

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
ЗАПОРІЗЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ

**ФІНАНСОВІ СТРАТЕГІЇ  
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Економіка та управління підприємствами  
Економіко-математичне моделювання та інформаційні технології в економіці  
Ринкові механізми обліку, аналізу та аудиту в національній економіці  
Теоретико-прикладні аспекти економічних процесів в Україні та світі  
Фінанси і грошовий обіг  
Економіка праці, управління персоналом та маркетинг  
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# ECONOMICS AND BUSINESS MANAGEMENT

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## TECHNICAL PROCESSES IN LOGISTICS AT INDUSTRIAL ENTERPRISES OF UKRAINE IN CHANGING CONDITIONS

**Androsov V.O.**

Zaporizhzhia National University  
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66  
Azso139@gmail.com  
ORCID: 0009-0009-3358-9361

**Key words:**

logistics processes,  
technological process,  
transportation requirements,  
warehouse requirements,  
planning, digitalization,  
mechanization of cargo  
operations, control

The article examines the technical processes that are the basis of logistics for the movement of material flows. It is also noted that in order to realize the delivery of goods «just in time», it is necessary to develop and implement such a single effective technical process for the entire production and transportation system of an industrial enterprise, which will facilitate the integration of production, transportation, and consumption. It is proved that the consumer should be a priority person, and therefore only in this way can the system be highly efficient. The author's vision of the technological process for the movement of material flows is presented. It is proved that the technological process in logistics at industrial enterprises is determined by the following technological and organizational requirements: transport, requirements for warehouse facilities. It is found that transportation requirements are based on transport logistics. The main tasks of transport logistics are identified, which are as follows: selection of the type of vehicle, planning of transport processes together with warehouse and production processes, various types of transport, ensuring technical integration of transport and component processes, determining rational delivery routes, digitalization of transport logistics and its processes. A single technological process, its tasks, components, and development scheme are considered. It is proved that the unified technical process is developed by a commission headed by the chief engineer and consisting of representatives of operational, planning, freight, and track engineers of the locomotive industry. Particular attention is paid to the stage of stock formation in the warehouse, technological processes and loading and unloading operations. The main components of control over the implementation of technical processes are defined, namely: a clear division of responsibilities between employees, strict adherence to the norms of the internal distribution, production, and economic system, timely planning and informing about the need for vehicles.

## ТЕХНІЧНІ ПРОЦЕСИ В ЛОГІСТИЦІ НА ПРОМИСЛОВИХ ПІДПРИЄМСТВАХ УКРАЇНИ В МІНЛИВИХ УМОВАХ

**Андросов В.О.**

Запорізький національний університет  
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

**Ключові слова:**

логістичні процеси,  
технологічний процес,  
транспортні вимоги,  
вимоги до складських  
приміщень, планування,  
цифровізація,  
механізація вантажних робіт,  
контроль

В статті розглянуто технічні процеси, що виступають основою логістики для руху матеріальних потоків. Зазначено також для того, щоб реалізувати доставку товарів «точно в строк» потрібно розробити й впровадити такий єдиний ефективний технічний процес для всієї виробничо-транспортної системи промислового підприємства, який буде сприяти інтеграції виробництва, транспорту, споживанню. Доведено, що споживач повинен бути пріоритетною персоною, а тому тільки таким чином можна отримати високу ефективність системи. Надано авторське бачення технологічного процесу для руху матеріальних потоків. Доведено, що технологічний процес у логістиці на промислових підприємствах визначається такими технологічними та організаційними вимогами: транспортними, вимогами до складових

