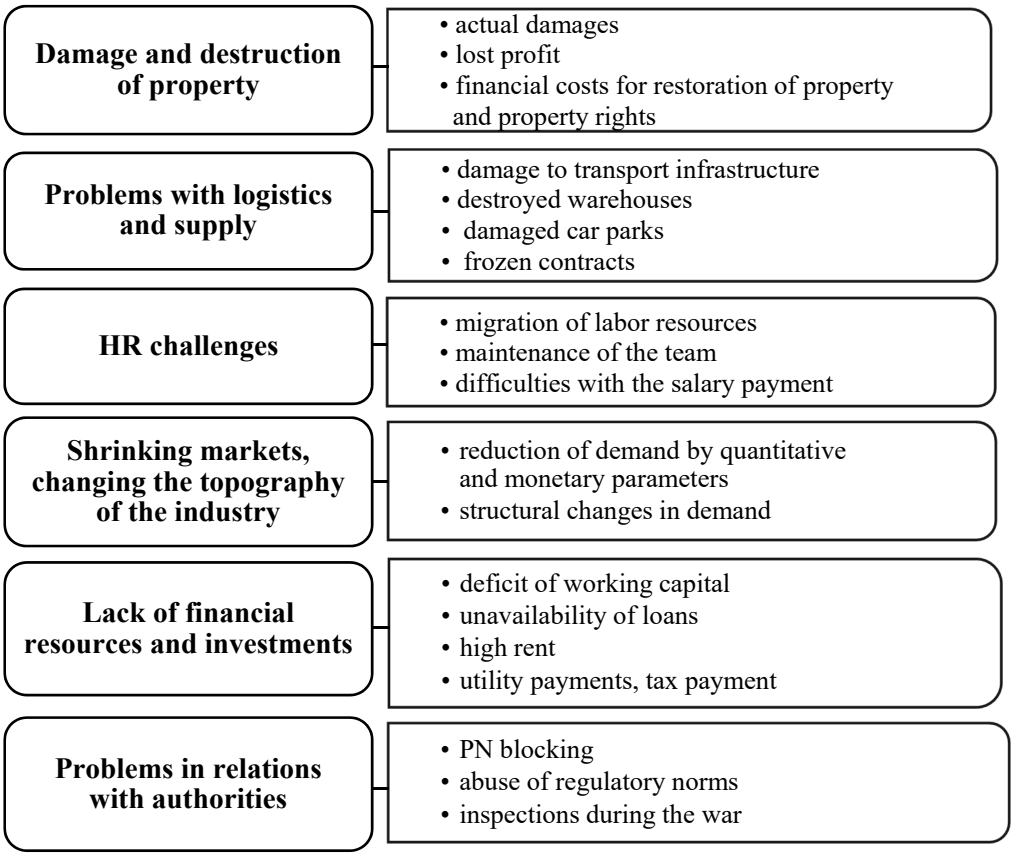


Figure 1. The main challenges of retail during the full-scale military aggression of russia on the territory of Ukraine

Source: compiled by the authors based on (Yermakova, 2022a; Yermakova, 2022b; Vinokurov, 2023; How trade in Ukraine changed during the war, 2023; Kyiv School of Economics, 2023; Research on the state of business in Ukraine, 2023; Investment facilitation for development, 2021; State and needs of business in the conditions of war, 2023).

Thus, according to the data of the Association of Retailers of Ukraine (Yermakova, 2022a), during the first month of the war, the drop in the volume of retail sales reached a mark of 50 %, and the number of trade facilities that ceased their activities was 30%. In particular, 3.973 out of 13.674 stores did not work. The largest number of closed objects was observed: in the jewelry segment – 85 %; in fashion retail (clothing, footwear and fashion accessories sellers) 72 % of stores were forced to close; in the retail of household and digital appliances – 50 %; in non-food retail (building materials, cosmetics, and household goods) 30–35 % of trade facilities did not work.

The destruction of product supply chains has become a significant problem for Ukrainian retail. The lack of commodity resources makes trading itself impossible. The main logistical challenges faced by retailers include: refusal to stockpile, because when goods in warehouses increase, the volume of frozen finances increases and the risk of an attack and loss of assets increases; difficulties with the purchase of goods due to the limitation of the

range and circle of suppliers, the blocking of ports and the burden on the railway infrastructure; destruction of bridges and roadways; shortage of fuel.

An equally difficult challenge for retail trade was the personnel problem, which had a controversial nature. So, on the one hand, the decrease in the number of operating trade businesses and the loss of their solvency led to a significant reduction in personnel, on the other hand, due to significant external and internal migration of the population in the labor market of certain regions, the lack of qualified workers became noticeable. Thus, during the war, almost 20 % of Ukrainian retailers reduced their staff by more than 10 % (Yermakova, 2022b). The war led to the deformation of market institutions, including the labor market.

Among the mentioned, the most difficult to solve is the problem of a significant reduction of solvent demand in the domestic market. This situation leads to a decrease in the income of trade business entities, a decrease in the profitability of their activities, and financial and economic stability. The reasons for this situation were changes in the quantitative (population size) and qualitative (decrease in citizens' incomes) parameters of demand. This thesis is confirmed by the fact that the real population of Ukraine has decreased due to forced migration and temporary occupation of its territories. Thus, according to UNHCR data, about 4.9 million Ukrainian citizens received temporary protection status in European countries until January 3, 2023 (Vinokurov, 2023). Due to the increased level of unemployment (30 %) and the decrease in the level of wages, the incomes of the citizens who remained in the country also decreased significantly.

Separately, it is worth paying attention to the transformation of the trade landscape due to structural changes in demand. In the conditions of danger and saving money, the population rapidly changed its purchasing priorities, giving preference to goods and services that satisfy basic needs (food products, goods for life support and communication, etc.).

The result of the financial activity of most retail enterprises in the conditions of a full-scale war was losses. Thus, according to the Association of Retailers of Ukraine, the losses of large enterprises in the industry exceeded UAH 50 billion, real losses are much higher, since data on small network and non-network enterprises are not taken into account. About 60 % of the losses fall on food chains, at the same time, food trade recovers faster than other retail (How trade in Ukraine changed during the war, 2023). According to experts' calculations (Kyiv School of Economics, 2023), as of February 2023, the amount of losses caused by trade increased to USD 2.6 billion.

Retail companies, like the rest of domestic business, have very limited recovery opportunities due to a lack of funding. The criticality of the financing situation is confirmed by the results of a survey of entrepreneurs in various industries. The lack of financial resources in the country hinders

business recovery the most: customer insolvency (46.9 %), unavailability of credit funds (37.5 %) and equity. The average weighted need of business in additional financing as of June 2023 was USD 1. 052. 623 (Study of the State of Business in Ukraine, 2023).

The problem of confrontation between national trade networks, on the one hand, and manufacturers and suppliers of food products, on the other, due to payment terms for delivered goods, remains unresolved. The reduction of goods turnover in the conditions of war and the lack of working capital do not always allow prompt payment for deliveries. The retail sector operates under the conditions of regulatory restrictions on activity, in particular in terms of shortening the terms of payments for socially significant goods; the wartime government imposed a 10 % retail surcharge on basic products, such a surcharge does not cover all business costs.

The conditions of bank lending do not allow solving the liquidity crisis of trade business in modern conditions, because the cost of bank loans increased during the full-scale war, and the state support program by providing loans under the 5-7-9 program cannot overcome the problem.

The lack of funds within the country, the reduction of direct foreign investment in Ukraine in 2022 compared to 2021 by more than 80 % requires the search for other ways of financial support. The problem could be partially solved if Ukraine joined the initiative of investment facilitation for development (Investment facilitation for development, 2021), introduced within the framework of the WTO, the purpose of which is the adoption of the Agreement on the Simplification of Investment Procedures.

Thus, credit restrictions and investment freezes due to war risks became a significant obstacle to the development of business activities in the field of retail trade. However, companies that do not invest in development are guaranteed to lose market share.

A significant number of business owners during the martial law in Ukraine testify to the presence of problems related to the unpredictability of the state's actions, which impair the efficiency of operations. In particular, the risks associated with the tax and customs systems have increased significantly in the field of retail trade. One of the biggest obstacles that the state puts before business is the blocking of tax invoices in the VAT system, RACMS (the risk assessment criteria monitoring system) due to the criteria put forward by the state, and non-compliance with court decisions. Such actions of the tax service put enterprises that are counting on receiving a tax credit from VAT in even more difficult conditions. The policy regarding inspections by tax authorities is also inconsistent.

Eradication of corruption in Ukraine is a key economic priority. According to the survey of business representatives, 68.9 % of respondents believe that the government should first solve the task of eliminating

corruption; 48 % – to improve access to credit resources, 40.9 % – to carry out judicial reform. A significant part of business problems, the solution of which depends on the actions of the authorities, is in the area of reforms of the tax system, tax administration and tax audits of enterprises. The work of white businesses in Ukraine is also hindered by the inefficient activities of the State Customs Service (SCS), more than 50% of business representatives point to the need to restart the SCS, re-elect the manager at transparent competitions with the participation of international experts and re-certify employees, and implement a new customs IT system in order to minimize human factor (State and needs of business in the conditions of war, 2023). The state's inconsistency in determining the customs value of goods subject to duty and VAT and the long-term resolution of disputed issues negatively affect the activities of retail enterprises and relations with foreign trade partners. For the retail sector, the issue of transparency and efficiency of customs operations remains relevant, despite the reduction in foreign trade turnover, since the share of imported goods is high in the assortment in various segments of retail trade, except for food, which only for certain categories of goods has a critical dependence on imported supplies.

The general characteristics of the state of retail trade in Ukraine can be characterized by the results of monitoring the Retail Well-Being Index (RWBI), which takes into account such indicators as the attendance of shopping centers (shopping malls), the vacancy of spaces in shopping centers and the level of rental rates. In March 2022, this indicator was 16.7, while in December 2021 it was 39.9 (UCSC, 2023).

2. Life trajectory of trade business during the war

Taking into account a number of key events that led to the mentioned problems and the corresponding business response to them, it is possible to hypothesize that retail went through certain stages of survival and development during the full-scale war. These stages can be defined as a specific life trajectory of a business during the war (*Figure 2*). Since general political and economic conditions of functioning have developed for all subjects of the domestic economy, it is natural that the stages of the life trajectory were the same for all of them. Although the response of individual businesses to relevant adverse events and conditions is somewhat different and depends, as a rule, on the established anti-crisis management system, flexibility and adaptability of the business model to external challenges.

To justify the validity of the proposed hypothesis, it is worth considering the characteristic features of each of the presented stages of the trajectory, the events that caused them, and the reaction of the trade business to them.

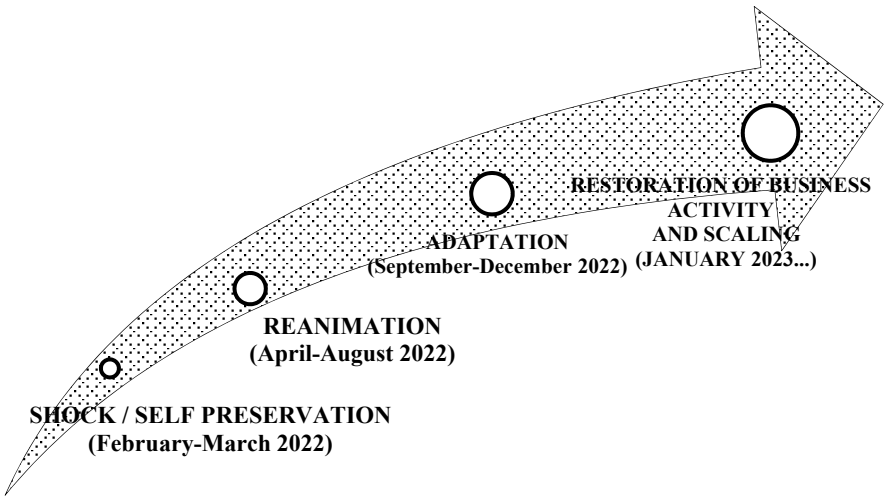


Figure 2. Life trajectory of domestic retail during the war

Source: compiled by the authors on the basis of (Kostenko, Korolenko, & Guz, 2022; State Statistics Service of Ukraine, 2021; UTG, 2023; Taranova, 2022; Business Support in Wartime, n.d.; Shvets, 2023; Osik, 2022; Gradus Research, 2022; Gordiychuk, 2022; Yermakova, 2023c; Analysis of markets in the YouControl system, n.d.) and own research.

The first stage can be defined as a "shock" (February-March 2022), and the response of retailers to it as a reaction of self-preservation. In the last two pre-war years (2020, 2021), Ukrainian retail was among the most profitable sectors of the Ukrainian economy. In total, retailers received more than UAH 430 billion in gross profits for the year (State Statistics Service of Ukraine, 2022). Retail turnover, which characterizes not only the volume of activity of retail enterprises, but is also an important marker of the economic activity of the population, after the COVID-19 pandemic, also showed an annual growth of 10–12% (State Statistics Service of Ukraine, 2021, 2022).

However, after the start of full-scale hostilities on February 24, 2022, everything changed dramatically. A significant number of retail trade companies lost their infrastructure facilities (distribution centers, warehouses, stores, etc.). Some facilities were damaged, some were closed due to danger to staff and customers, and in some areas it was not possible to organize supplies.

During the 25 days of hostilities, 3 973 or 29 % of trade facilities/stores were closed for one reason or another (Yermakova, 2022a) (*Table 1*).

According to the Ukrainian Trade Guild, 26 shopping centers were affected by the full-scale war: 8 were destroyed and 18 were partially damaged. The amount of direct losses reached USD 402 million (UTG, 2023).

Under such conditions, it was extremely difficult to continue working. However, most retail enterprises managed to rebuild and optimize their activities and continue to function in the new conditions.

Table 1.

Changes in the number of retail trade facilities in Ukraine at the beginning of the war

Segment	The total number of objects until February 24, 2022	Active objects as of 03/21/2022	Closed objects by state on 21.03.2022	Closed objects, %
Retail market	3329	2749	580	17
Food (mini-markets, supermarkets)	3796	3171	625	16
Pharmaceutics (pharmacies)	2652	1928	724	27
Non-food (household goods, household chemicals, cosmetics)	1313	194	1119	85
Jewelry	1363	1163	200	15
Car refueling (gas stations, gasoline, fuel)	554	272	282	51
Consumer Goods (household, digital appliances)	510	142	368	72
Fashion (clothes, shoes)	111	76	35	32
Building materials (building materials)	46	6	40	87
Entertainment Centers (RC, cinemas)	13675	9701	3974	29

Source: compiled by the authors based on (Yermakova, 2022a).

The second stage of the life trajectory of domestic retail during the war can be defined as "resuscitation" (April-August 2022). The main resuscitation measures that contributed to the support of retailers at this time: business relocation; financial support from the state; cost optimization; solving problems with personnel; adjustment of assortment; entering the international market.

So, relocation has become a significant support for many businesses and for retail in particular. During this period, state and non-state programs to support business relocation were launched. The task of such initiatives was to ensure the full recovery of businesses relocated from the Eastern and Southern regions of Ukraine to the territory of Lviv, Ivano-Frankivsk and Ternopil regions, taking into account the establishment of channels for the supply of goods. In particular, a group of MTI companies: Intertop Ukraine LLC, Pandora, and Foxtrot trading company, which partially relocated to the territory of Lviv Oblast, have a history of relocation (Taranova, 2022).

Certain financial support from the state became an important means of survival in the first months of the war (Business support in war conditions). The main forms of state financial assistance have become:

- payments to enterprises in the amount of UAH 6 500 per month for each employed internal migrant;

- credit programs with the possibility of receiving up to UAH 60 million at zero interest during martial law;
- tax changes and adoption of the draft law "On Amendments to the Tax Code of Ukraine";
- access to grant funds for business.

Optimization of expenses by reviewing their structure, rejection of non-essential items, and improvement of business processes and development of online sales ensured the solvency of retail trade enterprises.

Regarding the personnel problem. Due to the departure of a significant number of management personnel abroad and the need to resolve security issues for those who remained in Ukraine, the issue of remote work organization of the offices of trading companies arose. Operational personnel, in turn, needed evacuation from the combat zone and moral and psychological support, and the families of employees who were in the ranks of the Armed Forces had to be supported materially as well. A high level of social responsibility, care for personnel and preservation of the team was demonstrated by the majority of system trading companies, in particular: the chain of stores "Brocard Ukraine", the EVA line of stores (TOV "RUSH"), "Foxtrot", "Epicenter C" and others (Shvets, 2023).

In addition to the above, the challenges of structural changes in demand forced retailers to adjust the product offer on the consumer market, which involved: changing the assortment, diversifying suppliers, and adjusting the price policy. All this made it possible to restore sales volumes and continue trading activities.

New opportunities to enter the international market also helped Ukrainian retail. Yes, even on the eve of the war, such domestic trading companies as: online retailer MakeUp took the risk of becoming international; Ukrainian online marketplace Rozetka.ua; Intertop is one of the largest operators of retail trade in the fashion segment in Ukraine (Osyk, 2022).

Thus, during the first six months of the war, Ukrainian retail demonstrated resilience to the challenges associated with a large-scale war and moved to the next stage of "adaptation" (September–December 2022). During this period, most national retailers resumed work, and retail trade was included in the TOP-10 areas of business activity during the war (2nd place). Business owners tried to keep their employees and the level of wages, looked for new sales markets, built new business relationships (Gradus Research, 2022).

A separate challenge during this period was the energy crisis associated with Russia's attacks on Ukraine's energy system. Therefore, retailers had to solve the issue of alternative energy supply. Thus, the largest Ukrainian grocery chain of supermarkets, ATB, allocated UAH 400 million for the purchase of diesel generators and Starlink terminals. Similar solutions were introduced by "Silpo" and other retailers (Gordiychuk, 2022). Thus, the

so-called "generator effect" was activated, which allowed the continuation of work and ensured the continuity of operational activities.

The next stage in the life trajectory of domestic retail during the war can be defined as "restoration of business activity and scaling." Signs of the recovery of business activity of economic entities in Ukraine appeared in the first months of the war, but this process began to acquire a systemic nature and features of scaling only at the beginning of 2023. The most important indicator demonstrating this trend is the development of trade turnover, which in January–March 2023, it was UAH 262 689 million, which is UAH 32 352.5 million (14 %) more than the similar figure in 2022 (State Statistics Service of Ukraine, n.d.).

After 14 months of the war, retail almost reached the pre-war state of operation, 16 265 of the 16 821 trade facilities of the entire industry were already working. The percentage of operating facilities was 97 %, respectively, closed – only 3 % (Yermakova, 2023c).

The intensification of business activity in the field of trade is also evidenced by the number of new registered businesses. According to the analytical system YouControl (Analysis of markets in the YouControl system), in the first half of 2023, 55 118 new entities were registered, the main type of economic activity of which is wholesale and retail trade.

3. Key factors of stability of Ukrainian retail

In the conditions of mass emigration of employees and customers abroad, a decrease in purchasing power demand, interruptions in the supply of electricity, an increase in purchase prices, regulatory pressure, a lack of working capital and investments, overcoming the challenges of domestic retail was ensured by a set of measures applied in conditions of risk and uncertainty.

Due to real or potential damage (destruction) of property, there was a geographical redistribution of retail concentration in Ukraine. Many enterprises had to stop their activities, close individual trade facilities, relocate, and develop e-commerce. All management decisions were made in a very short time and mostly situationally, because not every company had a pre-developed plan of action in the most pessimistic conditions. In this area of challenges, an important issue is the possibility of compensation for economic losses due to the destruction and damage of property, loss of commodity assets, as well as lost profits by receiving reparations and compensations. However, the mechanism of compensation, which allows it to be provided in real terms, is still not working; collecting evidence and conducting court cases, can take many years. In such conditions, it is advisable to record the damage caused, collect evidence, carefully document

all damages in order to be ready to appeal to national and international courts for the protection of rights violated as a result of the war.

New realities since the pandemic restrictions forced traditional retailers to move in the direction of omnichannel sales and concentrate goods as close as possible to the end consumer, which made it possible to solve problems with logistics and supply in a short time. The war mostly caused import supply problems, and almost every company had to rebuild their supply chains. Mobility and flexibility, active networking made it possible to conclude direct contracts, use warehouses abroad instead of those lost during hostilities. One of the promising directions of retail development in the conditions of martial law are: development of own brands; access to international online sites; changing the product portfolio, including at the expense of internal suppliers; increasing the insurance stock of goods and using digital tools for effective interaction between the retailer and suppliers (experience of ATB company). Thus, a creative approach has become an advantage for solving a number of problems in this area.

Measures to overcome HR challenges and adapt to the new reality were the creation of safe working conditions; material and psychological support of employees and their families; provision of leave to preserve personnel, formation of a critical number of teams for work by booking conscripts; availability of option "B" with the possibility to sign documents instead of the manager. The experience of the OKKO Company, which attracted women drivers for the transportation of oil products and hired older people, is positive. At the beginning of the war, many retailers evacuated employees and their families, relocated with housing rental expenses covered.

The problem of shrinking markets and changing the terrain of the industry in wartime is partly solved by diversifying products, updating the assortment according to customer needs, and reviewing and changing marketing strategies such as price reductions, promotional offers, advertising and product promotion, etc.

In conditions of limited access to financing, the emphasis shifted to the issue of controlling operating costs, reducing them, and closing unprofitable areas of activity. Financial support for expenses during martial law is more focused on the use of internal resources; external financing is possible at the expense of grants from the government or international organizations, soft loans under special government programs.

Problems in relations with authorities are difficult for an individual company to manage. This is a matter of interaction between business (unions, associations) and state authorities. Reducing the negative impact of this factor is possible with professional legal support of the company.

The conducted study of retail challenges during the war made it possible to systematize the practical experience of companies and outline the main ways to overcome them (*Table 2*).