приміщень. З’ясовано, що транспортні вимоги базуються на транспортній логістиці. Виявлено основні завдання транспортної логістики, які полягають у наступному: вибір типу транспортного засобу, планування транспортних процесів разом зі складськими та виробничими, різними видами транспорту, забезпечення технічної інтеграції транспортних і складових процесів, визначення раціональних маршрутів доставки, цифровізація транспортної логістики та її процесів. Розглянуто єдиний технологічний процес, його завдання, складові, схема розробки. Доведено, що єдиний технічний процес розробляється комісією, яку очолює головний інженер, а до її складу входять представники експлуатаційного, планового, вантажного, колійного інженерів локомотивного господарства. Особливу увагу приділено етапу формування запасів на складі, технологічним процесам вантажно-розвантажувальним роботам. Визначено основні компоненти контролю за виконанням технічних процесів, а саме: чіткий розподіл обов’язків між працівниками, суворе дотримання норм внутрішньої розподільчої, виробничої, економічної системи, своєчасне планування й інформування про потребу в транспортних засобах.

**Statement of the problem**

Technical processes in logistics for the movement of material flows always need to be perfectly defined. In modern conditions at industrial enterprises, they are changing under the influence of new technologies, equipment, rapid technological progress, and technical flows at enterprises. Each industrial enterprise faces the task of improving the main technological processes in logistics, creating such processes in production that meet the requirements of a changing environment and ensure the competitiveness of the enterprise, both in the domestic and foreign markets.

**Analysis of the latest research and publications**

This issue always arouses scientific interest among economists, the scientific community and practitioners of industrial enterprises, both domestic and foreign. The scientific works of foreign economists are devoted to this issue: Busher J. [11], Coyle J. [12], Murphy P. [13] and domestic economists: Zaborska N., Zhukovska L. [1], Kyslyy V., Bilovodska O., Olefirenko O., Solianyk O. [2], Mishchuk I. [4], Rudkivskyi O., Gongalo Y. [10] and others.

When studying technical processes in logistics, we always find new pressing issues in today’s changing environment. They appear on the basis of the digitalization of the logistics process, in the context of a pandemic, crisis, war and other situations, and therefore are always relevant and require careful research.

**Objectives of the article**

To study technical processes in logistics: to define technical and organizational requirements, identify the main tasks of transport logistics, develop a technical process

scheme for cargo stations and cargo processing stations, and form components of control over the implementation of technical processes in logistics.

**The main research material of the research**

Technical processes are the basis for the movement of material flows. To realize the basic logistics principle of just-in-time delivery, it is necessary to develop and implement a single technical process for the entire production and transportation system based on the integration of production, transportation and consumption so that the consumer is a priority and the system’s high efficiency is fully achieved. This is how it should be.

A technological process is a chain consisting of logistics tasks and operations, additional methods and special conditions for their implementation, which require daily and dimensional support of basic production technologies through the digitalization of processes Fig. 1.

The technological process in logistics is determined by certain technical and organizational requirements.

These include, in particular, the following [5]:

1. Transportation requirements. These include: optimization of the type and kind of vehicle, type and nature of the transported cargo, volume and distance of transportation, use of advanced vehicles for transporting cargo in packages, containers and pallets, use of complex mechanization and, on this basis, automation of loading and unloading operations, ensuring a minimum number of overloads, maintaining the quantity and quality of transported materials, determining the synchronization of production rhythms to provide workshops with semi-finished products and materials.

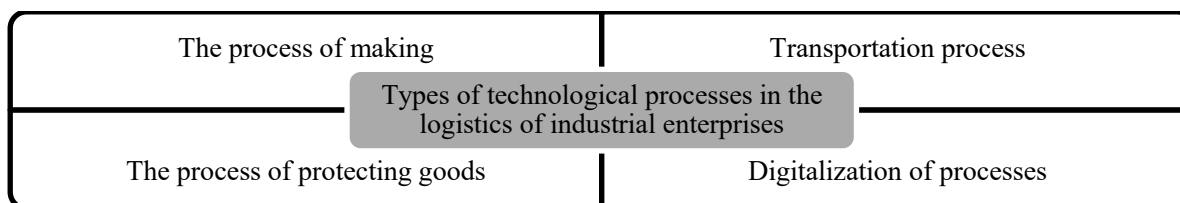


Fig. 1 – Types of technological processes in logistics

Source: based on the authors’ materials [6; 7; 8]

2. Warehouse requirements aimed at simplifying warehouse operations and reducing costs through the efficient use of warehouse space, equipment and labor. The successful use of all warehouse operations requires not only a highly organized warehouse system, but also the rational development of technological processes. When developing technical processes, a list of necessary tasks is determined in accordance with the nature of the goods.

Transportation requirements are met by transport logistics (including freight transportation).

The main goal of transport logistics is to provide the necessary transportation services in the areas of procurement, sales and waste disposal at minimum cost, with a focus on continuously reducing transportation needs. The main tasks of transport logistics can be defined as follows:

- selecting the type of vehicle;
- planning of transportation processes together with warehouse and production processes;
- planning of transportation processes together with different types of transport;
- ensuring the technical integration of transportation and warehousing processes;
- determination of rational delivery routes [7].

A unified technical process in transport logistics can be understood as a rational system for organizing the operation of transshipment stations and sidings of industrial enterprises. It links the technology of handling trains and wagons at transshipment stations and sidings and ensures that the production process of industrial enterprises is in line with a single transport rhythm. This involves the application of efficient labor methods and the sharing of technical equipment in the transport departments of enterprises and at railway stations. This process is reflected in a document that establishes the procedure for the operation of tracks and stations connecting them. It is aimed at ensuring the most rational use of technical means of transport units of enterprises and branch stations and increasing the turnover of vehicles at stations and branch stations [8].

The main task of operating under a single technological process is to accelerate the turnover of vehicles and transportation using internal resources, which is an obligation specified in the railway line operation agreement.

The unified technical process is developed by a commission consisting of the chief engineer of the section (chairman), representatives of operational, planning, freight and track engineers of the locomotive department and representatives of the company that owns the siding. In its work, the commission is guided by the provisions of the Railways Charter, transportation rules and recommendations for the development of unified technological processes for the operation of sidings, junction and interchange stations.

The technical process for freight and cargo handling stations is an integral part of the overall technical process. At large freight stations, container and marshalling yards, independent (separate) technological processes can be developed for station technology, cargo loading time and freight car cleaning.

Technical processes include the sequence and duration of commercial operations performed at the freight yard and in the cargo office.

They are usually developed according to the following scheme [9]:

- Comprehensive layout, specialization and dimensions (length, area, etc.) of lines and premises in the cargo yard.
- List of warehouses (open and closed), available space, and estimated capacity (tons).
- A list of means of mechanization of loading operations and their estimated capacity.
- List of warehouse mechanization and automation equipment and their performance.
- Warehouse layout, placement of machinery and equipment, reference materials, and work organization.
- The scope of commercial activities that are already being carried out and are planned to be carried out over the next two to three years.
- A list of existing and planned (probable) personnel at the loading dock and in the goods department, including loading and unloading operators and technical staff.
- A list of freight yard facilities (e. g., sorting platforms, container yards, railroad tracks) and their normal, holiday, and weekend operating hours (one or two shifts, 24-hour operation).
- Estimation of the need for vehicles for loading and unloading cargo on weekdays and weekends (by facility).
- The nature of the unevenness of cargo arrivals at the facility (minimum, maximum, and average) and the activities of the cargo department (by time of day).
- Schedules for accepting parcels and containers.
- Organizing direct and reloading of wagons loaded with parcels and containers.

The main task of the inventory formation stage is to provide the warehouse with goods and materials that are necessary and can be stored for a certain period of time. In doing so, it is necessary to coordinate the actual capabilities and deliveries of sales services and warehouses.

The main storage tasks are as follows [3].

- Unloading, sorting, unpacking, and preparing materials and products for acceptance from transportation.
- Placement of materials in the warehouse.
- Sorting materials, creating orders for sending materials to customers; packaging for shipment and placing them in containers.
- Loading into vehicles and delivery to consumers.