Table 2

Ways of overcoming (reducing the negative impact) challenges of retail in the conditions of martial law

The main challenges of retail during the war	Coping methods/actions aimed at reducing negative consequences
Damage and destruction of property	Business relocation
	Fixing the damage caused, documenting all damages, collecting evidence for receiving compensation in the future
Problems with logistics and supply	Development of omnichannel sales
	Concentration of goods closer to the final consumer
	Reduction and optimization of logistics chains
	Use of warehouses abroad
	Access to international online sites with own brands
	Development of own brands
	Diversification of the product portfolio
	Increasing the insurance stock of goods
	Use of digital tools in working with suppliers
HR challenges	Creation of safe working conditions
	Material and psychological support of employees and their families
	Evacuation of employees and their families, coverage of housing rental costs
	Recruitment of older people and women to the so-called "male" positions
	Reservation of conscript workers
	Development of mobility of managers and staff
Shrinking markets, changing the topography of the industry	Change in marketing strategy
	Product portfolio optimization
	Geographical diversification of activities within the country
	Expansion of international partnerships and sales markets
Lack of financial resources and investments	Reduction of costs, primarily permanent
	Optimization of business processes
	Attracting grants from the government or international organizations
	Obtaining preferential loans
	Closing unprofitable areas of activity

Source: Compiled by authors based on (State of Business in Ukraine Survey, 2023; UCSC, 2023; Gradus Research, 2022).

Thus, in the conditions of war, retail companies had to abandon standard approaches to management and organization of current activities. Situational or scenario approaches, principles of rapid response to changes in external operating conditions, as well as flexibility, adaptability, maneuverability, mobility, unity of all levels of management, critical thinking and creativity are the basis of planning of all parameters of the managed activity process.

Conclusions

The crisis caused by the full-scale invasion of the Russian Federation into Ukraine radically disrupted the stability of macro- and microeconomic systems, including the retail sector. The main challenges for retail trade were factors such as damage and destruction of property – in just one month of hostilities, Ukrainian retail lost a third of its trading facilities in most market segments; destruction of commodity supply chains and, as a result, limitation of the assortment of goods, reduction of suppliers, shortage of fuel materials; personnel problems due to the migration of workers and consumers, during the war, almost 20% of Ukrainian retailers reduced their staff by more than 10%; transformation of the terrain of trade activity due to structural changes in demand; sharp deterioration of the financial condition (losses of large enterprises in the industry exceeded UAH 50 billion) and lack of financial resources; the unpredictability of the state's actions, in particular, in terms of regulation of the tax and customs systems.

The research confirmed the hypothesis regarding the gradual recovery and development of retail as a life trajectory that was formed during the war. The life trajectory of retail includes stages that are characterized by a change in its state: "shock" (February–March 2022); "resuscitation" (April–August 2022); "adaptation" (September – December 2022); "revival of business activity and scaling".

The scientific novelty of the obtained results lies in the construction of the life trajectory of retail during the war, the identification and structuring of ways to overcome the challenges of retail in various planes.

The results of the analysis of the state of retail show that the business responded as quickly as possible to every challenge caused by the war, abandoning standard approaches to management and organization of activities. This response to changes in the external environment made it possible to pass the point of no return, adapt and resume business activity.

The practical significance of the research lies in the possibility of applying the obtained results to the recovery of work by other companies in crisis conditions.

In the future, it is planned to focus attention on researching the problems of retail development in the context of the active use of innovative technologies.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	REFERENCE
Biliavska, Y., & Mykytenko, N. (2023). The Consumers' Behavior as a Driver of Retail Trends. *SCIENTIA FRUCTUOSA*, 3, 17-32. http://journals.knute.edu.ua/scientia-fructuosa/article/view/1838/1739	Biliavska, Y., & Mykytenko, N. (2023). The Consumers' Behavior as a Driver of Retail Trends. *SCIENTIA FRUCTUOSA*, *(3). 17-32.* http://journals.knute.edu.ua/scientia-fructuosa/article/view/1838/1739
Gradus Research. (2022, листопад). Настрої українського бізнесу. https://gradus.app/ documents/322/Gradus_for_KIEF_-_Business_Survey_y9d5apv.pdf	Gradus Research (2022, November). Moods of Ukrainian business. https://gradus.app/documents/322/Gradus_for_KIEF_-_Business_ Survey_y9d5apv.pdf
Investment facilitation for development. (2021). World Trade Organization. https://wto.org/english/tratop_e/invfac_public_e/invfac_e.htm	Investment facilitation for development. (2021). World Trade Organization. https://wto.org/english/tratop_e/invfac_public_e/invfac_e.htm
Kotlyk, A., & Gres, G. (2022). Securing business flexibility in conditions of war in Ukraine. Modeling the Development of the economic systems, 3, 20-23. https://doi.org/10.31891/mdes/2022-5-2	Kotlyk, A., & Gres, G. (2022). Securing business flexibility in conditions of war in Ukraine. Modeling the Development of the economic systems, 3, 20-23. https://doi.org/10.31891/mdes/2022-5-2
UCSC (2023, 19 червня). Індекс самопочуття рітейлу. https://www.ucsc.org.ua/indeks-samopochuttya- rytejlu-rwbi-u-travni-2023-roku-neznachno-znyzyvsya-i-stanovyt-288-punktiv	UCSC (2023, June 19). Retail Well-Being Index. https://www.ucsc.org.ua/indeks-samopochuttya-rytejlu-rwbi-u-travni-2023-roku-neznachno-znyzyvsya-i-stanovyt-288-punktiv
UTG (2023, 10 квітня). Війна змінила все: думки експертів про стан торгової нерухомості в Україні та перспективи розвитку. https://utgcompany.com/ vijna-zminyla-vse-dumky-ekspertiv-pro-stan-torhovoi-nerukhomosti-v-ukraini-ta-perspektyvy-rozvytku/	UTG (2023, April 10). The war changed everything: experts' opinions on the state of commercial real estate in Ukraine and prospects for development. https://utgcompany.com/ vijna-zminyla-vse-dumky-ekspertiv-pro-stan-torhovoi-nerukhomosti-v-ukraini-ta-perspektyvy-rozvytku/
Аналіз ринків в системі YouControl. (б.д.). https://youcontrol.market/app/ua/market-analysis/ukraine	Analysis of markets in the YouControl system (n.d.). https://youcontrol.market/app/a/market-analysis/ukraine
Ватченко, Б., & Шаранов, Р. (2022). Антикризове управління підприємством в умовах війни. *Економічний простір, 182, 38-43.* http://www.prostir.pdaba.dp.ua/index.php/journal/article/view/1186. https://doi.org/10.32782/2224-6282/182-5	Vatchenko, B., & Sharanov R. (2022). Anti-crisis management of the enterprise in war conditions. *Ekonomichnyi prostir – Economic space*. Vol. 182. 38-43. https://doi.org/10.32782/2224-6282/182-5
Вінокуров, Я. (2023, 10 січня). Українські мігранти підіймають економіку Європи. Що буде з Україною без них? Економічна правда. https://www.epravda.com.ua/publications/2023/01/10/695807	Vinokurov, Ya. (2023, January 10). Ukrainian migrants are boosting the European economy. What will happen to Ukraine without them? Economic truth. https://www.epravda.com.ua/publications/2023/01/10/695807
Гордійчук, Д. (2022, 7 грудня). Ефект генератора: бізнес адаптується до відключень і це впливає на ціни. *Економічна правда.* https://www.epravda.com.ua/publications/2022/12/7/694687	Gordiychuk, D. (2022, December 7). Generator effect: Businesses adapt to outages and this affects prices. *Ekonomichna pravda – Economic truth*. https://www.epravda.com.ua/publications/2022/12/7/694687
Державна служба статистики України (2022). Статистичний збірник "Діяльність суб'єктів великого, середнього, малого та мікропідприємництва за 2021 рік". https://ukrstat.gov.ua/	State Statistics Service of Ukraine. (2022). Statistical collection "Activities of large, medium, small and micro enterprises for 2021". https://ukrstat.gov.ua/

Державна служба статистики України (2021). Статистична інформація "Оптовий та роздрібний товарооборот підприємств оптової та роздрібної торгівлі". https://ukrstat.gov.ua/	State Statistics Service of Ukraine. (2021). Statistical information "Wholesale and retail turnover of wholesale and retail trade enterprises". https://ukrstat.gov.ua/
Дослідження стану бізнесу в Україні. (2023, червень). https://drive.google.com/file/d/1X4e53R9UZs7Iu XwAyPyOxrrAhhNy5rkL/view?pli=1	Study of the state of business in Ukraine. (2023, June). https://drive.google.com/file/d/1X4e53R9UZs7IuXwAyPyOxrrAhhNy5rkL/view?pli=1
Єрмакова Я. (2022a, 23 березня). Статистика війни: за місяць бойових дій український рітейл втратив третину своїх торгових точок. https://rau.ua/novyni/rusiian-war/	Yermakova, Ya. (2022a, March 23). War statistics: during the month of hostilities, Ukrainian retail lost a third of its outlets. https://rau.ua/novyni/rusiian-war/
Єрмакова Я. (2022b, 22 вересня). Спецпроект RAU і robota.ua: як змінився ринок праці в рітейлі з квітня по серпень 2022 року. https://rau.ua/novyni/specproekt-rau-i-robota-ua/	Yermakova, Ya. (2022b, September 22). RAU and robota.ua special project: how the retail labor market changed from April to August 2022. https://rau.ua/novyni/specproekt-rau-i-robota-ua/
Єрмакова Я. (2023c, 3 травня). 430 днів спротиву: скільки магазинів втратили й відкрили провідні торговельні мережі України за 14 місяців війни (інфографіка). https://rau.ua/novyni/magaziniv-vtratili-merezhi-14/	Yermakova Ya. (2023c, May 3). 430 days of resistance: how many stores were lost and opened by the leading retail chains of Ukraine during the 14 months of the war (infographic). https://rau.ua/novyni/ magaziniv-vtratili-merezhi-14/
Київська школа економіки (2023, 22 березня). За рік повномасштабної війни росія завдала збитків інфраструктурі України на майже $144 млрд. https://kse.ua/ua/about-the-school/news/za-rik-povnomasshtabnoyi-viyni-rosiya-zavdala-zbitkiv-infrastrukturi-ukrayini-na-mayzhe-144-mlrd/	Kyiv School of Economics (2023, March 22). During the year of the full-scale war, Russia caused almost $144 billion in damage to Ukraine's infrastructure. https://kse.ua/ua/about-the-school/news/za-rik-povnomasshtabnoyi-viyni-rosiya-zavdala-zbitkiv-infrastrukturi-ukrayini-na-mayzhe-144-mlrd/
Костенко, Ю., Короленко, О., & Гузь, М. (2022). Аналіз фінансової стійкості підприємства в умовах воєнного стану. *Економіка та суспільство*, *43*. https://doi.org/10.32782/2524-0072/2022-43-77	Kostenko, Yu., Korolenko, O., & Huz, M. (2022). Analysis of the financial stability of the enterprise in the conditions of martial law. *Economy and society*, *43*. https://doi.org/10.32782/2524-0072/2022-43-77
Нескородєва, І., & Ян, Буюнь. (2022). Загрози та перспективи відновлення підприємницької активності в Україні в воєнний та післявоєнний період. *Інфраструктура ринку*, 68. https://doi.org/10.32782/infrastruct68-23	Neskorodieva, I., & Yan, Buiun. Threats and prospects of business activity in Ukraine during the war and post-war period. *Market infrastructure*. Vol. 68. https://doi.org/10.32782/infrastruct68-23
Осік, Д. (2022, 14 лютого). Ритейл на експорт: українські мережі, які ризикнули вийти на закордонні ринки. rau.ua. https://rau.ua/novyni/ritejl-na-eksport/	Osik, D. (2022, February 14). Retail for export: Ukrainian chains that risked entering foreign markets. https://rau.ua/novyni/ritejl-na-eksport/
Павлова, В.А. (2022). Шляхи розвитку вітчизняного ритейлу в повоєнний період. *Академічний огляд, 1(56)*, 42-50. https://acadrev.duan.edu.ua/images/PDF/2022/1/6.pdf	Pavlova, V. (2022). Ways of development of domestic retail in the post-war period. *Academic review*, *1(56)*. 42-50. https://acadrev.duan.edu.ua/images/PDF/2022/1/6.pdf
Підтримка бізнесу в умовах війни (б.д.). https://business.diia.gov.ua/wartime	Business support in wartime (n.d.). https://business.diia.gov.ua/wartime

Проскурніна, Н. (2018). Розвиток роздрібної торгівлі України в умовах динамічної природи змін. *Науковий вісник Ужгородського національного університету. 22*. Ч. 3. С. 34-37. https://dspace.uzhnu.edu.ua/jspui/bitstream/lib/25362/1	Proskurnina, N. (2018). The development of retail trade in Ukraine in the conditions of the dynamic nature of changes. *Scientific Bulletin of the Uzhhorod National University, 22(3)*, 34-37. https://dspace.uzhnu.edu.ua/jspui/bitstream/lib/ 25362/1
Стан та потреби бізнесу в умовах війни: результати опитування в січні 2023 року. Center for Innovations Development. https://cid.center/the-state-and-needs-of-business-at-war-results-of-the-january-2023-survey/	State and needs of business in conditions of war: survey results in January 2023. Center for Innovations Development. https://cid.center/the-state-and-needs-of-business-at-war-results-of-the-january-2023-survey/
Таранова, Є. (2022, 22 квітня). Релокація на Львівщину: як переїжджали MTI та "Фокстрот". https://delo.ua/uk/business/relokaciya-na-lvivshhinu-yak-pereyizdzali-mti-ta-fokstrot-a-miscevi-cinovniki-sukali-yim-misce-396082/	Taranova, E. (2022, April 22). Relocation to Lviv region: how MTI and Foxtrot moved. https://delo.ua/uk/business/relokiya-na-lvivshhinu-yak-pereyizdzali-mti-ta-fokstrot-a-miscevi-cinovniki-sukali-yim-misce-396082/
Швець, А. (2023, 27 квітня). Топ-15 компаній роботодавців воєнної доби. dsnews.ua. https://www.dsnews.ua/ukr/reitingi/top-15-kompaniy-robotodavciv-voyennoji-dobi-27042023-478527	Shvets, A. (2023, April 27). Top 15 companies of wartime employers. https://www.dsnews.ua/ukr/reitingi/top-15-kompaniy-robotodavciv-voyennoji-dobi-27042023-478527
Як змінилася торгівля в Україні під час війни (2023, 16 серпня). https://ua-retail.com/2022/06/yak-zminilasya-torgivlya-v-ukra%D1%97ni-pid-chas-vijni/	How trade in Ukraine changed during the war. (2023, August 16). https://ua-retail.com/2022/06/yak-zminilasya-torgivlya-v-ukra%D1%97ni-pid-chas-vijni/

Conflict of interest: The authors declare that they have no financial or non-financial conflicts of interest with respect to this publication; have no relationship with any government agency, commercial or non-commercial organization that might have an interest in presenting this point of view. Given that two of the authors work for an institution that is the publisher of the journal, which may lead to a potential conflict or suspicion of bias, the final decision to publish this article (including the selection of reviewers and editors) was made by those members of the editorial board who are not affiliated with this institution.

The authors received no direct funding for this study.

The contributions of the authors are equal.

Trubei O., Hanechko I., Afanasyev K. Retail in times of war: resumption of business activity. *Scientia fructuosa*. 2023. № 5. S. 89-106. https://doi.org/10.31617/1.2023(151)06

Received by the editorial office 22.08.2023.
Sent for revision 12.09.2023.
Accepted for printing 18.09.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)07
UDC 339.37:658.81=111

KHARSUN Liudmyla,
PhD (Economics), Associate Professor
at Department of Trade Entrepreneurship
and Logistics
State University
of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0002-7569-943X
l.kharsun@knute.edu.ua

LUCHNIKOVA Tatyana,
PhD (Economics), Associate Professor
at Department of Trade Entrepreneurship and
Logistics
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0003-0624-5829
t.luchnykova@knute.edu.ua

SHULPINA Nataliia,
Associate Professor
at Department of Management
and Marketing
Kyiv National Linguistic University
73, Velyka Vasylkivska St., Kyiv, 03150, Ukraine

ORCID: 0000-0001-7163-7998
nataliia.shulpina@knlu.edu.ua

STIMULATION OF DOMESTIC GOODS SALES

The strategy of import substitution in the national economic policy, which provides the creation of conditions for the domestic production development, is mainly based on production capabilities and is aimed at ensuring the socio-economic and security needs of the country. Much less emphasis was placed on the possibility of substituting domestically produced goods for the demand of the population. Much less emphasis was placed on the possibility of the population's demand replacement with domestically produced goods. However, in view of social security, especially in the conditions of martial law, when there are disruptions in the supply of products, in particular imported products, the correlation between the industrial and trade sectors within the policy of import substitution seems to be unfairly underestimated. So the issue of taking into account the parameters of retail trade when determining the priorities of the national policy of import

ХАРСУН Людмила,
к. е. н., доцент,
доцент кафедри торговельного
підприємництва та логістики
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0002-7569-943X
l.kharsun@knute.edu.ua

ЛУЧНИКОВА Тетяна,
к. е. н., доцент кафедри торговельного
підприємництва та логістики
Державного торговельно-економічного
університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0003-0624-5829
t.luchnykova@knute.edu.ua

ШУЛЬПІНА Наталія,
доцент кафедри менеджменту і маркетингу
Київського національного лінгвістичного
університету
вул. Велика Васильківська, 73, м. Київ, 03150,
Україна

ORCID: 0000-0001-7163-7998
nataliia.shulpina@knlu.edu.ua

СТИМУЛЮВАННЯ ПРОДАЖІВ ВІТЧИЗНЯНИХ ТОВАРІВ

Стратегія імпортозаміщення в національній економічній політиці, яка передбачає створення умов для розвитку внутрішнього виробництва, переважно базується на виробничих можливостях і спрямована на забезпечення соціально-економічних та безпекових потреб країни. Значно менше акцент робиться на можливості заміщення товарами вітчизняного виробництва попиту населення. Однак, з огляду на соціальну безпеку, особливо в умовах воєнного стану, коли мають місце зриви у постачанні продукції, зокрема імпортної, взаємозв'язок промислового та торговельного секторів у межах політики імпортозаміщення видається несправедливо недооціненим. Тож актуальними стають питання врахування параметрів роздрібної торгівлі при визначенні пріоритетів національної політики імпортозаміщення. Відтак, метою статті є дослідження потенціалу впливу роздрібної

substitution becomes relevant. Therefore, the purpose of the article is to investigate the potential impact of retail trade on the implementation of the policy of import substitution in the country and to determine the directions of trade business support for domestic production in wartime with the perspective of post-war recovery of Ukraine. Using the methods of analysis and synthesis, comparison, grouping and systematization, the article examines the level of import dependence of the retail trade of Ukraine in the pre-war period, which gives an idea of the potential of import substitution in the industry. Evaluating the product structure of retail turnover according to the criterion of the ratio of domestic and imported products made it possible to establish product groups, the domestic production of which must be supported and developed. Using the analysis of the dynamics of the commodity structure of imports in the prewar and wartime period, commodity items were identified for which supply chains were restored and for which there is a sufficiently high domestic demand, reflecting the needs of the market under martial law. Also, based on the analytical assessment of the levers of influence of trade business on its supply chain partners – domestic suppliers, the directions of its support for domestic, import-substituting production have been determined. The involvement of trade enterprises in the implementation of the national strategy of import substitution with the perspective of post-war reproduction involves the transformation of approaches to the integrated management of supply chains.

Keywords: strategy of import substitution, import dependence of trade, supply chain participants, suppliers, trade enterprise, retail turnover.

торгівлі на реалізацію політики імпортозаміщення в країні та визначення напрямів підтримки торговельним бізнесом внутрішнього виробництва у воєнний час з перспективою повоєнного відновлення України. З використанням методів аналізу та синтезу, порівняння, групування та систематизації, в статті досліджено рівень імпортозалежності роздрібної торгівлі України у довоєнний період, що дає уявлення про потенціал імпортозаміщення в галузі. Оцінювання товарної структури роздрібного товарообороту за критерієм співвідношення вітчизняної та імпортної продукції дозволило встановити товарні групи, внутрішнє виробництво яких необхідно підтримувати і розвивати. За допомогою аналізу динаміки товарної структури імпорту в довоєнний і воєнний період, виділено товарні позиції, по яких відбулось відновлення ланцюгів постачання і на які достатньо високим є внутрішній попит, що відображає потреби ринку в умовах воєнного стану. Також, спираючись на аналітичну оцінку важелів впливу торговельного бізнесу на своїх партнерів по ланцюгах постачання – вітчизняних постачальників, визначено напрями його підтримки внутрішнього, імпортозаміщуючого виробництва. Долучення підприємств торгівлі до реалізації національної стратегії імпортозаміщення з перспективою повоєнного відтворення передбачає трансформацію підходів до інтегрованого управління ланцюгами постачання.

Ключові слова: стратегія імпортозаміщення, імпортозалежність торгівлі, учасники ланцюга постачання, постачальники, підприємство торгівлі, роздрібний товарооборот.

JEL Classification: D 51, 81; E 66; F 13; L 14, 81.

Introduction

Martial law in the country despite the destruction and damage caused by hostilities cannot be a reason to suspend the formation of a strategic vision for the development of the national economic system. On the contrary, right now during the war, it is necessary to lay a solid foundation for the recovery, restructuring and development of the domestic economy in the post-war perspective. And the key role here should be played by the industry which is oriented to domestic needs and in the long run to the growth of the country's export potential. In order to achieve such goals it is appropriate to use the instruments for import substitution policy. In this regard, its focus should not only be applied to the strategic sectors of the national economy to which in

Ukraine in the pre-war period included the defence-industrial complex, aviation, space, machine-building (including shipbuilding), metallurgical and chemical industries as considering the data on the volume and range of imports into the country, it is evident that the majority of it was related to consumer goods of mass demand. That is why, with the onset of the war, the problem of satisfying the demand of population with goods of a wide range and mass consumption became acute.

The issues of formation and implementation of import substitution policy are studied by a significant number of scientists, public figures and practitioners. Thus, the author of the monograph "State policy of import substitution in the system of ensuring economic security of Ukraine: priorities and implementation tools" R. Lupak (2018) revealed in detail the essence of the state policy of import substitution in the context of its impact on the national economic security of the country. Also methodological approaches to the analysis of the level of import dependence of the national economy and justification of priorities and tools for the implementation of import substitution policy are proposed in this work.

The work (T. Segal, 2021) is dedicated to the study of the essence, objectives, and conditions for implementing import substitution policies by countries around the world. The authors emphasize the expediency of its implementation by countries which develop market relations, given their aspiration to achieve economic independence and gain a place in the global markets of goods and services. The increased interest in the strategy of import substitution in the modern world is noted by Douglas A. Irwin in his publication (2020), while he was also pointing out the threats and possible negative consequences of its implementation.

In his research, A. Shevchenko (2023) emphasizes the urgent need to identify first-priority import-substituting industries in Ukraine, considering the prospects for post-war reconstruction. This statement is supported by a detailed analysis of Ukraine's dependence on imports from russia and belarus before the full-scale invasion of the russian federation and the determination of the potential for its replacement by domestic production.

The importance of implementing import substitution policy within the framework of a wartime economy is examined in the publication (B. Danylyshyn, 2023), which provides data on the rates of recovery in the real sector of the economy of several countries after the Second World War. The article emphasizes the need for implementing industrial protectionism tools and integrated regional development in Ukraine, taking into account the location of relocated enterprises. In the scientific report (L. Deyneko, 2022), the authors highlight the main strategic directions for the industrial recovery of Ukraine, including the need to saturate the domestic market with domestically produced goods.

At the same time, the issues of the interdependent development of trade and industry in the country remain insufficiently researched. Without proper attention and scientific understanding, there is a problem of determining levers and effective tools and means of cooperation between trade enterprises and manufacturers in supply chains aimed at implementing the import substitution strategy.

The purpose of the article is to determine the potential directions of influence of retail trade on the implementation of the policy of import substitution in the country and the development of domestic production in wartime with the perspective of post-war recovery of Ukraine.

The hypothesis of the article is the assumption that the trade business in Ukraine should become an active participant in the processes of formation and implementation of import substitution policy, taking into account the level of import dependence of retail trade in the pre-war period, the transformation of supply chains in the conditions of martial law and the need to restore the country's economy in the post-war perspective. The main directions of support for manufacturing enterprises by the trade business should include: analytical assessment of market demand with the identification of priority mass-consumption goods for the industry; procurement logistics tools oriented towards supporting domestic suppliers; informational, advisory, and coordination work within supply chains, and etc.

Scientific publications of Ukrainian and foreign scientists, analytical materials of specialized institutions and organizations, practitioners, statistical and analytical materials of the State Statistics Service of Ukraine served as the information base of this article. Methods of analysis and synthesis, comparison, grouping and systematization, graphic display of research results were used. The methodological tools of the research are applied in the following logical sequence: analysis of the levers of influence of retail trade on the processes and prospects of import-substituting production in the country; identification of strategic directions for the development of import-substituting production based on the assessment of the level of import dependence of retail trade of Ukraine, selection of product groups with the most positive dynamics of domestic production, assessment of the demand structure during the period of martial law; determination of the composition of tools supporting the interaction of trade enterprises with supply chain partners – domestic manufacturers and suppliers at the stage of planning and implementation of purchases.

1. Levers of influence of retail trade on import substitution policy

Trade entrepreneurship which performs an important social and economic role is one of the first to experience changes in the functioning of

supply chains with the beginning of hostilities in the country. First of all, it concerns disruptions, delays and eventually disruptions in the supply of consumer goods. So difficulties with the supply of imported products are becoming especially noticeable. That is why trade enterprises are more actively looking for alternatives to imported products in the domestic market, striving to provide the demand with the necessary range and achieve acceptable profitability indicators. Accordingly, the strategy of import substitution in the procurement logistics of trade enterprises becomes one of the means of ensuring uninterrupted supply, reducing risks and creating conditions for the development of domestic production.

By focusing on consumer needs reflected in the structure of domestic trade, the assortment of purchases of trade enterprises is formed, which can serve as a reference point for the assortment policy of import substitution. In particular, the identification of promising import-substituting industries can be based on the analysis of the product structure of retail trade during the pre-war period, comparing the share of separate product groups in retail turnover with the proportional contribution of domestically produced products within it. In this way, the level of import dependence in the trade sector is assessed. In addition, when determining the potential for expanding import-substituting production capacities in the country, it is important to identify those product categories that had a positive trend in their share of retail turnover for goods manufactured in Ukraine during the pre-war period. Because these are the goods which already have demand in the domestic market, their manufacturers are participants in the supply chains in trade.

The assessment of potential and the directions for implementing the import substitution policy in Ukraine should be based on an operational analysis of the structure and dynamics of trade and industrial production during the war. In particular, a change in consumer priorities, the destruction or relocation of production capacities of participants in supply chains in trade should be taken into account when adjusting the commodity structure of import-substituting production.

The focus on trade indicators when determining the priorities of import substitution policy also involves analysing the state, dynamics, and structure of imports of high demand products during the war. Such information indicates the most in-demand products in the domestic market, the demand for which cannot be met by domestic suppliers.

In general, the cooperation of trade enterprises and domestic suppliers in the process of promoting the implementation of import substitution policy should take into account the interests of all participants in supply chains. And its result should be the development of a complex of compromise solutions, tools and measures aimed at supporting import-substituting production by domestic trading companies (*Figure 1*).

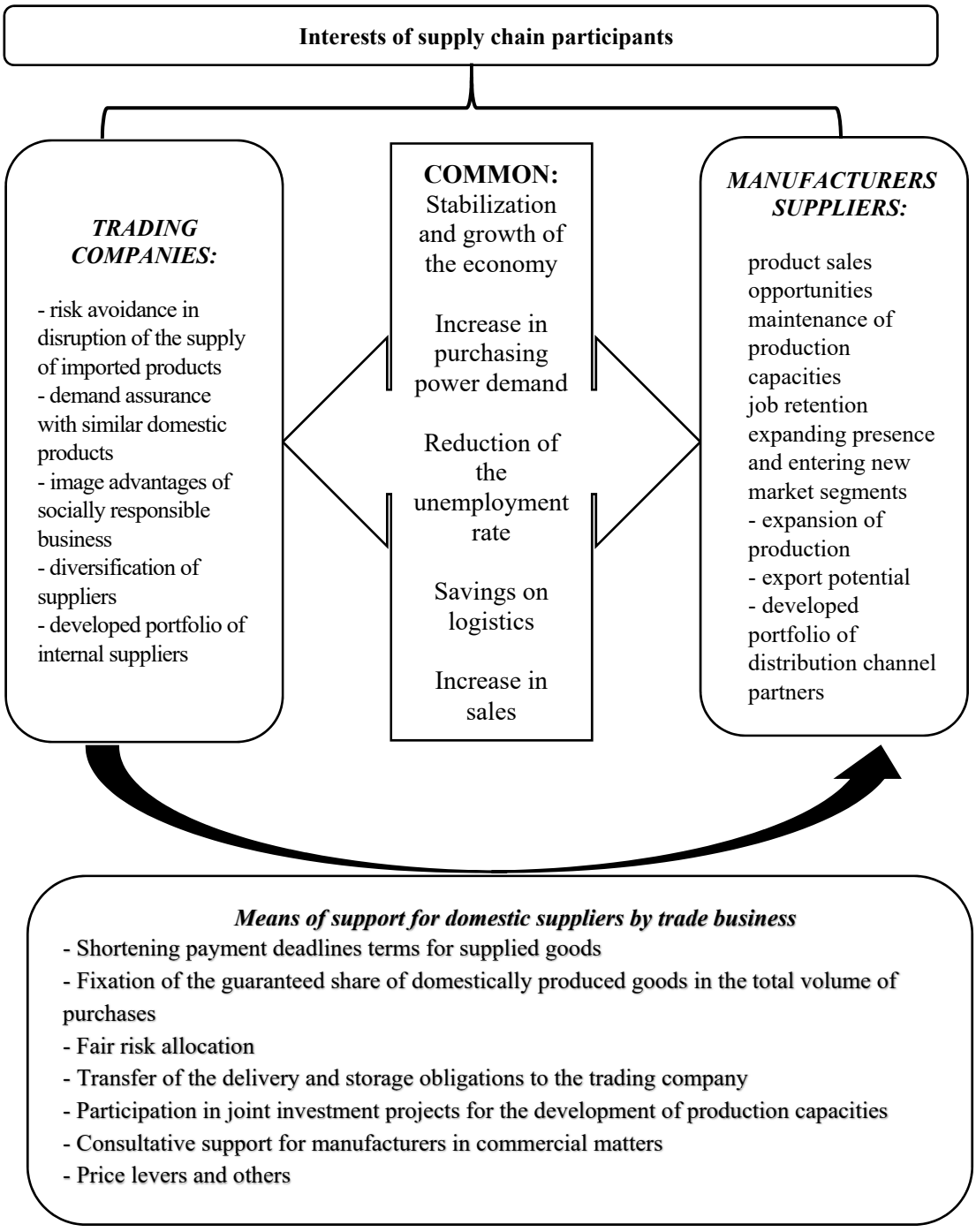


Figure 1. Means of promoting import substitution by trade enterprises

Source: compiled by the authors.

Therefore, thanks to the analysis of retail trade in the pre-war period and during the war, as well as active initiative actions of trade enterprises in cooperation with domestic suppliers, promising directions for import substitution should be outlined, including with regard to the post-war recovery period.

2. Promising directions of import substitution in the retail trade of Ukraine

Analyzing the retail turnover of Ukraine in order to determine the potential opportunities and promising directions for the substitution of imported goods with analogues of domestic production, it is first necessary to determine the main import-dependent positions. With the beginning of hostilities, as a result of the destruction of international supply chains, the shortage of such goods is most noticeable, and therefore, they can become a reference point in the development of the country's industry replacing imports To do this, it is worth highlighting the main categories of goods of domestic retail trade with the allocation of the share of domestically produced products in their sales volumes (*Table*). In this way, it is possible to assess the production potential of the domestic industrial sector focused on retail trade, and, at the same time, the level of import dependence of the latter.

Thus, in the structure of retail turnover of Ukraine in the pre-war period, the ratio of food and non-food goods was in favor of the latter (43.1% and 56.9%, respectively, in 2021). At the same time, the high level of import dependence of the trade sector of the Ukrainian economy is noted, because the share of domestic products in retail turnover in 2021 amounted to only 53.1%, including for non-food products, this indicator was at the level of only 34.5%, and for food products – 77.6% (State Statistics Service of Ukraine, 2022).

As can be seen from the data in the table. 1, the average level of import dependence for selected Top-20 commodity positions in the structure of retail turnover of Ukraine exceeds the indicator of 50%. Among food products in the pre-war period, only in the category "Fruits and vegetables, fresh" was the share of domestically produced goods less than 50%. The opposite is the situation with non-food products, where, with the exception of products of the fuel and energy complex, this indicator is in the range of 0.3% ("Telecommunications equipment") – 49.3% ("Pharmaceutical products").

Thus, domestic production capacities in Ukraine in the pre-war period covered less than half of the retail turnover of the main commodity items – UAH 482.3 billion. The other part of it – more than UAH 491 billion – is covered by imported goods, which may indicate that it is advisable to increase production of the relevant goods. The main points of reference in increasing the volume of domestic production in order to prevent a shortage of goods in a situation of military-political instability should be product groups with the highest level of import dependence: telecommunications equipment; cars, parts and accessories for them; clothing and household electrical goods. However, the assessment of the potential opportunities of the manufacturing sector for import substitution in retail trade during the war is significantly complicated by the need to clarify the scale of destruction, relocation, suspension or curtailment of the activities of industrial enterprises.

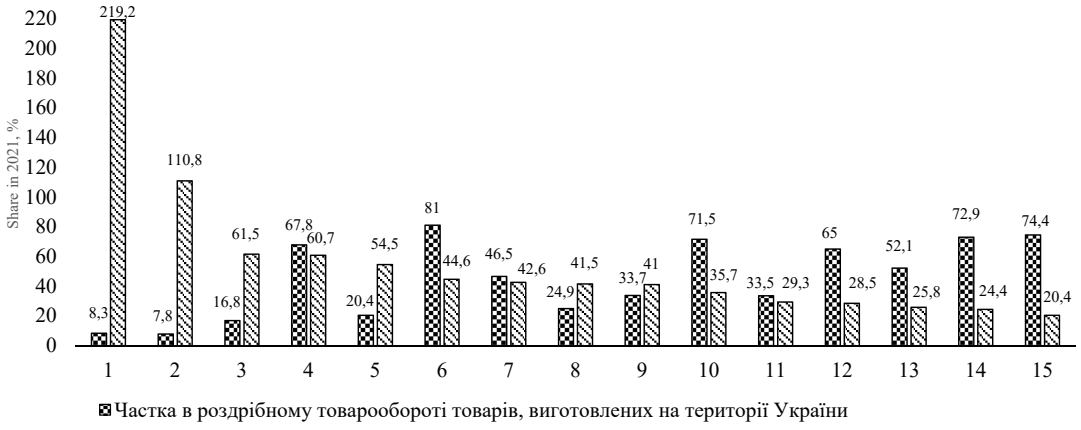
Table

Top-20 commodity positions in the retail turnover of Ukraine and the level of import dependence on them in the pre-war period (as of 01.01.2022)

Product group	Retail turnover		Rank	Including domestic production		The level of import dependence, %
	billion (UAH) hryvnias	in % to the total		billion UAH	in % to the corresponding product group	
Groceries	449762.3	43.1		349159.3	77.6	22.4
Meat products	30588.3	2.9	14	28255.7	92.4	7.6
Fish, crustaceans and shellfish (including fish products)	22255.1	2.1	19	16552.7	74.4	26.6
Dairy products	49053.9	4.7	5	41232.5	84.1	15.9
- including rennet, processed and sour milk cheese	19889.4	1.9		14309.0	71.9	28.1
Bakery and flour confectionery products	37562.0	3.6	8	34543.4	92.0	8.0
- including flour confectionery	19040.7	1.8		16761.8	88.0	12.0
Sugar confectionery	33782.5	3.2	12	24903.0	73.7	26.3
Fruits and vegetables, fresh	34235.0	3.3	11	16254.1	47.5	52.5
Alcohol beverages	68360.0	6.6	3	46262.6	67.7	32.3
- including vodka and liquor and spirits products	19524.6	1.9		11314.0	57.9	42.1
- beer	22382.3	2.1	18	19685.7	88.0	12.0
Other drinks (non-alcoholic)	25301.2	2.4	17	22044.9	87.1	12.9
Tobacco products (including related products)	37034.8	3.6	9	27173.3	73.4	26.6
Non-food products	594754.2	56.9	–	205405.7	34.5	65.5
Clothes	32352.6	3.1	13	1999.7	6.2	93.8
Cosmetic products and products for toilet rooms	34716.7	3.3	10	8637.3	24.9	75.1
Telecommunication equipment	21084.0	2.0	20	63.3	0.3	99.7
- including mobile telephones	17990.5	1.7		19.0	0.1	99.9
Cars, parts and accessories for them	80561.7	7.7	2	2930.1	3.6	96.4
- including cars	69685.1	6.7		1610.4	2.3	97.7
Household electrical goods	27024.5	2.6	15	2292.7	8.5	91.5
Pharmaceutical products	87695.7	8.4	1	43239.5	49.3	50.7
Motor gasoline	49329.5	4.7	4	35962.4	72.9	27.1
Gas oils (diesel fuel)	39365.0	3.8	7	28158.9	71.5	28.5
Propane, butane and methane for cars	25416.5	2.4	16	16570.7	65.2	34.8
Other non-food consumer and non-consumer goods	48531.8	4.6	6	15119.4	31.2	68.8
- including household products for washing, cleaning and care	20785.1	2.0		6406.2	30.8	69.2
Total	973548.6	–	–	482302.1	–	–
On average	–	–	–	–	49.5	50.5

Source: compiled by the authors based on data from the State Statistics Service of Ukraine, 2022.

In accordance with another approach to identifying promising areas for the development of domestic production of consumer goods – analyzing the structure of retail trade by commodity items with the highest growth rates of the share of sales of goods produced in Ukraine – we will outline the list of commodity groups whose production had the greatest potential for import substitution in the pre-war period (*Figure 2)*.



Symbols: 1. Leather goods and travel accessories; 2. Shoes; 3. Bicycles; 4. Coffee; 5. Games and toys; 6. Lubricants; 7. Products made of ceramics and glass, wood, cork, wicker, knife, non-electric household appliances and equipment; 8. Cosmetic goods and toiletries; 9. Animals – pets and feed for them; 10. Gasoline (diesel fuel); 11. Textile goods, curtains, curtains, curtains and tulle; 12. Means for washing, cleaning, polishing and car care; 13. Fertilizers and agrochemical products; 14. Motor gasoline; 15. Fish, crustaceans and mollusks (including fish products).

Figure 2. Top-15 product positions with the fastest growth rates of the share of goods manufactured on the territory of Ukraine in retail turnover

Source: compiled by the authors based on data from the State Statistics Service of Ukraine, 2022.

Thus, during the period 2017-2021, the share (8.3%) of leather goods and travel accessories of domestic production almost tripled, by 110% – footwear, by 61.5% – bicycles, by 60.7% – coffee, on 54.5% – games and toys. At the same time, it should be noted that the largest increase in the share of domestically produced goods occurred mainly in items with a low share in total retail turnover.

In the structure of imports to Ukraine for almost a year of war, as of the end of December 2022, in addition to the traditionally high share of fuel and energy materials, the share of finished goods, which are retail products and may indicate priority areas for the development of domestic production, is significant. So, the second place was taken by the category of cars and other motor vehicles – 5.8% (USD 2.5 billion), telephones and computer equipment (1.8% and 1.0%, respectively), and imports of tractors, insulated wires and cables, tires and tires, and animal feed products increased compared to 2021 (Yurydychna Gazeta Online, 2022). According to official statistics, in 2022, imports to Ukraine decreased for almost all commodity

items except 10, including: hats with an increase of 766.2%; clothing and clothing accessories, textiles – by 75.4%; vegetables – by 40.8%; printed products – by 6.6%; ceramic products – by 5.5%; coffee, tea – by 3.1% (State Statistics Service of Ukraine, 2023). In the period January-April 2023, the situation with imports changed significantly, as its growth compared to the same period in 2022 was 21.5%, while the increase in import volumes was noted for the vast majority of commodity items (State Statistics Service of Ukraine, 2023).

Such data on the structure and dynamics of imports of goods to Ukraine since the beginning of Russia's full-scale invasion may indicate that their supply chains are being established in response to the existing demand in the country and the inability to meet it with domestic production capacity.

In general, the determination of the priority areas for the development of import-substituting production in Ukraine should be based on the assessment by the trade business of the need for domestically produced goods, based on the pre-war level of import dependence of retail trade and the operational analysis of changes in the structure of trade turnover during hostilities. In turn, suppliers, in order to develop their own production potential, establishing communication and cooperation with supply chain partners, can provide information about the real possibilities of participation of industrial enterprises in the implementation of the import substitution strategy, develop new mechanisms of cooperation with trade enterprises in order to expand the sale of their products. The formation of a common vision of the prospects for import substitution in retail trade between trading and industrial companies should become the basis for initiating the development and implementation of a state import substitution policy.

3. Tools to support import substitution policy by the trade sector

The implementation of import substitution policy in Ukraine using new approaches to determining its priority areas based on the analysis of retail trade parameters should take place already during the period of martial law. Justifying the urgency of implementing measures of integrated management of supply chains in trade with an orientation to the prospects of import substitution, the following arguments can be given:

- precisely in the conditions of military operations, the consumer needs of the population come to the forefront in trade, the satisfaction of which is carried out under the conditions of centralized state support;
- the supply chains for imported products are often either completely disrupted or unstable, whereas domestic purchases can be more reliable and faster;
- the state policy of protectionism in the conditions of martial law (restriction of foreign exchange payments for imports, introduction of a list of critical import goods, etc.) along with objective security restrictions in the

process of implementing import operations, lead to a shift in the structure of consumption from imported goods to domestic ones;

- reduction in exports due to a decrease in domestic production and complications in the organization of international transportation leads to a reorientation of domestic suppliers to the needs of the domestic market;
- unprecedented international economic and political support for Ukraine in the war with Russia can be directed, among other things, to the restoration and development of domestic production of consumer goods.

Representatives of leading business structures also speak about the need for urgent steps to restore the Ukrainian industrial sector. Thus, representatives of the Union of Ukrainian Entrepreneurs even identified 10 key theses of state support for domestic business, in particular, the development of the production potential of Ukraine during the war period with a post-war perspective (Vojna v Ukraine.com., 2023). There is every reason to involve representatives of the trade business in the implementation of at least one of the proposed areas – "creating a list and supporting production areas that Ukraine wants to motivate".

The levers and tools of trade business influence on the recovery and development of the production potential of Ukraine are significant. This can be explained, firstly, by the fact that the retail market is highly concentrated, with more than half of it in the hands of large retail chains. As a result, domestic manufacturers are in a position of dependence on trading companies, unable to diversify their sales channels. In addition, the conditions of interaction in supply chains even in the pre-war period were not in favor of suppliers and industrial companies: long payment terms for supplied products (retailers' debts to manufacturers consistently fluctuate around UAH 3-4 billion), dozens of additional services without justification their value and shifting all commercial risks to the supplier (A. Shcherbak, 2023).

In general, the arsenal of means for trade enterprises to influence the development of import-substituting production includes consultative, informational, coordination, financial and operational support for domestic suppliers – partners in supply chains in trade. A significant part of such means lies in the realm of the mechanism of financial and settlement operations in work with suppliers:

- shortening the terms of payment for the delivered goods, and in some cases prepayment is also appropriate (for example, if the restoration of the supplier's production capacities or their relocation is necessary);
- increasing the purchase price in order to achieve a more equitable distribution of added value within supply chains;
- participation in lending schemes for manufacturing enterprises and in investment projects related to the creation of new and reconstruction of existing production facilities.