The organization of the logistics process in the warehouse and its stages are shown in Figure 2.

The organization of warehouse operations must meet the following requirements [6; 7]:

- warehouse operations should be performed in the shortest possible time and at the lowest possible cost;
- each operation should be performed in the smallest possible space, using the maximum possible warehouse area and not impeding the speed and quality of the operation;
- the entire operational process should be carried out systematically, and operations should be performed in a strict sequence to ensure timely transition from one operation to another;

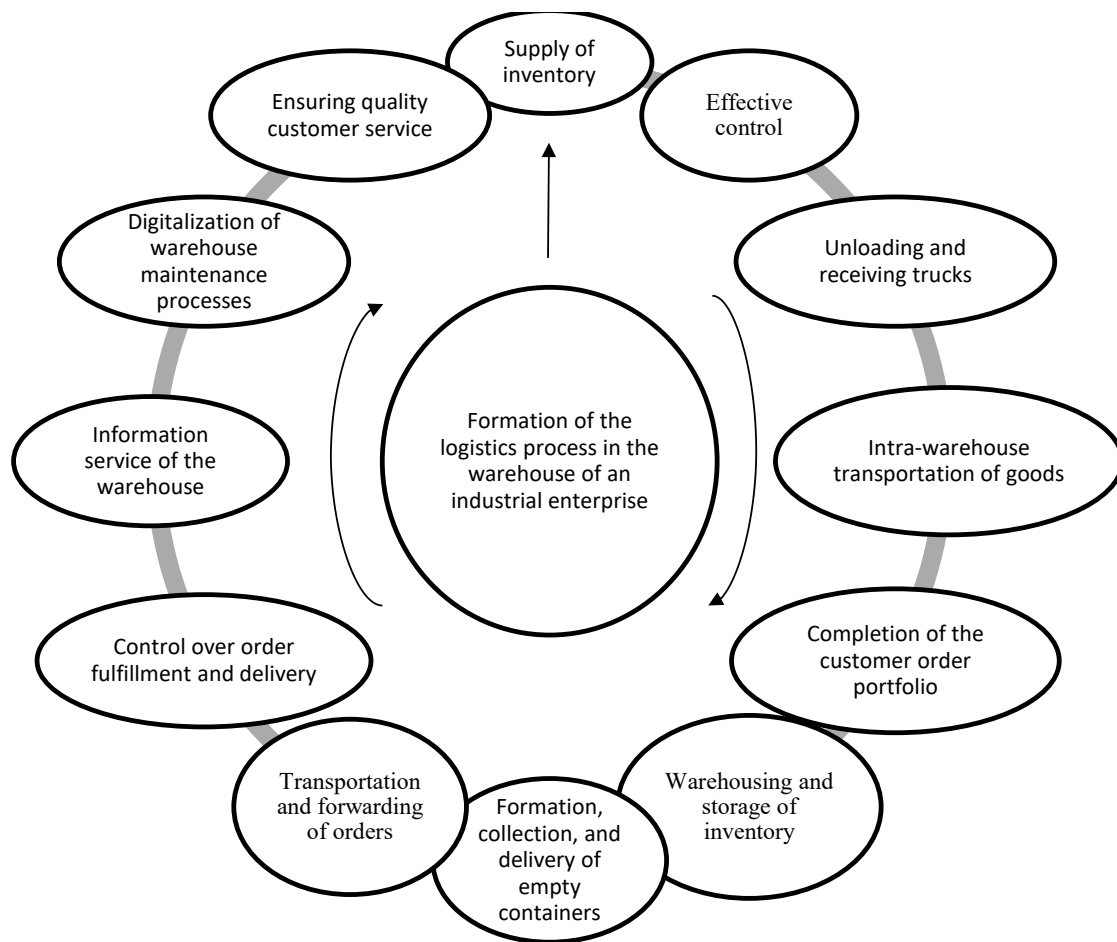


Fig. 2 – Organization of the logistics process in the warehouse and its stages

Source: [6]

- operations are carried out using modern equipment and means of mechanization and automation;
- storage and processing operations are carried out with minimal loss of raw materials and reduced product quality;
- the rational organization of technological processes should guarantee a reduction in storage costs and an increase in the quality of the company’s work.