Support for import-substituting development of domestic industry requires significant investments. According to the analytical centre

"Ukrainian Institute for the Future", the restoration and opening of new production facilities in Ukraine is one of the priority areas of capital investment from the perspective of investors. Foreign investors show interest in the creation and development of technology parks, although mostly in western Ukraine. Some European funds are already willing to invest in the construction of industrial and warehouse facilities for long-term lease. "In general, to restore the logistics infrastructure, manufacturers need almost 400 thousand square meters of warehouse space destroyed by the enemy" (Vojna v Ukraine.com, 2023).

It is advisable for commercial enterprises to also act as investors for their supply chain partners – manufacturer-suppliers. This primarily involves their participation in investment projects for the establishment of warehouse complexes and logistics centers for the storage and handling of products from manufacturing companies. Another promising area for trade enterprises is the diversification of their activities by investing in the creation, restoration or development of production facilities together with their supplier partners.

In addition to investing, trading businesses will also support domestic producers by relieving them of some of their supply obligations. For example, trading companies can take over the warehousing function using their own warehouse facilities or by renting them. The same situation is possible with transportation operations with the suppliers' cargo.

A separate area of support for import-substituting industries in Ukraine by the trade business may be pricing policy instruments, in particular by promoting the price competitiveness of domestically produced goods. Unfortunately, today, in times of russia's military aggression, there are frequent cases of retail chains selling imported goods at lower prices than similar domestically produced goods.

In general, the role of retailers in stimulating import-substituting production in Ukraine should be to coordinate the efforts of supply chain participants and to exchange information on available raw materials, production capacities, and labour resources in order to organize the production of scarce goods. Suppliers can also benefit from retailers' assistance in promoting their products through their own and competitors' distribution channels.

As an example of the interest of trading companies and their proactive support of the domestic producer, we can cite the Industry memorandum "On Ensuring Stable Operation of the Food Supply Chain in Ukraine under Martial Law" developed to ensure food security, support Ukrainian producers and buyers, and minimize the risks of product shortages. This document was developed with the participation of the largest retailers in Ukraine, including ATB, Silpo, Auchan, Novus, Varus, Kolo, and stipulates that payment terms for contracts for the supply of basic food products of domestic production will not exceed 30 calendar days (Y. Boyko, 2023). Thus, by guaranteeing industrial companies sales volumes of their products, often, especially for

basic categories of goods, replacing similar imported ones, trade enterprises demonstrate the practice of conducting socially responsible business and become active participants in the market self-regulation mechanism.

However, the spread of direct imports among retailers in Ukraine during the war raises some concerns. On the one hand, the motive to quickly provide the population with the necessary products is quite understandable. However, in the context of supporting domestic producers, a number of questions arise for representatives of the trade business: – Are such purchases sufficiently justified by the lack of opportunities to produce similar products within the country? Especially when it comes to the range of direct imported products under a simplified procedure without printed labels with product information in Ukrainian (according to the Resolution of the Cabinet of Ministers No. 234 of 09.03.2022 "On Measures to Ensure Uninterrupted Supply of Imported Food and Feed under Martial Law"). So, imported instant foods, rice, pasta, oatmeal, hygiene products, animal products, yeast from Poland, Hungary and Romania have already appeared in Auchan Ukraine. There are pates and canned meat from the Czech Republic on the store shelves. The delivery of canned meat and fish from other European countries is also expected (K. Simonenko, 2022).

Therefore, in order to avoid negative consequences for domestic producers as a result of a decrease in the competitiveness of their products compared to imported ones, it is advisable to introduce a procedure for quick approval of imports of direct imports with the provision of supporting information on the impossibility of purchasing these products in Ukraine. In general, the introduction of any mitigating rules of trade, even under martial law, should provide for their verification through the prism of the interests of domestic producers during the war and in the post-war period.

As resources to support domestic production, trade enterprises can raise their own capital and facilitate the attraction of capital from other supply chain partners. However, special attention should be paid to redistributing value added in supply chains in favor of supplying producers. However, special attention in this matter should be paid to the redistribution of added value in supply chains in favor of manufacturer-suppliers.

Trade business representatives can also contribute to the support of domestic manufacturers at the level of implementation of the state policy of import substitution. For example, trade enterprises should actively participate in the formation of the State Register of Import Substitution and Cooperation in Strategic Industries, the creation of which was initiated by the Ministry of Strategic Industry in pre-war times (Government Portal, 2021). Therefore, through the activities of public organizations, specialized associations and committees, trade enterprises can point to promising domestic production, participate in setting rules and conditions of interaction with suppliers.

Conclusions

Import substitution is a key element of the country's economic development strategy not only in peacetime, but also in times of war, when the issues of minimizing losses are particularly acute, as well as the formation and implementation of a system of measures aimed at restoring and building economic potential in the post-war period. At the heart of this winning path is the real sector of the economic system – the industrial sector. To support it through the use of import substitution policy instruments, the efforts of all economic entities should be combined. And trade enterprises should play a decisive role among them, thereby demonstrating their socially responsible corporate position.

On the one hand, the potential for trade businesses to influence import substitution processes can be explained by their systemic role in supply chains. Being the closest to the market, knowing its needs and trends, and coordinating the processes and operations of bringing products to the consumer, retailers have the ability to interact with all participants in the supply chain and influence the activities of public associations and government institutions. Representatives of the retail sector can undoubtedly use these potential opportunities to support domestic producers in creating, restoring and expanding their production capacities, as well as in organizing distribution channels for their products. On the other hand, by bringing domestic and foreign products to the end consumer, trading companies have leverage over their purchasing decisions and can therefore direct them toward choosing goods of Ukrainian origin.

The potential for increasing import-substituting production in Ukraine, based on an analysis of the structure of retail trade and the share of domestically produced goods in it, is significant. Import dependence on the main commodity items in retail exceeded 50% in the pre-war period. The period of martial law also demonstrated changes in the structure of consumer demand, as well as a much faster recovery of the supply chain of imported products, which confirms the need for support for the domestic industry, in particular from the trade business.

The set of tools for retailers to influence the implementation of the import substitution strategy is quite broad. First of all, at the stage of determining the priority areas of domestic production, the parameters of retail turnover can act as a kind of guideline. Also, in terms of direct interaction with suppliers, trading companies can use a wide range of financial, pricing, communication, and marketing tools to support import-substituting industries. In particular, these include financial and settlement instruments related to setting payment terms for delivered products, purchase prices, and supplier lending. The participation of trade enterprises in investment projects aimed at restoring/developing production capacities and logistics infrastructure, which are also aimed at supporting relocated production, also has significant potential.

Further research and developments on the topic of the study should be aimed at finding effective tools and practical recommendations for integrated supply chain management with a focus on the prospects of import substitution in retail trade. For this purpose, it is important to define and detail the system of interaction between trade enterprises and domestic suppliers, based on the interests and levers of influence of all supply chain participants.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	**REFERENCE**
Douglas, A. Irwin. (2020, July 8). Import substitution is making an unwelcome comeback. https://www.piie.com/blogs/trade-and-investment-policy-watch/import-substitution-making-unwelcome-comeback	Douglas, A. Irwin. (2020, July 8). Import substitution is making an unwelcome comeback. https://www.piie.com/blogs/trade-and-investment-policy-watch/import-substitution-making-unwelcome-comeback
Troy, Segal. (2021, January 02). Import Substitution Industrialization (ISI) Defined, With Example. (Reviewed by Thomas Brock). https://www.investopedia.com/terms/i/importsubstitutionindustrialization.asp	Troy, Segal. (2021, January 02). *Import Substitution Industrialization (ISI) Defined, With Example.* (Reviewed by Thomas Brock). https://www.investopedia.com/terms/i/importsubstitutionindustrialization.asp
Vojna v Ukraine.com. (2023, 11 травня). 10% зростання на рік – вимога від бізнесу до уряду. https://vojna-v-ukraine.com/ukraine-now/44554-10-zrostannja-na-rik.html	Vojna v Ukraine.com. (2023, May 11). 10% growth per year is a requirement from business to government. https://vojna-v-ukraine.com/ukraine-now/44554-10-zrostannja-na-rik.html
Vojna v Ukraine.com. (2023, 29 травня). Окупанти знищили 22% складських приміщень в Україні. https://vojna-v-ukraine.com/ukraine-now/47959-okupanti-znischili-22-skladskih-primischen.html	Vojna v Ukraine.com. (2023, May 29). Occupiers destroyed 22% of warehouses in Ukraine. https://vojna-v-ukraine.com/ukraine-now/47959-okupanti-znischili-22-skladskih-primischen.html
Бойко, Ю. (2023, 14 квітня). Представники продуктового рітейлу об'єднались для стабілізації ланцюга постачання базових продуктів. РБК – Україна. https://www.rbc.ua/rus/news/predstavniki-produktovogo-riteylu-ob-ednalis-1681452248.html	Boyko, Yu. (2023, April 14). Representatives of food retail have united to stabilize the supply chain of basic products. RBC – Ukraine. https://www.rbc.ua/rus/news/predstavniki-produktovogo-riteylu-ob-ednalis-1681452248.html
Данилишин, Б. (2023, 3 березня). Як забезпечити економічне зростання в умовах війни? *Економічна правда*. https://www.epravda.com.ua/columns/2023/03/3/697664/	Danylyshyn, B. (2023, March 3). How to ensure economic growth in conditions of war? Economic pravda. https://www.epravda.com.ua/columns/2023/03/3/697664/
Дейнеко, Л.В. (Ред.) (2022). Виклики майбутнього для промислового розвитку України*: наукова доповідь.* НАН України, ДУ «Ін-т екон. та прогноз. НАН України», 184 с. http://ief.org.ua/wp-content/uploads/2022/06/Vyklyky-majbutnjogo-dlja-promyslovogorozvytky.pdf	Deineko, L.V. (Ed.) (2022). Future challenges for the industrial development of Ukraine: scientific report. National Academy of Sciences of Ukraine, State University of Economics and forecast. «National Academy of Sciences of Ukraine», 184 p. http://ief.org.ua/wp-content/uploads/2022/06/Vyklyky-majbutnjogo-dlja-promyslovogorozvytky.pdf
Державна служба статистики України. (2023). Товарна структура зовнішньої торгівлі у 2022 році. https://www.ukrstat.gov.ua/	State Statistics Service of Ukraine. (2023). Commodity structure of foreign trade in 2022. https://www.ukrstat.gov.ua/
Державна служба статистики України. (2023). Товарна структура зовнішньої торгівлі у січні-квітні 2023 року. https://www.ukrstat.gov.ua/	State Statistics Service of Ukraine. (2023). Commodity structure of foreign trade in January-April 2023. https://www.ukrstat.gov.ua/

Державна служба статистики України. (2022). Товарна структура роздрібного товарообороту підприємств по продовольчих та непродовольчих товарах у 2021 році. https://www.ukrstat.gov.ua/	State Statistics Service of Ukraine. (2022). Commodity structure of retail turnover of enterprises in food and non-food goods in 2021. https://www.ukrstat.gov.ua/
Державна служба статистики України. (2022). Частка продажу підприємствами роздрібної торгівлі товарів, що вироблені на території України за (2017-2021). https://www.ukrstat.gov.ua/	State Statistics Service of Ukraine. (2022). The share of sales by retail enterprises of goods produced on the territory of Ukraine for (2017-2021). https://www.ukrstat.gov.ua/
Лупак, Р.Л. (2018). *Державна політика імпортозаміщення в системі забезпечення економічної безпеки України: пріоритети та інструменти реалізації: монографія.* Львів: ННВК «АТБ», 527 с. http://www.lute.lviv.ua/fileadmin/www.lac.lviv.ua/data/kafedry/Ekonomiky/Docs/2018_Monografiya_Lupak_R._L. pdf	Lupak, R.L. (2018). State policy of import substitution in the system of ensuring economic security of Ukraine: priorities and implementation tools. Lviv: NNVK "ATB" Publishing House. http://www.lute.lviv.ua/fileadmin/www.lac.lviv.ua/data/kafedry/Ekonomiky/Docs/2018_Monografiya_Lupak_R._L. pdf
Симоненко, К. (2022, 29 квітня). Прямі поставки: продаж іноземних товарів без українського маркування допомагає швидко задовольняти попит у воєнний час. RAU. https://rau.ua/dosvid/prjami-postavki-inozemnih-tovariv/	Simonenko, K. (2022, April 29). Direct deliveries: selling foreign goods without Ukrainian marking helps to quickly meet demand in wartime. RAU. https://rau.ua/dosvid/prjami-postavki-inozemnih-tovariv/
Урядовий портал. (2021, 5 листопада). Мінстратегпром започаткує формування Державного реєстру імпортозаміщення та кооперації у *стратегічних галузях* промисловості. https://www.kmu.gov.ua/news/minstrategprom-zapochatkuye-formuvannya-derzhavnogo-reyestru-importozamishchennya-ta-kooperaciyi-u-strategichnih-galuzyah-promislovosti	Government portal. (2021, November 5). The Ministry of Strategy and Industry will initiate the formation of the State Register of Import Substitution and Cooperation in Strategic Industries. https://www.kmu.gov.ua/news/minstrategprom-zapochatkuye-formuvannya-derzhavnogo-reyestru-importozamishchennya-ta-kooperaciyi-u-strategichnih-galuzyah-promislovosti
Шевченко, А.В. (2023). Перспективи імпортозаміщення російських та білоруських товарів на внутрішньому ринку України. Національний Інститут стратегічних досліджень, відділ секторальної економіки. https://niss.gov.ua/sites/default/files/2023-02/importozamischennyarf_df.pdf	Shevchenko, A.V. (2023). Prospects of import substitution of Russian and Belarusian goods in the domestic market of Ukraine. National Institute of Strategic Studies, Department of Sectoral Economy. https://niss.gov.ua/sites/default/files/2023-02/importozamischennyarf_df.pdf
Щербак, А. (2023, 9 травня). Як помирити роздріб із виробниками? *Дзеркало тижня.* https://zn.ua/ukr/business/jak-pomiriti-rozdrib-iz-virobnikami.html	Shcherbak, A. (2023, May 9). How to reconcile retailers with manufacturers? Mirror of the week. https://zn.ua/ukr/business/jak-pomiriti-rozdrib-iz-virobnikami.html
Юридична Газета. Online. (2022, 21 грудня). Імпорт та експорт України: вплив війни. https://yur-gazeta.com/golovna/import-ta-eksport-ukrayini-vpliv-viyni.html	Legal Gazette. Online. (2022, December 21). Imports and exports of Ukraine: the impact of the war. https://yur-gazeta.com/golovna/import-ta-eksport-ukrayini-vpliv-viyni.html

Conflict of interest. The authors certify that they have no financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that the authors are affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution. The authors received no direct funding for this study.

The research was carried out as part of Research Work "Adaptive management of logistics activities of a trade enterprise", No. 0123U102494

Kharsun. L., Luchnikova T., Shulpina N. Stimulation of domestic goods sales. *Scientia fructuosa*. 2023. № 5. S. 107-122. https://doi.org/10.31617/1.2023(151)07

Received by the editorial office 21.07.2023.
Sent for revision 11.08.2023.
Accepted for printing 27.09.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)08
UDC 339.37:658.81=111

SHMYGEL Alona,
PhD Student of the Department of Banking
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID: 0000-0001-9314-5505
a.shmygel@gmail.com

SHULGA Natalia,
Doctor of Sciences (Economics),
Professor,
Head of the Department of Banking
State University of Trade and Economics
19, Kyoto St., Kyiv, 02156, Ukraine

ORCID:0000-0002-2010-5884
2bank2@ukr.net

FACTOR ANALYSIS OF THE HOUSING MARKET IN UKRAINE (2003–2023)

The residential real estate market plays a key role in the development of global and national economies, since it has acted as a powerful driver of GDP growth, increasing the level of employment, household incomes, and profitability of financial institutions, construction organizations and trading enterprises. The house price growth has two dimensions, threat to financial stability and source of economic development. The aim of this research is to formulate a list of criteria, based on which one can decide whether the house price at a given stage of housing market development needs to be constrained or not. The aim is achieved by a multi-perspective analysis of residential real estate market in Ukraine and its evolution. This research is based on general scientific and special methods of cognition, including abstract logical reasoning, grouping, and statistical analysis. The factors that contribute to the growth of house prices are formed using the method of principal component analysis, and the effect is estimated using least squares regression. Five stages of the evolution of the Ukrainian residential real estate market are identified according to two general indicators: housing price growth and credit activity. The segmentation is based on significant changes in market conditions and/or changes in housing price drivers, as well as changes in the regulatory environment. Factors

ШМИГЕЛЬ Альона,
аспірантка кафедри банківської справи
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID: 0000-0001-9314-5505
a.shmygel@gmail.com

ШУЛЬГА Наталія
д. е. н., професор,
завідувач кафедри банківської справи
Державного торговельно-економічного університету
вул. Кіото, 19, м. Київ, 02156, Україна

ORCID:0000-0002-2010-5884
2bank2@ukr.net

ФАКТОРНИЙ АНАЛІЗ РИНКУ ЖИТЛА В УКРАЇНІ (2003–2023)

Ринок житлової нерухомості є потужним драйвером розвитку світової та національної економік, що впливає на зростання ВВП, підвищення рівня зайнятості, доходів населення, прибутковості фінансових установ, будівельних організацій і торговельних підприємств. Зростання цін на житло може розглядатись з двох позицій: як загроза фінансовій стабільності та як джерело економічного розвитку. Метою цього дослідження є формування переліку критеріїв, за якими можна обумовлювати ті чи інші заходи макропруденційної політики, спрямовані на обмеження вартості житла на ринку нерухомості через багатоаспектний аналіз ринку житла в Україні та його еволюції. В основу дослідження покладено загальнонаукові та спеціальні методи пізнання: абстрактно-логічний, групування; статистичні. Фактори, які сприяють зростанню цін на житло, формуються за допомогою методу аналізу головних компонентів, а вплив оцінюється за допомогою регресії найменших квадратів. Виділено п'ять етапів еволюції українського ринку житлової нерухомості за двома загальними показниками: зростання цін на житло та кредитна активність. Поділ заснований на значних змінах ринкових умов і (або) змінах драйверів цін на житло, а також на змінах у регуляторному середовищі. Досліджено фактори, що впливають на ціни на

affecting house prices at each of these stages were investigated using principal component analysis to identify variables for regression analysis. A set of criteria has been formed using which one can assess if the current rise in housing prices poses systemic risks to the national financial system and overall economy. Three hypotheses were put forward and their empirical verification was carried out, according to the results of which it was established that demand factors had the greatest impact on housing prices during the observation period; macro-financial conditions primarily affect prices on the primary real estate market; lending conditions affect price dynamics mainly only at the first stage of development of the housing market in Ukraine, which are determined in this study. The main drivers of the housing market in Ukraine are the unemployment rate, income growth levels, and population size. The conclusions drawn can significantly contribute to the monitoring system of the housing market in Ukraine and the analysis of the systemic risks it generates.

Keywords: real estate market, systemic risk, financial stability, regression analysis, principal component analysis, risks, macro-prudential policy.

житло на кожному з цих етапів з використанням методу аналізу головних компонентів, щоб визначити змінні для регресійного аналізу. Сформовано набір критеріїв, за допомогою яких можна судити, чи є поточне зростання цін на житло джерелом системних ризиків для стабільності національної фінансової системи та економіки в цілому. Висунуто три гіпотези та проведено їх емпіричну перевірку, за результатами якої встановлено, що фактори попиту найбільше впливали на ціни на житло протягом періоду спостереження; макрофінансові умови передусім впливають на ціни на первинному ринку нерухомості; умови кредитування впливають на цінову динаміку переважно лише на першому етапі розвитку ринку житла в Україні до поділу, запропонованому в цьому дослідженні. Основними драйверами ринку житла в Україні стали фактори попиту: рівень безробіття, доходів та чисельність населення. Зроблені висновки можуть суттєво сприяти системі моніторингу ринку житла в Україні та аналізу системних ризиків, що він генерує.

Ключові слова: ринок нерухомості, системний ризик, фінансова стабільність, регресійний аналіз, метод аналізу головних компонент, ризики, макропруденційна політика.

JEL Classification: G21.

Introduction

The residential real estate (RRE) market plays a key role in the development of global and national economies, since; on the one hand, it acts as a powerful driver of GDP growth, increasing the level of employment, household incomes, profitability of financial institutions, construction organizations and trading enterprises. On the other hand, it is a source of risks that can potentially threaten financial stability, as proven by the Global Financial Crisis (GFC) of 2007–2009. Among the main causes of the GFC there was global overvaluation of house prices (HP), paired with high private debt levels. The two drivers reinforced each other, creating "vicious circle", the process in which global economy was accumulating systemic stress and imbalances, which then amplified the consequences. The imbalances on the housing market were transferred to the financial sector through the collateral channel since buoyant credit activity was not supported by the quality of loans. Corrections of HP and rising ratios of non-performing loans negatively impacted the financial standings of lenders. That, in turn, led to widespread worsening of banks' financial conditions and even bank failures, contributing to global financial instability (Aoki and Nikolov, 2012). Therefore, the housing market is constantly in the spotlight, being investigated and analyzed by the regulators of the financial sector (here and after – regulators).

Depending on the stage of the cycle of real estate market, regulators can use a toolkit of levers and instruments of macroprudential policy, aimed at ensuring financial stability and preserving economic growth. The housing market in Ukraine developed amid the negative impact of four major financial crises: the GFC, which hit Ukraine in 2008–2009; the social-economic crisis of 2014–2015, deepened by the Russian aggression in the Eastern part of Ukraine and the annexation of Crimea; the crisis, provoked by the coronavirus pandemic in 2020 and the one, caused by Russia's full-scale war on Ukraine. These frequent imbalances destabilized the RRE market in Ukraine and generally resulted in low demand due to poor financial standings of households; and in unnaturally weak mortgage lending with the mortgage-to-GDP ratio of 0.55 % as of the end of Q3 2021 (National Bank of Ukraine, 2021).

The HP growth has two dimensions: threat to financial stability and source of economic development. Rapid asset price growth is usually considered as a source of systemic risk that should be immediately limited. However, by restraining the HP growth too early and without solid grounds, regulators risk to lose an important source of economic growth. Therefore, we would like to formulate a list of criteria, based on which one can decide whether the HP at a given stage of RRE market development needs to be constrained or not.

After the GFC, the RRE market became an extremely popular topic for investigation by both scholars and regulators across the globe. Lang et al. (2022) and Lo Duca et al. (2019) investigated the role of housing market in the general economy and, thus, the importance of developed macroprudential toolkit in response to risks to financial stability stemming from the RRE market. Égert and Mihaljek (2008), Hlaváēek and Komárek (2011), Duca et al. (2021), Maynou et al. (2021), Shmygel and Hoesli (2023) and Di Casola et al. (2022) explored and described the drivers of HP cycle and the current developments on the housing markets all across the globe. The tradeoff between the benefits and threats of active housing market were discussed by Nguyen and Bui (2020) and Zhang et al. (2018).

Lang et al. (2022) in their paper analyzed the links between real estate markets, the economy and the financial system. They outlined three general reasons of systemic importance of the real estate market.

The paper by Lo Duca et al. (2019) presented a framework that the European Central Bank employs to assess the risks to financial stability that arise from the housing market and to design the response of macroprudential policy.

The research on what drives the HP growth became very popular after the GFC. It is generally accepted to believe that the main fundamental factors can be divided into two general groups: supply and demand fundamentals (Égert and Mihaljek, 2008). Many authors agreed that the HP growth is primarily demand-driven. Hlaváēek and Komárek (2011), who studied the

RRE market in Czech Republic, claimed that the housing prices on the local market are driven by demand factors, such as wage growth and unemployment rate. Additionally, according to Maynou et al. (2021), the analysis of twelve European countries confirmed that the fundamental HP drivers are mainly fiscal factors and unemployment. According to Di Casola et al. (2022), based on the estimates of country-specific Bayesian vector autoregression (BVAR) models, HP change in the advanced countries during 2020–2021 was mainly driven by the demand factors.

In their paper on detection of the HP bubbles, Shmygel and Hoesli (2023) argued that the principal drivers of HP growth are demand-side factors as aggregate income and the rate of unemployment. Except from that they claimed that the lending conditions are, despite undoubtedly being among the factors that can contribute to the HP dynamics, are not the drivers of fundamental HP, since they tend to explain not only the intrinsic HP growth, but the bubble build-up as well.

In their article, Lo Duca et al. (2021) conducted a thorough research of the drivers of HP growth and investigated the links that connect housing markets, credit markets, HP expectations, financial stability and the wider economy.

The tradeoff between the advantages of buoyant housing market to economic growth and its threats to financial stability were discussed by Nguyen and Bui (2020). In their paper, the authors stated that more active RRE market gives a positive signal and stimulates other sectors of the economy as long as it remains within reasonable limits. This thought was confirmed by Zhang et al. (2018), who claimed that active demand on the housing market positively affects the loan portfolios of banks on initial stages. But the links between activity on the RRE market and financial stability become more direct and sensitive when the cycles on this market change. According to Jarmulska et al. (2022), during booms on RRE markets, both the HP growth and lending activity tend to be vigorous.

The aim of this research is an analysis of RRE market in Ukraine that is centered on the main indicator of this market – the HP growth. We want to analyze the evolution of housing market in Ukraine from the perspective of which factors contributed to its dynamics.

In this research, *three hypotheses* were put forward and tested by estimating the statistical significance of the OLS regression coefficients. This is done by calculating the p-values for each separate coefficient, based on the input variables, which are the fundamental drivers of house prices in our research. The p-value lower than 0.05 suggests that the null hypothesis that the coefficient is close to zero (has no impact on house prices) is rejected. The results of hypothesis testing are provided in the Results section. The first hypothesis is that the demand partition has the highest contribution to the HP growth throughout the whole period of observation. The second hypothesis is that the macro financial partition has lower effect on the HP growth on the

secondary RRE market. The third hypothesis is that the lending conditions had the strongest impact on the HP growth during the first stage of RRE development, as outlined in the following sections.

This research is structured as follows. First, we will identify the phases of Ukrainian housing market development and analyze it from the perspective (the second step, respectively) of what drives the HP growth. As a final step, will form a set of criteria with the help of which we can judge whether the current house price growth is a source of systemic risks to the stability of national financial system and economy in general.

The first step of this research is to distinguish the stages of evolution of the residential real estate market in Ukraine. This step fully relies on an expert judgment based on economic sense and the data on dynamics of residential HP on the real estate market of Kyiv city and the stock of loans issued for the purchase and construction of housing to individuals (stock of mortgage). Thus, the pivotal moment of every stage is the point where the dynamics change crucially or there are grounds to believe that the drivers/circumstances on the residential real estate market have changed drastically.

Next, we identified the drivers that contribute to the growth of HP. Based on the literature; we distinguished four general groups of fundamental factors that can possibly define the dynamics of HP as the principal indicator of the housing market. The general partitions of factors are the following: macro financial (MF) conditions, lending conditions (LC), demand factors and supply factors. These partitions are formed using the principal component analysis method and the data, described in the following section.

Principal component analysis (PCA) is a method that helps to reduce the dimensionality of dataset while increasing interpretability but minimizing information loss. While decreasing the dimensionality of data, the PCA preserve as much variability as possible. The PCA reaches this goal by creating new uncorrelated variables that are linear functions of the inputs in the original dataset (Jolliffe and Cadima, 2016). The advantage of partitioning is that it improves the forecasting power of the regression model by extracting common trends in macro financial variables, hence filtering out idiosyncratic noise, which may be endemic in countries with illiquid markets (Prasad et al., 2019).

Within the principal component analysis, we subtracted the first two dimensions from every partition for further analysis. It is a common practice to choose only certain percentage of variation explained to decide how many dimensions must be included in the further analysis. The focus is often on the first few dimensions. For this research, since we mostly care about identifying factors and not on predicting fitted variables, we chose the cut-off point of 55–60 % of variation explained by dimensions. Then, we estimated the correlation between eight (two dimensions * four partitions) potential variables, to avoid multicollinearity in the further regression

analysis. We also calculated the relative contribution of input data among every partition to better understand the composition of output data.

After estimating correlation and selecting variables, we performed the OLS regression analysis to identify the factors that influenced the HP growth on different stages. In order to do it, we built a multi-factor ordinary least squares model of the following form:

$$House\ prices_t = \beta_0 + \beta_1 Macrofinancial\ Conditions_t + \\ +\beta_2 Lending\ Conditions_t + \beta_3 Demand\ Partition_t + \beta_4 Supply\ Partition_t + \varepsilon_t, \quad (1)$$

where $House\ prices_t$ is a dependent variable in time "t" and X_t are the partitions of fundamental factors of HP dynamics, created with the help of PCA method.

Data. The Ukrainian residential real estate market analysis is built on the case of the Kyiv city. Since it is the capital of Ukraine, it is also the biggest, the most populated and economically active city. In addition, Kyiv has the most active real estate and construction markets. For this research, we used data for Kyiv city, where available and for the Ukraine in general for the variables that must be used on the macro-level. To perform the second step, the regression analysis, needed for and estimation of drivers of HP during different periods of the evolution of the Ukrainian residential real estate market, we formed a list of factors that are deemed to explain the behavior of HP as fully as possible. We outlined the four general categories of factors that can be considered as drivers of house price dynamics: macro financial conditions, lending conditions, demand-side factors and supply-side factors. All factors that were considered within each partition are displayed in the *Table 1*.

Table 1

Partitions of drivers[1] of HP in Ukraine

Macro financial conditions	Lending conditions	Demand-side factors	Supply-side factors
Real Gross Domestic Product growth y-o-y, %	ER-adjusted mortgage stock to GDP, %	Number of population in Kyiv city, million persons	Real residential construction cost index in Ukraine, %
Output gap, %	Google search, word "credit"	Disposable real aggregated income, UAH million	Commissioned dwellings in Kyiv, m^2
Inverted Current Account Deficit to GDP, %	New mortgage lending to GDP, %	Inverted DE seasoned unemployment rate in Kyiv city, %	Commissioned dwellings in Ukraine, m^2
	Inverted interest rate on mortgage, %		

Source: compiled by authors.

[1] Due to high seasonality some variables were seasonally adjusted with the help of the R-interface of X-13-ARIMA.

The dependent variable for the regression analysis is the real exchange rate adjusted HP on primary and secondary residential real estate markets of Kyiv city. The data series starts in Q1 2003 and is available on the quarterly basis. The housing prices on both sub-markets are adjusted to the exchange rate movements, according to the methodology described by Shmygel and Hoesli (2023), in order to get a dependent variable that describes solely the events on the RRE market.

The residential real estate market of Kyiv is divided into two sub-markets: primary and secondary. The primary RRE market is the market in which the newly built housing is offered to individuals, who become its first-time owners. In turn, the secondary RRE market consists of the transactions between two or more individuals: a seller and a buyer. Taking into account this division, we will build two identical in terms of a set and form of independent variables models: one with HP on the primary and the other with HP on the secondary market as the dependent variables of the model.

The exchange rate adjusted gross stock of mortgage loans, issued to individuals, used in the lending conditions partitions follows the same methodology for the correction for the exchange rate movements, as the dependent variable, but, instead of 40 % correction, the whole, 100 % of FX rate movement is subtracted from the variable.

The disposable real aggregated income demand-side variable is complex and is calculated based on the methodology, described by Shmygel and Hoesli (2023), as follows:

$$Disposable\ real\ aggregated\ income_t = Av.salary\ per\ month_t \times \\ \times Number\ of\ population_t \times \%\ of\ disposable\ income\ in\ aggregate\ income_t \quad (2)$$

This variable is perfectly tailored to serve as the complex demand-side driver of the HP dynamics, since it incorporates two of the most important fundamental factors: households' income and number of population.

1. Identification of the stages

In order to identify stages of the Kyiv residential real estate market's development, we employed an expert judgment based on the information on dynamics of residential HP on the real estate market of Kyiv city and the mortgage stock and economic sense. According to *Figure 1*, the only period of buoyant mortgage lending in Ukraine was before the GFC, when the gross mortgage portfolio of Ukrainian banks reached its peak and the ratio of exchange rate adjusted gross stock of mortgage loans, issued to individuals to GDP was 9.4 %.

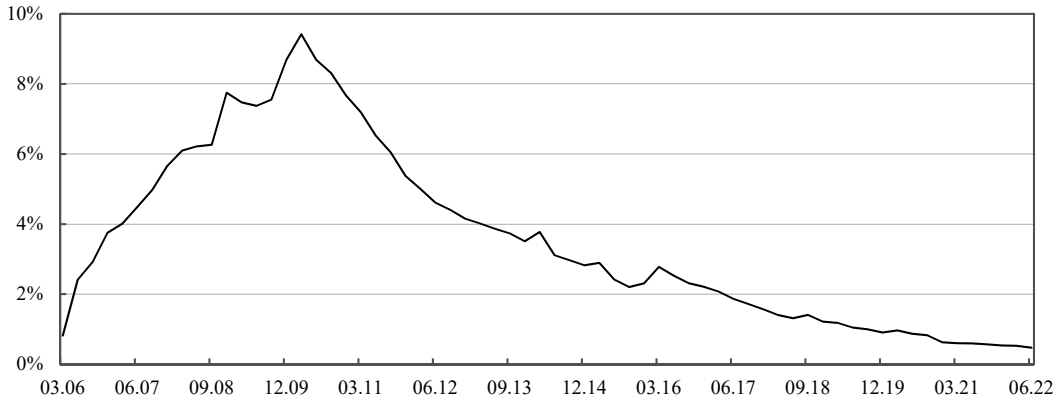


Figure 1. Exchange rate adjusted gross stock of mortgage loans to individuals to GDP, %

Source: compiled by authors using data from the National Bank of Ukraine (National Bank of Ukraine, 2023).

However, this growth was supported by the build-up of systemic risks, since the loan standards were low and most of the loans were issued in foreign currency, while the currency risks were not addressed by either the lenders or the borrowers. After 2009, the new mortgage lending was almost inactive in Ukraine with existing portfolios shrinking due to low quality of loans, high rate of non-performing loans and mass write-downs by banks. The new mortgage lending picked up in mid-2020, due to lower interest rates on the market and the launch of state support program. However, this recovery started from a very low base and coincides in time with restructuring and write-downs of legacy non-performing mortgage, left after the crises of 2008–2009 and 2013–2016. Therefore, it did not affect the ratio of mortgage stock to GDP and is unnoticeable in the *Figure 1*. After the start of full-scale Russian war in Ukraine in February 2022, the mortgage lending completely stopped for the first three month of war with only a few mortgage loans per month issued later this year.

According to the *Figure 2*, the active lending that preceded the GFC was also contributing to the overvaluation of HP and, thus, a bubble build-up. Although there is another spike in early 2015, this one is completely explained by a sharp hryvnia devaluation and is not considered a bubble according to the results of analysis done by Shmygel and Hoesli (2023). Apart from this short episode, the prices were mostly stable from post-bubble period in 2010 to the end of the period of observation. In the mid-2020, the prices began to gradually rise, responding to the recovery of mortgage lending. However, this growth was moderate and was brought to an end by the start of war in Ukraine. Following the full-scale invasion of Russia into Ukraine, the HP became chaotic, particularly on the primary market, since they weren't controlled by basic market forces anymore, but by the relative distance from the frontline and sellers' internal expectations.

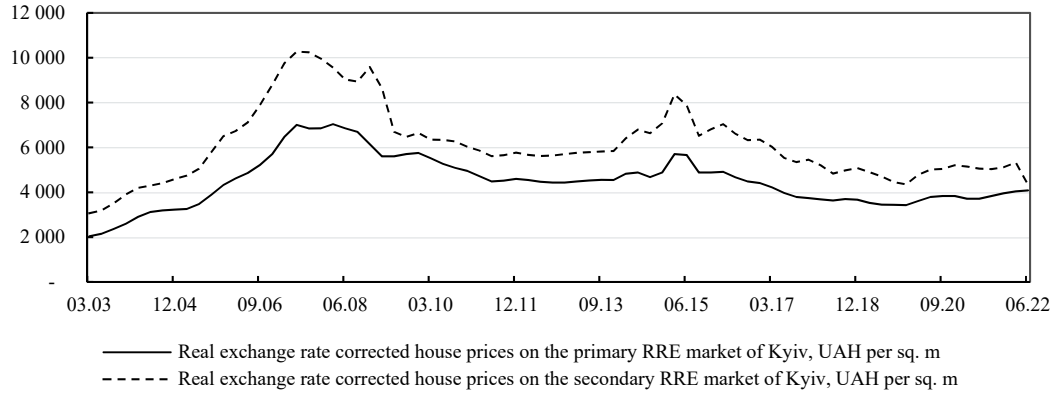


Figure 2. HP on the RRE sub-markets of Kyiv city

Source: compiled by authors using data from the real estate agencies and the NBU.

The analysis of data, provided on the *Figures 1, 2*, allowed us to formulate five distinct stages of development of residential real estate market in Ukraine, as follows in *Table 2*.

Table 2

Stages of development of residential real estate market in Ukraine

Stage	Distinct features of the stage
First (before Q1 2009)	Period of house price bubble and its formation, buoyant mortgage lending
Second (Q2 2009 – Q4 2013)	House prices fell following the bubble burst, the new mortgage lending almost inexistent, existing mortgage stock shrinking
Third (Q1 2014 – Q2 2020)	House prices relatively stable, except from the short hryvnia devaluation period, the new mortgage lending almost inexistent, existing mortgage stock shrinking
Fourth (Q3 2020 – Q1 2022)	House prices slowly pick up following the gradual recovery of mortgage lending
Fifth (since Q1 2022)	House prices chaotic, the market is not controlled by the demand and supply drivers, new mortgage lending almost inexistent

Source: compiled by authors.

2. Identification of factors

The next stage of this research is focused on the factors that contributed to the HP growths and thus, the residential real estate market development in Ukraine. We have previously formed four partitions of variables that, in theory, are driving the change of HP on both primary and secondary housing markets of Kyiv. With the groups of potential input variables being formed, we proceeded to the principal component analysis, the results of which are presented on the *Figure 3*. On the panels A to D we depicted the shares of variance that is explained by the new components, constructed from the input variables, provided in the *Table 1*. For the further

analysis, we subtracted two dimensions from each partition in order to proceed to the next stage of regression analysis.

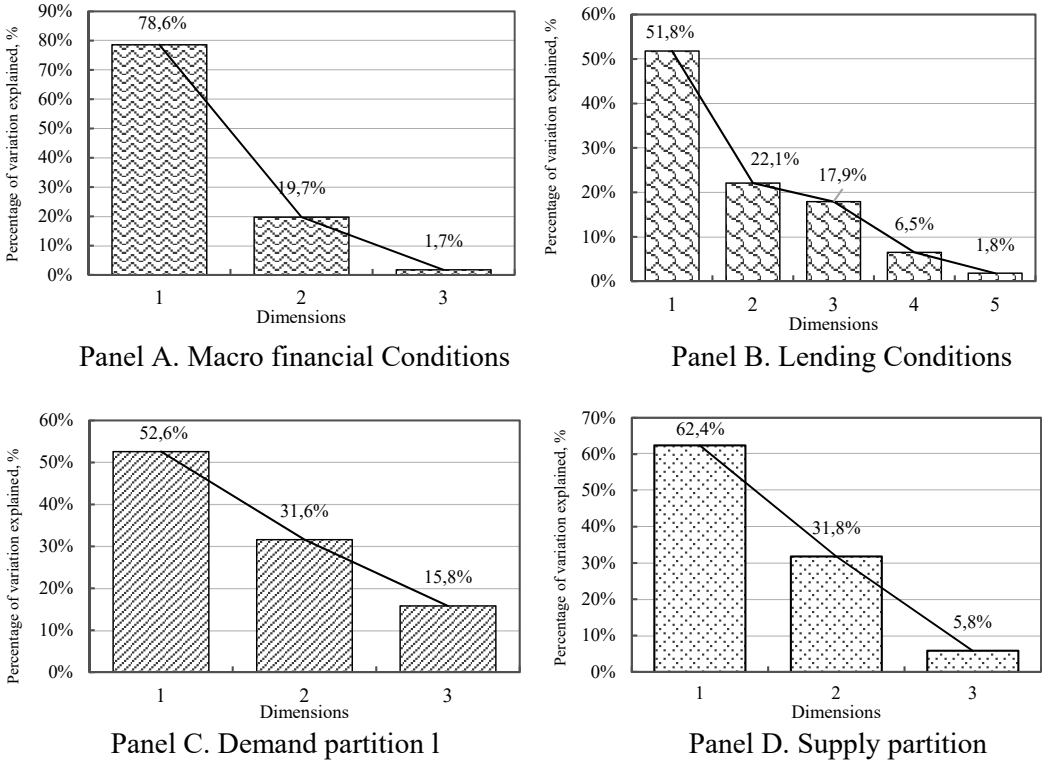


Figure 3. Panels A-D. Percentage of explained variance of the components of Macro financial, Lending Conditions, Demand and Supply partitions

Source: compiled by authors using R.

However, our initial plan was not to arrive with the final regression model with the highest measures of predictive power since we didn't intend to predict the fitted values. Our ultimate aim for this research was to identify fundamental factors of HP growth and analyze their contribution and its direction on each of the stages of RRE development. Thus, we planned to use only one of the dimensions with the greatest share of inputs' variability explained. However, due to high correlation between the first components of the macro financial and demand partitions, we decided to continue our research with the second component of the macro financial conditions partition.

The rationale for choosing to give up the first component of the macro financial conditions over the first component of the demand partition is that it is generally considered that demand-side factors are the main fundamentals of HP dynamics, as according to Geng (2018).

The largest contributors to the newly constructed variables of macro financial conditions, lending conditions, demand-side and supply-side partitions are, respectively: Inverted current account deficit to GDP, Exchange rate adjusted mortgage portfolio to GDP, Disposable real

aggregated income and Total area of commissioned dwellings per quarter in Kyiv city with 1Q lag.

In the *Table 3*, we provide results of the regression analysis for both baseline models: with dependent variable from the primary and from the secondary RRE market of Kyiv.

Table 3

Regression summary statistics for the multi-factor baseline model

	House prices on the primary RRE	House prices on the secondary RRE
Macro financial Conditions partition	–0.059***	–0.037*
Lending Conditions partition	–0.029***	–0.004
Demand partition	–0.069***	–0.067***
Supply partition	0.005	–0.004
Constant	–0.024*	–0.031*
Number of observations	58	58
R^2	0.636	0.522
Adjusted R^2	0.609	0.486
Note:	*p<0.1; **p<0.05; ***p<0.01	

Source: compiled by authors using R.

In this stage of research, *three hypotheses* were put forward and their empirical verification was carried out. The *first hypothesis* was that the demand partition has the highest contribution to the HP growth throughout the whole period of observation. The *second hypothesis* was that the macro financial partition has lower effect on the HP growth on the secondary RRE market. The *third hypothesis* was that the lending conditions had the strongest impact on the HP growth during the first stage of RRE development, as outlined in the previous sub-chapter. All three hypotheses were not rejected, as discussed in detail further.