Under certain conditions, the technological process of complex cargo mechanization is developed on the basis of a delivery and warehouse plan received from the supplier, a plan for a typical technological process of complex cargo mechanization, and the selection of lifting and handling equipment.

Before developing technological processes for loading and unloading operations, the following tasks should be performed [10]:

- study of technical processes of transportation, nomenclature of stored goods, standards, technical conditions of transportation, storage, management, packaging and labeling;
- familiarization with the structural features of the warehouse;
- analyzed the frequency of material deliveries, the volume of deliveries and the volume of shipments;

- development of technical plans for the supply of goods, reflecting the sequence of unloading and loading, transportation and warehouse operations;
- determining the required warehouse space and the number of lifting and handling and storage equipment;
- their optimal selection and size;
- calculation of the required number of warehouse containers and warehouse workers.

When developing technical processes under certain conditions, the scope of work is determined in accordance with the nature of the goods being processed.

Technical processes are documented in the form of flow charts, instructions, process maps, and schemes for the operation of machinery and lifting and handling equipment.

A flowchart defines the direction of goods movement, the number of technical tasks, the nature of each mechanization, and indicates the type and type of machinery or equipment used to perform a specific task. Flowcharts are used to create flowcharts and help organize technical processes. Unlike flowcharts, in addition to the sequence of technical operations, they contain a brief description of the equipment (specifications), time standards for each operation, and safety instructions.

One of the main documents is a material layout diagram. Technical instructions are drawn up for individual

operations that are distinguished by their own characteristics and particular complexity. This is particularly true for flammable and toxic cargo. Technical instructions provide a more detailed description of technical processes than flowcharts or diagrams. The instructions provide requirements and industry standards for production and handling operations and can improve the organization of warehouse operations. After the development of technical schemes and flow charts, a schedule for the operation of machinery and equipment is drawn up [1].

The specificity of calculations and the correct organization of the process is ensured by the development and use of contact schedules, which are drawn up on an hourly basis and provide information on the dynamics of hourly mutual contact of various transport, loading and unloading and technical means and changes in the material balance.

Schedules are drawn up on the basis of a certain amount of loading and unloading and warehouse operations to be performed per day or per shift for each unit in general and in particular, as well as taking into account hourly productivity [4].

The program determines the efficiency of using each type of equipment and the workload in different areas and operations. The graph shows the process of receiving and sending goods and their placement in the warehouse.

Control over the implementation of technical processes includes the following main components [2]:

- 1) a clear division of responsibilities between employees;
- 2) strict adherence to the norms of the internal distribution, production and economic system;
- 3) strict adherence to the content and sequence of operation of equipment, mechanisms and tools as defined by schedules, diagrams and maps;
- 4) ensuring timely planning and informing about the need for vehicles delivered to and taken from the depot, as well as strict compliance with the terms and procedure for accepting vehicles from the depot and executing the necessary documentation.

### Conclusions

The technical processes in logistics facilitate the movement of material flows and are determined by a set of technical and organizational requirements. Transportation requirements are met by transport logistics, namely freight transportation. A single technological process helps to accelerate the turnover of vehicles and performs transportation using the internal resources of industrial enterprises. The formation of stocks at industrial enterprises encourages the organization of warehouse operations, which stimulates the digitalization of logistics processes at enterprises in today's changing conditions.