According to the results of regression analysis in the *Table 3*, we obtained useful insights on the Kyiv housing market. It is worth noting that the supply-side variable, *total area of commissioned dwellings per quarter* is not significant for both sub-markets. This can be explained by the fact that during the period from 2009 to mid-2020 the mortgage lending was nearly nonexistent, due to the events and reasons that will be explained further. The absence of mortgage lending significantly impaired the housing demand and even contributed to the HP being uncorrelated with the demand fundamentals. However, this is not only the case for demand-side variables: extremely low levels of mortgage lending made HP on the primary real estate market[1] inelastic to the volumes of newly introduced housing due to two reasons. Firstly, in the case of more buoyant construction, the real estate

[1] The prices secondary RRE market, in theory, also must respond to the increasing housing stock, however with a bigger lag and to a lesser extent than the prices on primary market, thus the following reasoning is given only for the latter.

developers were unable to respond to it with accordingly lower prices, since up to the late 2020 they were working with almost zero marginality. Except from the infamous cases of bankruptcy of developers that defrauded nearly 30 thousand people, who never received the dwelling they had paid for, most of the developers were able to remain solvent because of the large volumes of construction and concomitant building of dozens of apartment complexes (National Bank of Ukraine, 2020). Secondly, they were unable to increase prices in times of stagnant construction activity due to inexistent mortgage lending and very low levels of demand on the market. According to the regression results, the most significant variable for both primary and secondary markets is the demand partition, as according to the literature and basic economic sense. The macro financial conditions and lending conditions partitions are more significant for the HP on the primary market, which also corresponds to the economic logic. We do not pay attention to the signs of the coefficients, since we use the standardized, PCA-transformed variables, which were also originally presented as growth rates. What is important for us is the interpretability of these coefficients in the graphical form as the distribution of factors that influence HP growth on different stages. According to the *Figure 4*, the lending conditions were playing significant role in the development of HP on the primary market only during the first stage of the real estate market development, from the beginning of 2003 to the early 2009 the demand factors. The lending conditions continue to contribute positively to the HP change during the crisis of 2008–2009 due to mortgage portfolio being on its historical heights. The significant role in the downfall of HP during the early second stage was played by demand factors, which is explained by falling disposable aggregated real income and rising unemployment. Another important driver of this contraction was macro financial variables, due to worsening economic conditions during the crisis.

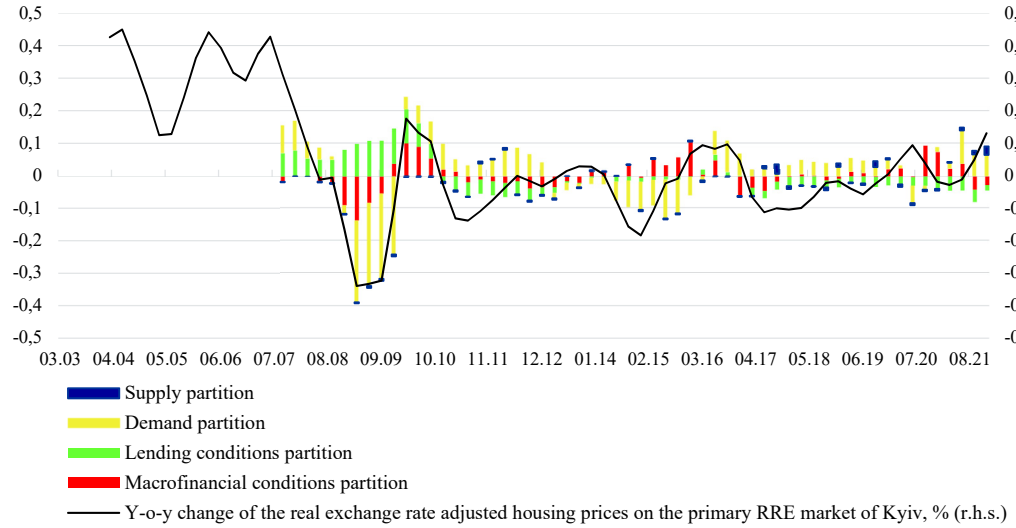


Figure 4. Distributions of factors that affect the house price growth on the primary RRE of Kyiv

Source: compiled by authors.

The same conclusion applies to the distributions of factors that affect the HP growth on the secondary housing market of Kyiv city. After the early second stage, the HP change was never significant with the demand partition generally negatively contributing to HP movement during the third stage and positively during the fourth. After the first stage, the lending conditions were only contributing to the fall of HP, since the new lending was almost inexistent and the stock of mortgage shrinking.

According to the *Figure 5*, the biggest contributor to the HP on the secondary market throughout all stages, also in accordance with the regression results, was the demand partition, with the second role played by the macro financial conditions.

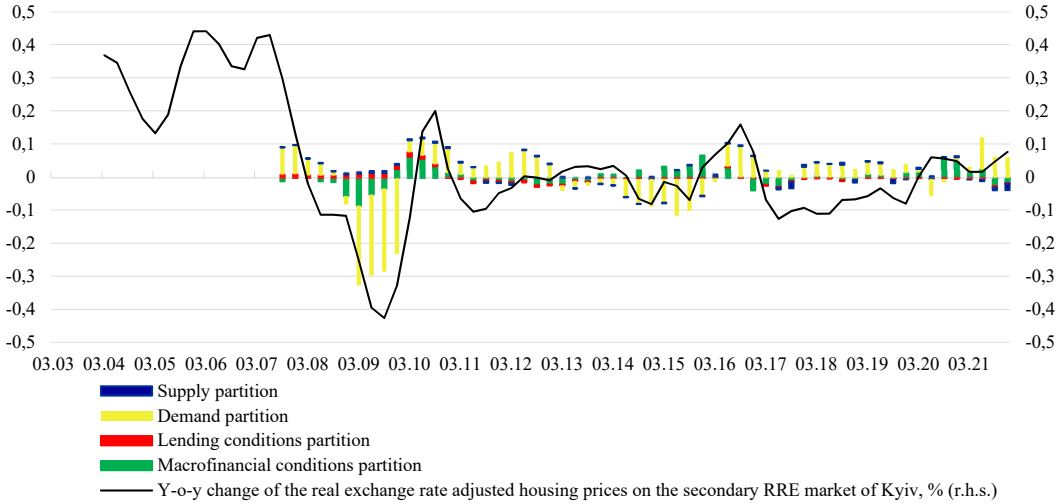


Figure 5. Distributions of factors that affect the house price growth on the secondary RRE market of Kyiv

Source: compiled by authors.

In the *Table 4* we present a short summary of the HP drivers across all stages of RRE development.

Table 4

Impact of HP drivers changes across the stages of RRE development

Stage	Impact of main factors	
	Primary RRE market	Secondary RRE market
First stage (before Q1 2009)	Demand and lending conditions partitions contribute to rising HP before the crisis; Demand and MF partitions contribute to falling HP during the onset of crisis	Demand partition contributes to rising HP before the crisis; MF partition contributes to fall of HP during the onset of crisis
Second stage (Q2 2009 – Q4 2013)	Demand partition positively contributes to the HP change before 2013; LC partition negatively contributes to the HP change before 2013; All partitions contribute negatively during 2013	Demand and MF partitions positively contribute to the HP change before 2013; Demand and MF partitions negatively contribute to the HP change during 2013

End of table 4

Stage	Impact of main factors	
	Primary RRE market	Secondary RRE market
Third stage (Q1 2014 – Q2 2020)	Demand and LC partitions contribute negatively before mid-2016; LC partition contributes negatively further; Demand contributes positively from mid-2016 to the Q1 2020, when the coronavirus crisis started	Demand partition contribute negatively before mid-2016; Demand contributes positively from mid-2016 to the Q1 2020, when the coronavirus crisis started; MF partition contribute positively before mid-2016 with insignificant impact further
Fourth stage (Q3 2020 – Q1 2022)	Demand partition contributes positively throughout whole stage; LC partition contributes negatively further; MF partition contributes positively throughout first half of the stage	Demand partition contributes positively throughout whole stage; MF partition contributes positively throughout first half of the stage
Fifth stage (since Q1 2022)	The impact not defined due to chaotic prices and market being in disequilibrium	

Source: compiled by authors.

3. A set of criteria to define whether the HP growth is threatening financial stability

Based on the results, obtained within the course of this research and described in the previous sub-sections, we have formulated a set of criteria, based on which it is possible to conclude whether the HP growth contributes to the general economic growth and remains safe for the financial stability. The HP growth remains within the corridor of safe values if the following criteria are met:

- The regulator executes restrictive or intentionally and well-informed expansionary mortgage market-oriented macroprudential policy; *AND.*
- (a) The HP growth is explained by market forces (demand and supply) or macro financial conditions with lending conditions being at least driver of second importance; *AND.*
- (b) The Mortgage-loans-to-GDP ratio is below 2 percentage points above its long-term trend (Basel Committee on Banking Supervision, 2010); *OR.*
- There are no signs of HP overvaluation (price bubble) according to the bubble detection framework, as according to Shmygel and Hoesli (2023).

As follows from the set of criteria, in case the first and the second OR third criteria are not met, the HP growth needs additional attention and analysis, with the mortgage market-oriented macroprudential policy possibly being shifted to restrictive. The rationale for making this conclusion based on only two but not all the criteria is based on the fact that the tendencies on the mortgage and residential real estate market not always coincide, because the markets are affected by multiple forces and are much more complex than

it can be regarded in theory. Since these two markets are not always moving together, an abnormal dynamic in either of them can be a source of disruptions that, amplified by an overly liberal prudential policy, can lead to severe episodes of financial instability.

Conclusions

We have singled out five distinct stages of RRE market development in Ukraine based on two general indicators: HP growth and lending activity. The division was based on the significant changes of market conditions and (or) changes of HP drivers, as well as on shifts in the regulatory environment. Then we investigated the HP drivers on each of these stages, using the principal component analysis method to form variables for the following OLS regression method. The analysis has showed that the housing cycle of the RRE market in Ukraine was mostly impacted by the demand-side factors: unemployment rate, as well as income and population growth. Three hypotheses were put forward and tested. It was proven that the demand factors have the highest impact on house price growth throughout the observation period; macro financial conditions mostly influence the prices on primary housing market; and the lending conditions were affecting the price dynamics the most in the first stage of housing market development during the active pre-crisis mortgage lending. Finally, we have formed a set of criteria with the help of which we can judge whether the current HP growth is a source of systemic risks to the stability of national financial system and economy in general. The conclusions, drawn within the process of this research, could significantly contribute to the framework of monitoring RRE market by the National Bank of Ukraine and to the analysis of systemic risks stemming from it.

REFERENCES

Aoki, K. & Nikolov, K. (2015). Bubbles, banks and financial stability. *Journal of Monetary Economics, Elsevier, 74(C)*, *33-51*. https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1495.pdf

Basel Committee on Banking Supervision (2010). *Guidance for national authorities operating the countercyclical capital buffer*. Retrieved June 2023, from https://www.bis.org/publ/bcbs187.htm

Di Casola, P., Dieckelmann, D., Grothe, M., Hempell, H., Jarmulska, B., Lang, J. H. & Rusnák, M. (2022). Drivers of rising house prices and the risk of reversal – Box 2, *Financial Stability Review, ECB*. https://www.ecb.europa.eu/pub/financial-stability/fsr/focus/2022/html/ecb.fsrbox202205_02~cc40a7cbda.en.html

Duca, J. V., Muellbauer, J., & Murphy, A. (2021). What Drives House Price Cycles? International Experience and Policy Issues. *Journal of Economic Literature, 59.3*, 773-864.

Égert, B. & Mihaljek, D. (2008). Determinants of House Prices in Central and Eastern Europe. *Czech National Bank, Working Paper*, *1*. https://www.bis.org/publ/work236.pdf

Hlaváēek, M. & Komárek, L. (2011). Regional analysis of housing price bubbles and their determinants in the Czech Republic. *Czech Journal of Economics and Finance*, *61.1*, 67-91.

Jarmulska, B., Bandoni, E., Lang, J. H., Lo Duca, M., Perales, C. & Rusnák, M. (2022). The analytical toolkit for the assessment of residential real estate vulnerabilities. *Macroprudential Bulletin, European Central Bank, 19*. https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu202210_2~ 7f1ad6fa2d.en.html

Jolliffe, I. T. & Cadima, J. (2016). Principal component analysis: a review and recent developments. *Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences,* 374. https://doi.org/10.1098/rsta.2015.0202

Lang, J. H., Behn, M., Jarmulska, B. & Lo Duca, M. (2022). Real estate markets, financial stability and macroprudential policy. *Macroprudential Bulletin, European Central Bank, 19*. https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1796.en.pdf

Lo Duca, M., Pirovano, M., Rusnák, M. & Tereanu, E. (2019). Macroprudential analysis of residential real estate markets. *Macroprudential Bulletin, ECB*, *7*. https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu202210_1~53d521bde7.en.html

Maynou, L., Monfort, M., Morley, B. & Ordóñez, J. (2021). Club convergence in European housing prices: The role of macroeconomic and housing market fundamentals, *Economic Modelling*, 103. https://doi.org/10.1016/j.econmod.2021.105595

National Bank of Ukraine. (2020). *Financial Stability Report*. Retrieved June 2023, from https://bank.gov.ua/en/news/all/zvit-pro-finansovu-stabilnist-cherven-2020-roku

National Bank of Ukraine (2021). *Financial Stability Report*. Retrieved June 2023, from https://bank.gov.ua/en/news/all/zvit-pro-finansovu-stabilnist-gruden-2021-roku

Nguyen, M. & Bui, T. (2020). The Real Estate Market and Financial Stability. *International Journal of Mathematical, Engineering and Management Sciences, 5*, 1270-1283.

Official statistics of the National Bank of Ukrain (2023). https://bank.gov.ua/ en/statistic/nbustatistic

Prasad, A., Elekdag, S., Jeasakul, P., Lafarguette, R., Alter, A., Feng, A.X. & Wang, C. (2019). Growth at Risk: Concept and application in IMF country surveillance, *IMF Working Papers*, *19/36*. https://www.imf.org/en/Publications/WP/Issues/2019/02/21/Growth-at-Risk-Concept-and-Application-in-IMF-Country-Surveillance-46567

Shmygel, A. & Hoesli, M. E. R. (2023). House Price Bubble Detection in Ukraine. *Journal of European Real Estate Research.* https://doi.org/10.1108/JERER-10-2022-0031

Zhang, D. et al. (2018). Real Estate Investments and Financial Stability: Evidence from Regional *Commercial Banks in China. The European Journal of Finance, 24.16*.

Conflict of interest. The authors certify that don't they have no financial or non-financial interest in the subject matter or materials discussed in this manuscript; the authors have no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript. Given that one of the authors is affiliated with the institution that publishes this journal, which may cause potential conflict or suspicion of bias and therefore the final decision to publish this article (including the reviewers and editors) is made by the members of the Editorial Board who are not the employees of this institution.

The authors received no direct funding for this study.

The contribution of the authors is equal.

Shmygel A., Shulga N. Factor analysis of the housing market in Ukraine (2003–2023). *Scientia fructuosa*. 2023. № 5. S. 123-138. https://doi.org/10.31617/1.2023(151)08

Received by the editorial office 16.06.2023.
Sent for revision 20.07.2023.
Accepted for printing 01.08.2023.
Published online 26.10.2023.

DOI: 10.31617/1.2023(151)09
UDC 332.1:338.28(477)=111

MAZUR Anastasiia,
PhD student of the Department
of Management,
Ivan Franko National University of Lviv
1, Universytetska St., Lviv, 79000, Ukraine

ORCID: 0000-0003-3506-4779,
anastasiia.mazur@lnu.edu.ua

REGIONAL STARTUP ECOSYSTEMS OF UKRAINE

The startup ecosystem of each country contains separate elements and reflects the effectiveness of their interaction, which is also reflected in regional ecosystems. The aim of the research is to identify and rank the start-up ecosystems of the regions of Ukraine according to various indicators, distinguish the differences between the ecosystems and determine the main directions of their development, expansion within a separate region. In the research multifactorial comparative analysis in four stages has been used, such as: justification of the indicator system, normalization of the matrix of standardized coefficients, squaring of all elements of the matrix of standardized coefficients and placement of the obtained rating values by rank. The highest level is characterized by a sufficient number of supporting elements that help startups find financing options and accelerate market entry processes; the high level has a dynamic ecosystem that helps early-stage startups find support and funding programs; the medium level has a developing ecosystem, and the existing business structure contributes to the development of the startup movement in the region; the low level has the potential for further development and additional initiatives by local authorities and business structures. According to the rating, the highest level was determined in Kyiv region, the high level is found in Dnipropetrovsk, Lviv, Odesa and Kharkiv regions, the average level is found in Donetsk and Zaporizhia regions. Other regions belong to the lower and the lowest levels, which emphasize the promising development of startup ecosystems in the regions. Regions with the highest level can focus on maintaining and expanding their existing ecosystem by providing

МАЗУР Анастасія,
аспірантка кафедри менеджменту
Львівського національного університету імені
Івана Франка
вул. Університетська, 1, м. Львів, 79000, Україна

ORCID: 0000-0003-3506-4779,
anastasiia.mazur@lnu.edu.ua

РЕГІОНАЛЬНІ СТАРТАП-ЕКОСИСТЕМИ УКРАЇНИ

Екосистема стартапів кожної країни містить окремі елементи та відображає ефективність їх взаємодії, що також відбивається на регіональних екосистемах. Метою статті є ідентифікація та ранжування стартап-екосистем регіонів України за різними показниками, розмежування відмінностей екосистем та визначення основних напрямків їх розвитку, розширення в межах окремого регіону. У дослідженні застосовано багатофакторний порівняльний аналіз у чотири етапи: обґрунтування системи показників, нормування матриці стандартизованих коефіцієнтів, зведення всіх елементів матриці стандартизованих коефіцієнтів у квадрат та розміщення отриманих рейтингових значень за рангом. Найвищий рівень характеризується достатньою кількістю допоміжних елементів, які допомагають стартапам знайти варіанти фінансування та прискорити процеси виходу на ринок; високий – має динамічну екосистему, яка допомагає стартапам на ранніх стадіях знайти підтримку та програми фінансування; середній – має екосистему, що розвивається, а існуюча структура бізнесу сприяє розвитку стартап-руху в регіоні; низький – має потенціал для подальшого розвитку та додаткових ініціатив з боку місцевої влади та бізнес-структур. Згідно з рейтингом, найвищий рівень визначено у Київській області, високий – у Дніпропетровській, Львівській, Одеській та Харківській, середній – у Донецькій та Запорізькій. Інші регіони належать до нижчого та найнижчого рівнів, що підкреслює перспективність розвитку стартап-екосистем у регіонах. Регіони з найвищим рівнем можуть зосередитися на підтримці та розширенні своєї існуючої

additional support and funding for startups; with high indicators they can focus on the further development of its dynamic ecosystem, creating more clusters and events to attract startups and investors; medium level regions can consentrate on increasing the number of supporting elements to make it easier for startups to find funding and scale; with a low level regions can focus on conducting competitions, hackathons, involving the IT community for the development of the startup community.

Keywords: startup, startup ecosystem, ranking, multifactorial comparative analysis, regions of Ukraine, ranking of regions, regional startup ecosystems.

екосистеми, надаючи додаткову підтримку та фінансування для стартапів; з високими показниками – на подальшому розвитку своєї динамічної екосистеми, створюючи більше кластерів і заходів для залучення стартапів та інвесторів; середнім рівнем – на збільшенні кількості допоміжних елементів, щоб полегшити стартапам пошук фінансування та масштабування; з низьким рівнем – на проведенні конкурсів, хакатонів, залучаючи IT-спільноту для розвитку стартап-спільноти.

Ключові слова: стартап, стартап-екосистема, рейтингування, багатофакторний порівняльний аналіз, регіони України, рейтинг регіонів, регіональні стартап-екосистеми.

JEL Classification: R11, M13.

Introduction

The technological and digital revolutions have created the prerequisites for the transition of startups from business projects to a different type of entrepreneurial activity with an innovative component. As part of this, a separate element of support stood out in the global structure, the startup ecosystem, which is formed from people and organizations of various types (physical or virtual) interacting as one system to expand existing capabilities and create new startups. The startup ecosystem of each country includes separate elements and reflects the effectiveness of their interaction, which also affects regional ecosystems.

The study of regional ecosystems will allow the differences in ecosystems to be distinguished, the main directions for development and further expansion in the context of a separate region, and the formation of a general economic strategy will be identified.

The development of regional startup ecosystems in Ukraine has been studied by Ukrainian scientists such as N. Sitnik (2020), Yu. Polyakova (2016, 2018), V. Smachylo, V. Khalina, and D. Chayka (Smachylo et al., 2021) who have focused on the structural elements, competitiveness, and maturity of these ecosystems and the state's role in their formation and development. Foreign researchers such as D. Cukier, F. Kon (2018), K. Mamede, R. Escalfoni, and J. Oliveira (2018) have studied approaches to ranking startup ecosystems. A new emphasis in the study of the ranking of startup ecosystems in a regional context is to focus on the ranking of regions of Ukraine based on indicators of the startup ecosystem, such as the number of startups, co-working spaces and hubs, accelerators and incubators, universities, and companies that produce products and services.

The aim of the research is the identification and ranking of startup ecosystems of regions of Ukraine according to various indicators to

distinguish differences in ecosystems and determine the main directions of their development and expansion within a specific region.

In the research a multivariate comparative analysis has been used, which includes four stages: substantiation of the indicator system, normalization of the matrix of standardized coefficients, squaring all elements of the matrix of standardized coefficients, and placement of the obtained rating values according to the rank. Indicators used to rank ecosystems include the number of startups, co-working spaces and hubs, accelerators and incubators, universities, product companies, and service companies. The rating is based on five levels: the highest, high, medium, low, and the lowest. For a more detailed analysis of the start-up ecosystem of the regions, indicators of the involvement of graduates of higher education institutions in start-up activities, ecosystem value, and percentage distribution of head offices of start-ups by region have been used.

1. Approaches to the regional startup ecosystem assessment

The startup ecosystem is a set of elements that directly or indirectly influence on the business environment and create opportunities for the support and development of startups at each stage of the startup life cycle. The ecosystem is a dynamic phenomenon that changes depending on internal and external market trends. Reactions to changes that have occurred in the past and present affect the effectiveness of a startup's entry into the domestic or global market.

Thriving regional startup ecosystems significantly impact local economic development, job creation, and growth. The changing local conditions of each region highlight the attractiveness of applying the best practices of higher-level ecosystems to developing regions and expanding the practice of interaction between geographically close regions (Blaga & Bakker, 2021).

The joint positions of Ukrainian (Sitnik, 2020), Moiseienko et al., 2020) and foreign scientists (Mamede et al., 2018, Bala Subrahmanya, 2022, Ziakis et al., 2022) are up to the following elements that have a favorable effect on the startup ecosystem:

- industry – business mentors, business partners, venture funds, banks, availability of access to interaction with various organizations and enterprises, as well as the use of additional resources allow startups to globalize faster;
- politics – the quality and efficiency of the government at different levels, regulatory and legal support, special measures developed by the state to support the startup sector;
- science – R&D funding, the relationship between entrepreneurial education and business performance, universities and research centers in the region act as providers of new technologies and catalysts of market opportunities.

The effectiveness of the ecosystem is also complemented by indispensable actors/factors, including finance, human resources, support system (including accelerators and incubators), and business and technology mentors. The presence of the components mentioned above is one of the mandatory requirements for the startup ecosystem since their absence can be reflected in the absence of the ecosystem, the ineffectiveness of the ecosystem, or the short-term existence (Sitnik, 2020).

D. Cukier and F. Kon, in the study of startup ecosystems in the section of individual cities, note that the startup ecosystem is similar to a biological ecosystem, which is displayed as a living organism and undergoes changes over time. Some changes can be planned and controlled, while others result from unpredictable forces acting inside and outside theecosystem As a result of the analysis of the startup ecosystems of Tel Aviv, Sao Paulo, and New York, the authors developed a maturity model of startup ecosystems, which includes four levels: nascent (presence of startups, a small number of investment deals, possible availability of state support), evolution (successful companies, a particular regional impact, and impact on the local economy, job creation), maturity (a large number of investment deals, the global impact of startups, the first generation of successful entrepreneurs), self-sufficiency (a large number of startups, entrepreneurial ecosystem support, an inclusive environment) (Cukier & Kon, 2018).

V. Smachylo, V. Khalina, and D. Chayka singled out the set of participants of the local startup ecosystem, which includes local authorities, as well as structures belonging to the territorial community; advisory and control bodies related to business operation; educational and scientific institutions, which, including, have their formations promoting the development of innovations; business promotion institutions (business incubators, accelerators); associations of employers, businesses and the public whose activities are aimed at mutual sustainable development (clusters, public organizations, contractual and legal associations); current business; investors and financial and credit institutions (Smachylo et al., 2021).

2. Ranking of regional startup ecosystems in Ukraine

The ranking of the startup ecosystem by regions will be carried out according to such *indicators* as:

- the number of startups – the total number of startups that were created in recent years within a separate area;
- the number of co-working spaces and hubs – availability of space and material resources for a team or independent work of startup founders on its further implementation;
- the number of accelerators and incubators – support programs that include access to financial and human resources;

• the number of universities – creating conditions for improving entrepreneurial competencies and obtaining more information about startups and their features;

• the number of product companies – developing software for creating their product and its further implementation (Green book of product companies and startups, 2021);

• the number of service companies – companies that provide custom software development services (Moiseienko et al., 2020), service companies develop startups within the company (corporate) or can act as investors.

The multifactor comparative analysis includes 4 stages (Polyakova, 2016, 2018):

Stage 1 is substantiation of the system of indicators, according to which the evaluation of the results and the formation of the initial data were carried out;

Stage 2 is normalization of the matrix of standardized coefficients aij by dividing all values by the maximum in each column, calculations are carried out according to the following formula:

$$a_{ij} = \frac{x_{ij}}{\max x_j}. \quad (1)$$

Stage 3 is all elements of the matrix of standardized coefficients are squared, and the results are added up by strips, after which the square root is determined from the sums obtained, calculations are made according to the following formula:

$$R_j = \sqrt{\sum_{i=1}^{n} a_{1j}^2}. \quad (2)$$

Stage 4 is the placement of the received rating estimates according to the rank and definition of each region in the rating.

The ranking of regions will be based on five levels: highest, high, medium, low, and lowest. The highest level is characterized by the fact that the ecosystem has a sufficient number of supporting elements, which helps the startup to find a more significant number of financing variations and a faster process of entering the market with a finished product or service, respectively, is a motivating factor for the creation and development of a startup within the given region.

The high level has a dynamic ecosystem that helps startups in the early stages to find support and funding programs, including accelerators and incubators, clusters, and the presence of events, conferences, and meetings that allow startups to learn more about opportunities and search for investors, institutions of higher education, allow to attract more the number of students, talents who can create new innovative solutions in the future.

The middle level has a developing ecosystem, and the existing business structure (associations, entrepreneurs, consultants, business schools) participates in the promotion of the startup movement in the region, which also contributes to the attraction of startups from other regions; the disadvantages are a small number of supporting elements that make it difficult to find funding and scale.

Low level is holding competitions, hackathons, support from the IT community for the development of the startup community, the total number of ecosystem objects does not allow the region to create a robust ecosystem, has the potential for further development and additional initiatives from local authorities and business structures, who are interested in expanding the network of startups.

The lowest level is characterized by the initial level of creating an ecosystem, cooperation between government organizations, the business community, and higher education institutions helps to solve the initial tasks in expanding the startup ecosystem.

According to the ranking of regional startup ecosystems at the beginning of the war in Ukraine, the highest level is in Kyiv region, the high level is noted in Dnipropetrovsk, Lviv, Odesa, and Kharkiv regions, and the average level is in Donetsk and Zaporizhia regions (*Table 1*).

Table 1

Ranking of regional startup ecosystems by regions of Ukraine

Value	Rating	Region
R>2	Highest	Kyiv region and Kyiv
1>R>2	High	Dnipropetrovsk, Lviv, Odesa, Kharkiv
0.5>R>1	Average	Donetsk, Zaporizhzhia
0.5>R>0,3	Low	Vinnytsia, Zhytomyr, Ivano-Frankivsk, Kirovohrad, Mykolaiv, Ternopil, Cherkasy
0.3>R	The lowest	Volyn, Zakarpattia, Rivne, Sumy, Luhansk, Poltava, Kherson, Khmelnytskyi, Chernivtsi, Chernihiv

Source: arranged by the author.

Kyiv region is characterizes by many successful startups that became unicorns as part of scaling or growing into large enterprises, such as Grammarly, PetCube, Ajax Systems, Grammarly, and Jooblee. To a large extent, the highest rating is influenced by the fact that Kyiv is the capital of Ukraine, and the majority of founders and investors focus on establishing or continuing their activities within the framework of this region. The most popular industries for the creation of startups are marketing and sales, software and data, social direction, and leisure (*Table 2*).

Table 2

The region with the highest level of the startup ecosystem

	Number of startups	Number of coworking spaces and hubs	Number of incubators. accelerators	Number of universities	Product companies	Service companies	Rating
Kyiv region	42	32	26	9	1265	303	2.0840
	Matrix of standardized coefficients						
	0.3750	1.0000	1	0.4500	1.0000	1	

Source: arranged by the authors based on (Accelerators of Ukraine n.d., Ukrainian Tech Ecosystem Overview n.d., Ecosystem metrics n.d., Ukraine Startup Ecosystem Overview, 2022).

The largest share of startup headquarters concentrate in Kyiv: as of January 2022 – 53.2 % in Kyiv and 1.9 % in Kyiv region, in December 2022, the number of startups decreased to 40 % in Kyiv and a slight increase to 2 % in Kyiv region, while Kyiv remains the central place of the Ukrainian startup ecosystem (Reports Polish-Ukrainian Startup Bridge, Ukrainian Startup Fund, Warsaw Stock Exchange, 2022). Over the past five years, the value of the ecosystem (the cumulative sum of the estimated value of all startups in the ecosystem) is constantly increasing, compared to 2019, in 2023, it increased by 116 %, which is the highest indicator among the regional centers of Ukraine (*Figure 1*). The value of the ecosystem of Kyiv region has remained unchanged for the past three years and amounts to USD 12.9 million. USA, and in this indicator, it is inferior to Odesa region.

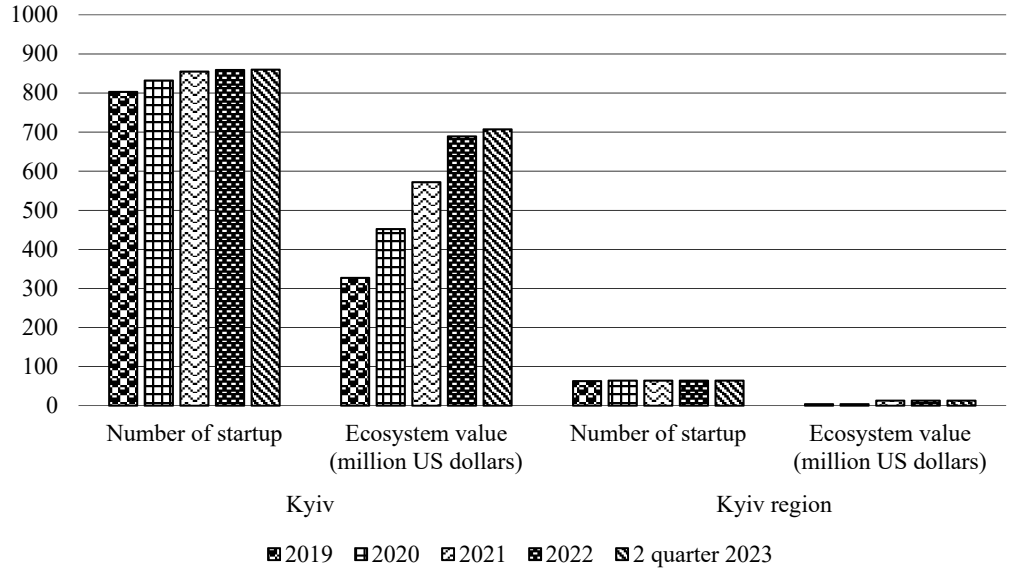


Figure 1. The number of startups and the value of the ecosystem of Kyiv region and Kyiv for the 2019 – 2nd quarter of 2023

Source: Compiled by the author based on Dealroom data (University Ukraine, n.d.).

The highest level of the startup ecosystem in Kyiv region and in Kyiv is confirmed by the number of graduates who founded startups; among 91 institutions of higher education (including state and private), 40 % have graduates of the founders. The largest share of graduates belongs to the National Technical University of Ukraine "Ihor Sikorskyi Kyiv Polytechnic Institute" (218 – startups founded by graduates, 198 – graduate founders, 12 – graduates who became founders and raised more than EUR 10 million, 1 – graduate-founder of a unicorn) and Kyiv National University named after Taras Shevchenko (199 – startups founded by graduates, 169 – graduate founders, 14 – graduates who became founders and raised more than EUR 10 million, 1 – graduate-founder of a unicorn).

The dynamic development of the IT industry, the development of digital competencies and the concentration of talents in leading universities, the development of corporate universities and innovative infrastructure, and the development of infrastructure and comfort in the city are characteristic of regions with a high level (*Table 3*).

Kharkiv region had an active and promising startup scene in pre-war. Combining a large reserve of highly qualified and highly skilled and talented workforce/experts, more significant cost savings, competitive infrastructure, and many other advantages, Kharkiv was considered the most dynamic, fast-growing city and was the leading technological destination in the entire Ukrainian market (Kharkiv: A Promising Startup Scene In Eastern Ukraine, 2015). Support for startups in this region also took place based on higher education institutions:

- the "Entrepreneurial University" initiative (V. N. Karazin Kharkiv National University, Kharkiv National University of Radio Electronics, Kharkiv Polytechnic Institute) – an academic course for one semester, based on the classic incubation program implemented in Ukraine and Moldova (YEP incubator: focus on impact projects for Ukraine’s recovery, 2022);
- the center of entrepreneurship of V. N. Karazin Kharkiv National University – startup contests "Karazin StartUp Week," Spark startup center of Kharkiv Polytechnic Institute – holding a school seminar "Startup intensive for teachers".

Startups in Lviv region operate on already formed markets, and the competition consists in comparing the product and its characteristics with other positions. Analysis of competitors showed that startups, in most cases, do not have significant uniqueness compared to others; some are even identical in functionality. The absence of identity includes the potential risk that the search for financing may take a long time and, in the end, the startup will not materialize. In Lviv, the startup ecosystem consists of the following elements: co-working spaces and hubs, communities, incubators, and startup events.

Table 3

The region with a high level of the startup ecosystem

Region	Number of startups	Number of coworking spaces and hubs	Number of incubators, accelerators	Number of universities	Product companies	Service companies	Rating
	Matrix of standardized coefficients						
Dnipro	64	4	1	21	89	37	1.2108
	0.5714	0.1250	0.0385	1.0500	0.0704	0.1221	
Lviv	112	13	3	15	129	138	1.3995
	1.0000	0.4063	0.1154	0.7500	0.1020	0.4554	
Odesa	78	5	3	20	97	38	1.2427
	0.6964	0.1563	0.1154	1.0000	0.0767	0.1254	
Kharkiv	95	17	3	19	109	102	1.4277
	0.8482	0.5313	0.1154	0.9500	0.0862	0.3366	

Source: compiled by the authors based on (Akseleratory Ukrayiny, n.d. Ukrainian Tech Ecosystem Overview, n.d. Ecosystem metrics, n.d. Ukraine Startup Ecosystem Overview, 2022).

The highest involvement of graduates in startup activities in regions with a high level concentrated in Lviv region (among 21 higher education institutions, 30 % of graduates of higher education institutions are involved in startup activities) and Odesa region (52 % of 23 higher education institutions). A smaller number displayed in Dnipropetrovsk and Kharkiv regions may be related to the unstable situation on the eastern border (*Figure 2*).

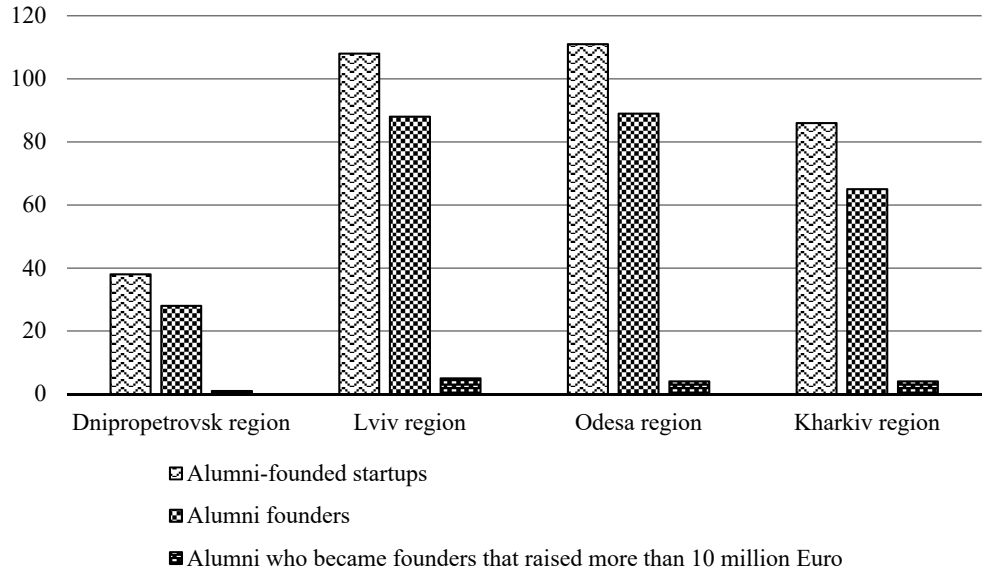


Figure 2. The number of graduates of higher education institutions in regions with a high level who take up start-up activities

Source: Compiled by the author based on Dealroom data (University of Ukraine, n.d.).

According to the "Ukrainian Startup Ecosystem" report, dated January 2022, 10.8 % of startup head offices were located in Kharkiv region, 8.2 % in Lviv region, 3.8 % in Dnipropetrovsk region, and 3.2 % in Odesa region. A study of the report on the impact of war on startups in December 2022 showed that the increase occurred in Lviv region by up to 10 % and in Odesa region by up to 4 %, Kharkiv region suffered the most losses, the number of head offices decreased to 5 %, Dnipropetrovsk region also notice reduction to 2 % (Reports Polish-Ukrainian Startup Bridge, Ukrainian Startup Fund, Warsaw Stock Exchange, 2022).

The number of startups and the value of the ecosystem in high-level regions tend to increase yearly. The researched areas with a high level of development of the startup ecosystem, together with Kyiv, formed the five main centers of development of the IT sector in Ukraine, in particular, an important role is played by IT clusters, which also influence the ecosystem through the implementation of projects aimed at the development of a favorable environment for technological business, activation of startups in the student environment, investment forums (Kolomiyets′, 2016).

Startups operate mainly in cities with a population of more than 100 000 inhabitants, that is, in large urban centers, 6 % of startups are located in small towns, and more often in rural areas than in small cities (Reports Polish-Ukrainian Startup Bridge, Ukrainian Startup Fund, Warsaw Stock Exchange, 2022).

For regions with an average level of development of the startup ecosystem (before the full-scale invasion, *Table 4*), the development of projects and the implementation of measures to support and develop the ecosystem were characterised as:

Donetsk region: Industrial enterprises and production facilities were lost due to hostilities in the territory of the region, which hurt the economic development of the region, at the same time, networks of Sikorsky Challenge startup schools at universities developed, the USAID project "Economic Support of Eastern Ukraine" was created for the development of the innovation ecosystem of eastern Ukraine: Starobilsk – Severodonetsk – Slovyansk – Kramatorsk – Pokrovsk – Mariupol, the presence of IT clusters (IT-cluster Donbas, Mariupol IT-cluster, IT-cluster Reactor), the largest in the region "Startup Center 1991" operated in Mariupol (for 2 years, startups of this center received USD 600 thousand of investments) (Innovative reintegration: how startups in the east create new opportunities, 2021), an acceleration program based on the GCIP Regional Accelerator in Donetsk region;

Zaporizhzhia region: cooperation between state organizations and business accelerators, conducting activities to strengthen the region’s business potential in youth entrepreneurship development and creating business hubs.

Table 4

The region with an average level of the startup ecosystem

Region	Number of startups	Number of coworking spaces and hubs	Number of incubators, accelerators	Number of universities	Product companies	Service companies	Rating
	Matrix of standardized coefficients						
Donetsk	5	1	4	10	0	0	0.5260
	0.0446	0.0313	0.1538	0.5000	0	0	
Zaporizhzhia	16	3	3	15	18	23	0.7816
	0.1429	0.0938	0.1154	0.7500	0.0142	0.0759	

Source: compiled by the authors based on (Akseleratory Ukrayiny, n.d. Ukrainian Tech Ecosystem Overview, n.d. Ecosystem metrics, n.d. Ukraine Startup Ecosystem Overview, 2022).

The most significant part of graduates engaged in startup activities concentrated in the Vasyl' Stus Donetsk National University, which since 2014 has been territorially located in Vinnytsia region due to the occupation. Zaporizhzhia region is characterized by extensive experience in mechanical engineering and production in such fields as automotive, aerospace, and energy, startups in these sectors can use the existing infrastructure to develop their ideas and commercialize innovative products or services.

An important direction in support of startups during the war is the creation of programs, in particular, 1991 Reload (Donetsk, Luhansk, Zaporizhzhia, Kharkiv, Kherson, Mykolaiv, and Odesa regions), opportunities for recovery and the search for new directions of development are allocated for startups (Program for restoring the operation of startups in the eastern and southern regions of Ukraine, 2022).

Regions with low levels of the startup ecosystem are characterized by expanding the network of supporting elements and creating communication platforms with business and state authorities. Of great importance in the development of startup ecosystems for the regions, as mentioned earlier, is the activity of regional development agencies, which also establish partnerships with international organizations and promote regions as places for investment and entrepreneurship (*Table 5*).

The largest startup concentration is in Vinnytsia, Ivano-Frankivsk, and Mykolaiv regions (*Figure 3*). According to the "Digital Development Program for 2018–2022" in the implementation report in 2021 in the Vinnytsia region, support for the activities of the Startup School "Sikorsky Challenge" was allocated UAH 300 thousand was given from the city budget to equip a prototyping laboratory for startups and innovators in the city of Vinnytsia, a memorandum was signed on the creation of the Innovation Cluster, as well as the filling of the ecosystem of the "Krystal" innovation and technology park, the task of which is to establish practical cooperation between educational institutions, institutions, businesses, authorities, and the city community (Report on the implementation of the Digital Development Program for 2018–2022 in 2021, 2021).

Table 5

The region with a low level of the startup ecosystem

Region	Number of startups	Number of coworking spaces and hubs	Number of incubators, accelerators	Number of universities	Product companies	Service companies	Rating
	Matrix of standardized coefficients						
Vinnytsia	8	3	1	9	16	19	0.4711
	0.0714	0.0938	0.0385	0.4500	0.0126	0.0627	
Zhytomyr	4	0	0	7	7	4	0.3521
	0.0357	0	0	0.3500	0.0055	0.0132	
Ivano-Frankivsk	9	3	1	6	12	14	0.3301
	0.0804	0.0938	0.0385	0.3000	0.0095	0.0462	
Kirovohrad	4	0	1	7	2	3	0.3541
	0.0357	0	0.0385	0.3500	0.0016	0.0099	
Mykolayiv	7	2	2	8	17	7	0.4177
	0.0625	0.0625	0.0769	0.4000	0.0134	0.0231	
Ternopil	11	1	2	6	10	7	0.3273
	0.0982	0.0313	0.0769	0.3000	0.0079	0.0231	
Cherkasy	8	0	0	8	15	9	0.4076
	0.0714	0	0	0.4000	0.0119	0.0297	

Source: compiled by the authors based on (Akseleratory Ukrayiny, n.d. Ukrainian Tech Ecosystem Overview, n.d. Ecosystem metrics, n.d. Ukraine Startup Ecosystem Overview, 2022).

The largest startup concentration is in Vinnytsia, Ivano-Frankivsk, and Mykolaiv regions (*Figure 3*). According to the "Digital Development Program for 2018–2022" in the implementation report in 2021 in the Vinnytsia region, support for the activities of the Startup School "Sikorsky Challenge" was allocated UAH 300 thousand was given from the city budget to equip a prototyping laboratory for startups and innovators in the city of Vinnytsia. a memorandum was signed on the creation of the Innovation Cluster, as well as the filling of the ecosystem of the "Krystal" innovation and technology park, the task of which is to establish practical cooperation between educational institutions, institutions, businesses, authorities, and the city community (Report on the implementation of the Digital Development Program for 2018–2022 in 2021, 2021).