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## BASICS OF DIGITAL TECHNOLOGIES IMPLEMENTATION AT UKRAINIAN INDUSTRIAL MACHINE BUILDING ENTERPRISES

**Androsov O.O.**

Zaporizhzhia National University  
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66  
Azso139@gmail.com  
ORCID: 0009-0001-0302-7239

**Key words:**

information and communication technologies (ICT), production processes, new technologies, productivity, efficiency, automation, industrial enterprises, modern technologies, competitiveness, product quality, cyberattacks

The article is devoted to the introduction of ICT technologies at industrial engineering enterprises in Ukraine. The study found that in order to improve the efficiency of production processes, ICT is used in the automation of production processes, namely, it increases productivity and product quality, and ensures accurate quality control. It is proved that ICT helps to collect, process and analyze analytical data quickly and efficiently, which contributes to the adoption of balanced and informed decisions on the most important issues at industrial enterprises. Modern technologies at industrial enterprises help to collect a large database of information about production processes, customers, and the market. Analyzing this data helps to identify which processes work best, opportunities for improvement, and which products or services are in demand among the customer base. Such measures allow industrial enterprises to make convincing decisions and increase their competitiveness in foreign and domestic markets. It is found that ICT ensures safety in the workplace. It is established that ICT at modern industrial enterprises is an important factor in the development of the Ukrainian economy, helping Ukrainian industrial enterprises to increase their competitiveness in international markets. The main problems in the implementation of ICT technologies are identified: high implementation costs, lack of qualified ICT personnel, security of ICT systems – protection against cyber attacks, the introduction and use of ICT technologies at industrial engineering enterprises is analyzed and it is found that in 2018–2019 the volume of the structure of products sold by main activities increased, and in 2020–2021 decreased due to the COVID-2019 pandemic.

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## ОСНОВИ ВПРОВАДЖЕННЯ ЦИФРОВИХ ТЕХНОЛОГІЙ НА ПРОМИСЛОВИХ ПІДПРИЄМСТВАХ МАШИНОБУДУВАННЯ УКРАЇНИ

**Андросов О.О.**

Запорізький національний університет  
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

**Ключові слова:**

інформаційно-комунікаційні технології (ІКТ), виробничі процеси, новітні технології продуктивність, ефективність, автоматизація, промислові підприємства, сучасні технології, конкурентоспроможність, якість продукції, кібератаки

Статтю присвячено впровадженню ІКТ-технологій на промислових підприємствах машинобудування в Україні. В результаті дослідження виявлено, що для підвищення ефективності виробничих процесів, ІКТ використовують в автоматизації виробничих процесів, а саме це підвищує продуктивність та якість продукції, забезпечує точний контроль якості. Доведено, що ІКТ допомагає збирати, обробляти та аналізувати швидко й якісно аналітичні данні, а це сприяє на промислових підприємствах прийняттю зважених та обґрунтованих рішень з найважливіших питань. Сучасні технології на промислових підприємствах допомагають зібрати велику базу даних про виробничі процеси, клієнтів та ринок. Аналіз таких даних дозволяє виявити, які процеси працюють краще, можливості для їх покращення та які продукти або послуги користуються попитом серед клієнтської бази. Такі заходи допускають промисловим підприємствам приймати переконливі рішення й підвищують їх конкурентоспроможність на зовнішньому та внутрішньому ринках. З'ясовано, що ІКТ забезпечує безпеку на робочому місці. Установлено, що ІКТ на сучасних промислових підприємствах виступає важливим фактором розвитку української економіки, допомагає українським промисловим підприємствам підвищити конкурентоспроможність на міжнародних ринках.

Виявлено основні проблеми при впровадженні ІКТ технологій: високі витрати на впровадження, брак кваліфікаційних ІКТ-кадрів, безпека ІКТ-систем-захист від кібератак, проаналізовано впровадження та використання ІКТ технологій на промислових підприємствах машинобудування та виявлено, що в 2018–2019 рр. збільшився обсяг структури реалізованої продукції за основними видами діяльності, а в 2020–2021 рр. зменшився в зв'язку з пандемією COVID-2019.