Ternopil Region has the tools to build an innovative ecosystem. After all, a business incubator and a technology park operate here, the Tempus training and innovation entrepreneurship program is implemented, and a technical university operates here. At the same time, the depression of the region, the lack of strong economic ties with a real business, and the incompleteness of the Technopark brand as an innovative leader negate these opportunities (Bakushevych et al., 2019). However, it is an essential perspective for the Ternopil region that in the Global Startup Ecosystem 2023 report, the startup ecosystem of Ternopil is among the world’s top 1000 (Ukraine Startup Ecosystem Overview).

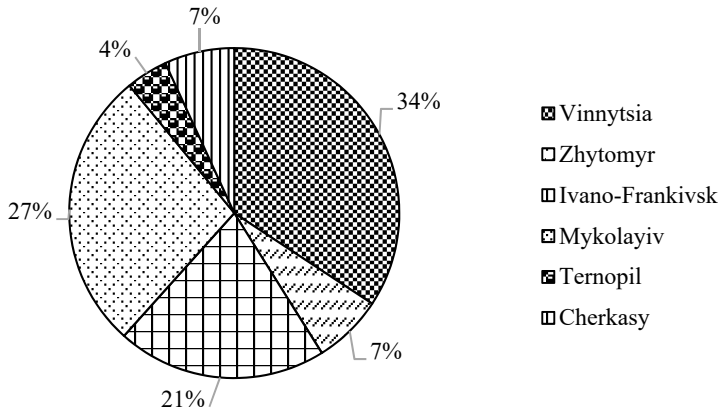


Figure 3. Percentage distribution of startups in regions with a low level of the startup ecosystem

Source: Compiled by the author based on (Reports Polish-Ukrainian Startup Bridge, Ukrainian Startup Fund, Warsaw Stock Exchange, 2022).

Ternopil National University of Economics and Ivan Pulyu Ternopil National Technical University have been played a vital role in the startup ecosystem, providing a skilled workforce and promoting entrepreneurship through specialized programs and initiatives (*Figure 4*). They offer courses and resources to develop entrepreneurial skills and encourage students to implement startup ideas. According to Dealroom, the ecosystem value is Zhytomyr region – USD 65 thousand, Mykolaiv and Ternopil regions share USD 500 thousand, and the highest value is USD 1.8 million in Cherkasy region.

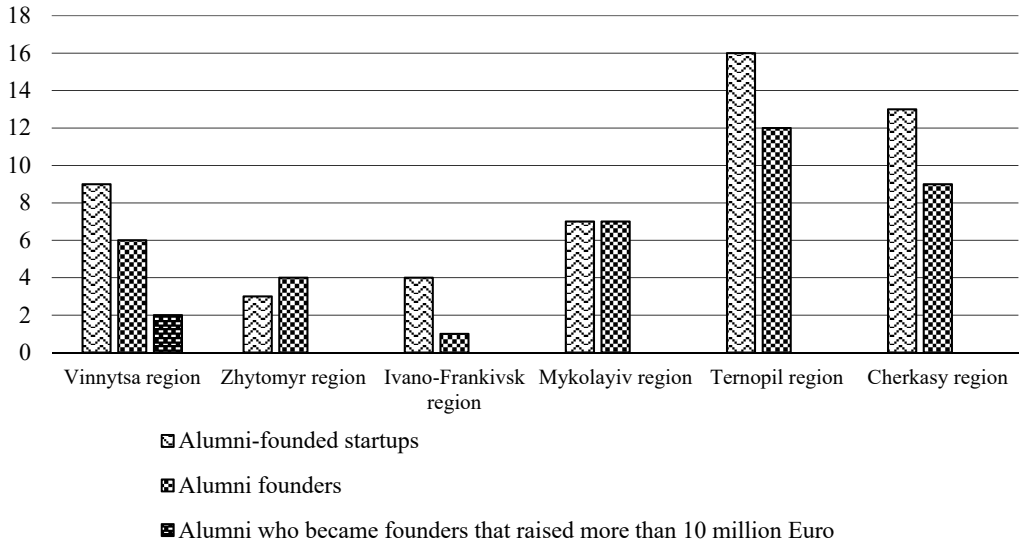


Figure 4. The number of graduates of higher education institutions in regions with a high level who take up start-up activities

Source: Compiled by the author based on Dealroom data (University of Ukraine, n.d.).

The regions need to expand the opportunities for financing startups through the involvement of venture capital funds, business angels, or the creation of local investment funds. For startups at the initial stages, an urgent issue is the expansion of coworking spaces, accelerators, and incubators, which can function based on higher education institutions, business structures, or independently, as well as the organization of regular networking events, industry conferences, and mentoring programs can facilitate communication between startups, industry experts and investors.

In the regions with the lowest level, regional development agencies in each of the specified areas of Ukraine conduct various activities to support the startup ecosystem and promote the development of innovative businesses in the region (*Table 6*).

Table 6

The regions with a low level of the startup ecosystem

Region	Number of startups	Number of coworking spaces and hubs	Number of incubators, accelerators	Number of universities	Product companies	Service companies	Rating
	Matrix of standardized coefficients						
Volyn	6	1	2	3	7	4	0.1802
	0.0536	0.0313	0.0769	0.1500	0.0055	0.0132	
Zakarpattia	3	0	1	1	4	9	0.0748
	0.0268	0	0.0385	0.0500	0.0032	0.0297	
Rivne	4	0	2	5	13	3	0.2644
	0.0357	0	0.0769	0.2500	0.0103	0.0099	
Sumy	2	0	3	4	5	5	0.2322
	0.0179	0	0.1154	0.2000	0.0040	0.0165	
Luhansk	1	0	2	2	0	0	0.1265
	0.0089	0	0.0769	0.1000	0	0	
Poltava	6	4	2	5	11	7	0.2958
	0.0536	0.1250	0.0769	0.2500	0.0087	0.0231	
Kherson	4	0	1	6	4	4	0.3049
	0.0357	0	0.0385	0.3000	0.0032	0.0132	
Khmelnytsk	4	1	1	6	2	5	0.3066
	0.0357	0.0313	0.0385	0.3000	0.0016	0.0165	
Chernivtsi	6	1	1	5	3	10	0.2625
	0.0536	0.0313	0.0385	0.2500	0.0024	0.0330	
Chernihiv	4	0	1	5	11	7	0.2566
	0.0357	0	0.0385	0.2500	0.0087	0.0231	

Source: compiled by the authors based on (Akseleratory Ukrayiny, n.d. Ukrainian Tech Ecosystem Overview, n.d. Ecosystem metrics, n.d. Ukraine Startup Ecosystem Overview, 2022).

The small number of startups in the lowest-performing regions implies relatively limited entrepreneurial activity in these regions. This may be due to several factors, such as a need for more awareness of entrepreneurship, limited access to financing, or a less developed startup culture. To improve startup ecosystems, efforts should focus on encouraging entrepreneurship and creating an environment that promotes and supports the creation of new businesses. In the studied areas, graduates are involved in startups from the leading higher education institutions in regions.

Regional development agencies in these regions provide several services and support for startups, including:

- provision of information and advice on business development, financing opportunities, and market research;
- organization of various startup events and competitions, such as hackathons, presentation competitions, and startup weekends, which offer opportunities to communicate and get to know potential investors and partners;
- providing training and educational programs such as startup schools, mentoring programs, and incubators to help entrepreneurs develop their skills and business ideas;
- facilitating access to funding sources, including grants, loans, and venture capital, as well as the connection of startups with investors and financial institutions;
- creating favorable conditions for the development of startups, such as providing tax incentives, regulatory support, and infrastructure development, to attract and retain talent and investment in startups.

The above measures contribute to the development of the startup ecosystem in these regions, creating a favorable environment for the growth and success of startups. Regional development agencies act as a bridge between startups and various stakeholders, including government, investors, academic institutions, and industry associations, to facilitate collaboration and knowledge sharing. By supporting startups, the agencies help stimulate innovation, create jobs, and stimulate economic growth in their regions.

Internal and external factors control startup ecosystems. External factors, including the financial climate, the market, and large corporations – affect the overall structure of the ecosystem and how everything functions in it. A startup ecosystem in similar fields, but in different regions, can ultimately act differently, this happens due to different entrepreneurial cultures and pools of resources. Also, a separate component that can lead to significant changes in the functions of regional ecosystems is the accumulation and application of knowledge and skills and the attraction of additional talents from other regions. The ecosystem assessment by regions of Ukraine was carried out based on a multifactorial comparative analysis, which allows the distribution of regions according to the potential for creating startups. The importance of rating the ecosystem of regions is determined by the fact that, based on quantitative data, it is possible to identify the advantages and disadvantages of each ecosystem to determine the main strategic directions for improvement in individual positions. The dynamism of regional startup ecosystems highlights the need for further research and identification of additional factors and entities that directly or indirectly impact it.

Conclusions

The rating of regions consists of five levels: highest, high, medium, low, and lowest. The highest level is characterized by a sufficient number of supporting elements that help startups find financing options and accelerate

the processes of entering the market. The high level has a dynamic ecosystem that helps early-stage startups find support and funding programs, including accelerators and incubators, clusters, and events. The mid level has a growing ecosystem, and the existing business structure is conducive to developing the startup movement in the region. The low level has the potential for further development and additional initiatives by local authorities and business structures. According to the ranking, the highest level is in Kyiv region, the high level is noted in Dnipropetrovsk, Lviv, Odesa, and Kharkiv regions, and the average level is in Donetsk and Zaporizhzhia regions. Other regions belong to the lower and lowest levels, which emphasizes the prospects for developing startup ecosystems in the regions. Kyiv region is characterized by many successful startups that have become unicorns as part of scaling or growing into large enterprises. Based on these conclusions, it is possible to formulate proposals for developing startup ecosystems in different regions. Regions with the highest level can focus on maintaining and expanding their existing ecosystem by providing additional support and funding for startups. High-performing regions can focus on further developing their dynamic ecosystem by creating more clusters and events to attract startups and investors. Mid level regions can focus on increasing supporting elements to make it easier for startups to find funding and scale. Regions with a low level can focus on conducting competitions and hackathons involving the IT community to develop a startup community. Overall, the research has been highlighted the importance of a robust startup ecosystem for developing innovation and entrepreneurship in the region and provides a basis for evaluating and comparing startup ecosystems across regions.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ	**REFERENCE**
Bakushevych, I., Martyniak, I., & Goshchynska, D. (2019). *Socio-economic development of Ukrainian regions in the context of European integration. In Business Risk in Changing Dynamics of Global.* Village 2. Monograph, (pp. 77-88). Nysa. (2022). URL: https://elartu.tntu.edu.ua/bitstream/lib/32258/2/BRCDGV_2019_Bakushevych_I-Socio_economic_development_77-88.pdf	Bakushevych, I., Martyniak, I., & Goshchynska, D. (2019). *Socio-economic development of Ukrainian regions in the context of European integration. In Business Risk in Changing Dynamics of Global.* Village 2, (pp. 77-88). Nysa. https://elartu.tntu.edu.ua/bitstream/lib/32258/2/BRCDGV_2019_Bakushevych_I-Socio_economic_development_77-88.pdf
Bala Subrahmanya M. H. (2022). Competitiveness of High-Tech Start-Ups and Entrepreneurial Ecosystems: An Overview. *Journal of Global Business and Change*, *17*, 1-10. http://dx.doi.org/10.1007/s42943-022-00056-w	Bala Subrahmanya M. H. (2022). Competitiveness of High-Tech Start-Ups and Entrepreneurial Ecosystems: An Overview. *Journal of Global Business and Change*,*17*, 1-10. http://dx.doi.org/10.1007/s42943-022-00056-w
Blaga, M., & Bakker, D. (2021). Entrepreneurial startup ecosystems: What can smaller ecosystems learn from their top-tier counterparts? Present considerations and future directions. https://esignals.fi/research/en/2021/03/29/entrepreneurial-startup-ecosystems-what-can-smaller-ecosystems-learn-from-their-top-tier-counterpartspresent-considerations-and-future-directions/#e3946ea5	Blaga, M., & Bakker, D. (2021). Entrepreneurial startup ecosystems: What can smaller ecosystems learn from their top-tier counterparts? Present considerations and future directions. https://esignals.fi/research/en/2021/03/29/entrepreneurial-startup-ecosystems-what-can-smaller-ecosystems-learn-from-their-top-tier-counterpartspresent-considerations-and-future-directions/#e3946ea5

Cukier, D., & Kon, F. (2018). A maturity model for software startup ecosystems. *Journal of Innovation and Entrepreneurship*, *7(1)*, 14. https://doi.org/10.1186/s13731-018-0091-6	Cukier, D., & Kon, F. (2018). A maturity model for software startup ecosystems. *Journal of Innovation and Entrepreneurship, 7(1)*, 14. https://doi.org/10.1186/s13731-018-0091-6
Ecosystem metrics. https://app.dealroom.co/metrics/ecosystem/	Ecosystem metrics. https://app.dealroom.co/metrics/ecosystem/
Kharkiv: A Promising Startup Scene In Eastern Ukraine, (2015). https://magazine.startus.cc/ kharkiv-a-promising-startup-scene-in-eastern-ukraine/	Kharkiv: A Promising Startup Scene In Eastern Ukraine, (2015). https://magazine.startus.cc/ kharkiv-a-promising-startup-scene-in-eastern-ukraine/
Mamede, K., Escalfoni, R., & Oliveira, J. (2018). It is identifying social and technical aspects in the startup ecosystem in Rio de Janeiro State. In Workshop on Big Social Data and Urban Computing – VLDB, (pp. 1-15). Rio de Janeiro, Brazil. https://ceur-ws.org/Vol-2247/poster8.pdf	Mamede, K., Escalfoni, R., & Oliveira, J. (2018). It is identifying social and technical aspects in the startup ecosystem in Rio de Janeiro State. In Workshop on Big Social Data and Urban Computing – VLDB, (pp. 1-15). Rio de Janeiro, Brazil. https://ceur-ws.org/Vol-2247/poster8.pdf
Moiseienko, T., Korohodova, O., Chernenko, N., & Hlushchenko, Y. (2020). The structural elements of the startup ecosystem formation and functioning in the fourth industrial revolution conditions. *The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism, 11*, 81-88. https://doi.org/10.26565/2310-9513-2020-11-09	Moiseienko, T., Korohodova, O., Chernenko, N., & Hlushchenko, Y. (2020). The structural elements of the startup ecosystem formation and functioning in the fourth industrial revolution conditions. The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism, *11*, 81-88. https://doi.org/10.26565/2310-9513-2020-11-09
Reports Polish-Ukrainian Startup Bridge, Ukrainian Startup Fund, Warsaw Stock Exchange. (2022). https://www.startupbridge.eu/report/#top	Reports Polish-Ukrainian Startup Bridge, Ukrainian Startup Fund, Warsaw Stock Exchange. (2022). https://www.startupbridge.eu/report/#top
Ukraine Startup Ecosystem Overview. (2022). https://www.startupblink.com/startup-ecosystem/ ukraine	Ukraine Startup Ecosystem Overview. (n.d.) (2022). https://www.startupblink.com/startup-ecosystem/ ukraine
Ukrainian Tech Ecosystem Overview (n.d.). https://techecosystem.gov.ua/	Ukrainian Tech Ecosystem Overview (n.d.). https://techecosystem.gov.ua/
University of Ukraine. URL: https://ukraine.dealroom.co/universities/ f/all_locations/allof_Ukraine	University of Ukraine. https://ukraine.dealroom.co/universities/ f/all_locations/allof_Ukraine
Ziakis, C., Vlachopoulou, M., & Petridis, K. (2022). Start-Up Ecosystem (StUpEco): A Conceptual Framework and Empirical Research. *Journal of Open Innovation: Technology, Market, and Complexity*, *8(1),* 35. https://doi.org/10.3390/joitmc8010035	Ziakis, C., Vlachopoulou, M., & Petridis, K. (2022). Start-Up Ecosystem (StUpEco): A Conceptual Framework and Empirical Research. *Journal of Open Innovation: Technology, Market, and Complexity, 8(1),* 35. https://doi.org/10.3390/joitmc8010035
Акселератори України. https://clarity-project.info/edrs/?search=%D0%B0%D0%BA%D1%81%D0%B5%D0%BB%D0%B5%D1%80%D0%B0%D1%82%D0%BE%D1%80&sources=&status=registered&regions=	Accelerators of Ukraine. https://clarity-project.info/edrs/?search=%D0%B0%D0%BA%D1%81%D0%B5%D0%BB%D0%B5%D1%80%D0%B0%D1%82%D0%BE%D1%80&sources=&status=registered&regions=
Звіт про виконання Програми цифрового розвитку на 2018-2022 роки у 2021 році, 2021. https://vmr.gov.ua/media/Departamenty/DIT/Prohramy/Zvit%20po%20Prohrami%20tsyfrovoho%20rozvytku%20za%202021%20rik.pdf	Report on the implementation of the Digital Development Program for 2018-2022 in 2021. (2021) https://vmr.gov.ua/media/Departamenty/DIT/Prohramy/Zvit%20po%20Prohrami%20tsyfrovoho%20rozvytku%20za%202021%20rik.pdf
Зелена книга продуктових компаній та стартапів, 2021. https://cdn.regulation.gov.ua/aa/8a/75/59/regulation.gov.ua_IT-product-companies-startups_web.pdf	Green book of product companies and startups. (2021). https://cdn.regulation.gov.ua/aa/8a/75/59/regulation.gov.ua_IT-product-companies-startups_web.pdf

Інкубатор YEP: акцент на імпакт-проєктах із відновлення України, 2022. https://ucluster.org/blog/2022/06/inkubatop-yep-impakt-proekty-iz-vidnovlennja-ukrainy/	YEP incubator: focus on impact projects for Ukraine's recovery. (2022). https://ucluster.org/blog/2022/06/inkubatop-yep-impakt-proekty-iz-vidnovlennja-ukrainy/
Інноваційна реінтеграція: як стартапи сходять створюють нові можливості. (2021). https://v-variant.com.ua/article/startapy-na-skhodi/	Innovative reintegration: how startups in the east create new opportunities. (2021). https://v-variant.com.ua/article/startapy-na-skhodi/
Коломієць О. Г. Особливості розвитку IT-кластерів в Україні. *Соціально-економічні проблеми сучасного періоду України*, 2016, *5*, 68-73. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file_name=PDF/sepspu_2016_5_16.pdf	Kolomiyets′, O. H. (2016). Peculiarities of the development of IT clusters in Ukraine]. *Socio-economic problems of the modern period of Ukraine*, *5*, 68-73. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file_name=PDF/sepspu_2016_5_16.pdf
Полякова Ю. В. Інноваційний потенціал регіонів України. *Науковий вісник УжНУ. Серія Міжнародні відносини. Економіка. Країнознавство. Туризм*, 2016, *6(2)*, 168-171. http://www.visnyk-econom.uzhnu.uz.ua/archive/6_2_2016ua/6_2_2016.pdf#page=168	Polyakova, Y. V. (2016). Innovative potential of Ukrainian regions. *Scientific Bulletin of Uzhhorod National University. Series International Relations. Economics*. *Country Studies. Tourism*, *6(2),* 168-171. http://www.visnyk-econom.uzhnu.uz.ua/archive/ 6_2_2016ua/6_2_2016.pdf#page=168
Полякова Ю. В. Визначальні характеристики інноваційної діяльності у регіональному вимірі. *Електронний науковий журнал "Приазовський економічний вісник",* 2018, 1 (06), 100-105. pev.kpu.zp.ua/journals/2018/1_06_uk/21.pdf	Polyakova, Y. V. (2018). Defining characteristics of innovative activity in the regional dimension. *Pryazovskyi Economic Journal, 1(06),* 100-105. pev.kpu.zp.ua/journals/2018/1_06_uk/21.pdf
Програма для відновлення роботи стартапів зі східних та південних регіонів України, 2022. https://mon.gov.ua/ua/news/vidkrito-reyestraciyu- na-programu-vidnovlennya-roboti-startapiv-zi-shidnih-i-pivdennih-regioniv-ukrayini-1991-reload	Program for restoring the operation of startups in the eastern and southern regions of Ukraine. (2022). https://mon.gov.ua/ua/news/vidkrito-reyestraciyu-na-programu-vidnovlennya-roboti-startapiv-zi-shidnih-i-pivdennih-regioniv-ukrayini-1991-reload
Ситник Н. І. Держава як суб'єкт формування екосистеми стартапів України. *Науковий вісник Херсонського державного університету. Серія: Економічні науки,* 2020, *40*, 31-35. https://doi.org/10.32999/ksu2307-8030/ 2020-40-5	Sitnik, N. I. (2020). The state as a subject of forming the startup ecosystem of Ukraine. *Scientific Bulletin of Kherson State University. Series: Economic Sciences*, 40, 31-35 https://doi.org/10.32999/ksu2307-8030/2020-40-5
Смачило В., Халіна В., Чайка Д. Формування локальної стартап-екосистеми. *Економіка і суспільство,* 2021, 23. https://doi.org/10.32782/2524-0072/2021-23-9	Smachylo, V., Khalina, V., & Chayka, D. (2021). Formation of a local startup ecosystem. *Economy and Society,* 23. https://doi.org/10.32782/2524-0072/2021-23-9

Conflict of interest. The author certifies that she doesn't have financial or non-financial interest in the subject matter or materials discussed in this manuscript; the author has no association with state bodies, any organizations or commercial entities having a financial interest in or financial conflict with the subject matter or research presented in the manuscript.

The author has not received any direct funding for this research.

Mazur A. Regional startup ecosystems of Ukraine. *Scientia fructuosa*. 2023. № 5. S. 139-156. https://doi.org/10.31617/1.2023(151)09

Received by the editorial office 21.04.2023.
Send for revision 19.05.2023.
Accepted for printing 26.06.2023.
Published online 26.10.2023.