### Statement of the problem

Information and communication technologies (ICTs) are an integral part of the modern world, influencing the development of various sectors of the economy, including industry. Today's industrial enterprises in Ukraine are gradually moving to the use of ICT to optimize production processes, ensure product quality and reduce production costs. This article examines the development of ICT at Ukrainian industrial enterprises and their contribution to the country's economy.

### Analysis of the latest research and publications

As can be seen from the publication and recent research, this issue is becoming a priority among economists and scientists. The development of information and communication technologies (ICT) was carried out by such leading domestic scientists as: V.P. Vyshnevsky, O.M. Garkushenko [6], S.I. Knyazev, D.V. Lipnitsky, V.D. Chekina [1; 3–5], S.V. Kolyadenko [9] and foreign experts Stiglitz, D., Sen, A., Fitoussi [8] and others. A lot of topical issues are raised in their scientific works by leading ICT specialists in industrial enterprises, namely where it is necessary to collect data on production processes, logistics, customers and the market. This issue is constantly relevant and requires scientific research. Innovation processes at industrial enterprises are constantly in motion and changing.

### Objectives of the article

To study and analyze the implementation and development of ICT at industrial enterprises, to consider the problems of Ukrainian industrial enterprises in the implementation of ICT, to justify the state support of ICT companies.

### The main research material of the research

In today's world, information technology has become a key element for the effective functioning and development of enterprises. In particular, industrial enterprises engaged in the production of goods and services are actively using ICT to increase production efficiency, optimize business processes and improve product quality. Ukraine is no exception, and the use of ICT in industrial enterprises is gradually developing.

In recent years, industrial enterprises in Ukraine have begun to actively use ICT to improve the efficiency of production processes, and one of the most important areas of ICT use is the automation of production processes. Modern technologies have made it possible to automate many processes in industrial enterprises, which contributes to increased productivity and improved product quality.

ICT can also reduce the number of errors in production and provide more accurate quality control.

Another important aspect of ICT is its ability to collect, process and analyze data. Modern technologies allow companies to collect large amounts of data about production processes, customers, and markets. By analyzing the data, companies can understand which processes work best, where improvements are needed, and what products and services customers prefer. This allows companies to make more informed decisions and ensure their competitiveness in the market.

Another important aspect of using ICT is ensuring safety in the workplace. Modern technologies allow you to control various aspects of the production process, such as temperature and pressure, helping to ensure the safety of employees and prevent accidents.

The development of ICT at industrial enterprises is an important factor in the development of the Ukrainian economy. According to the State Statistics Committee of Ukraine, in 2020, production of computer, electronic and optical products increased by 16.6% compared to 2019. In addition, the production of electronic components increased by 14.6%. This demonstrates the growing importance of ICT in industry and its contribution to the country's economic development.

In addition, the use of ICT helps Ukrainian industrial enterprises become more competitive in international markets. Modern technologies allow industrial enterprises to produce high-quality products faster and more efficiently, making them more attractive to foreign partners and increasing exports.

Despite the potential that ICTs bring to Ukrainian industrial enterprises, there are also challenges that enterprises face in implementing these technologies.

First, the high costs of implementing ICT can be prohibitive for most industrial enterprises. There is also the need to train staff and purchase the necessary equipment.

Second, most regions of Ukraine lack qualified ICT specialists. This can hinder the maintenance and development of ICT systems at enterprises.

Thirdly, the security of ICT systems, including protection against cyberattacks, is a serious problem. A negligent attitude to this issue can lead to serious problems for businesses and their customers.

According to the State Statistics Service of Ukraine, in 2020, 68% of industrial enterprises in Ukraine used computers, and 55% had access to the Internet. At the same time, only 23% of enterprises use email and 16% use e-business systems.

However, despite the gradual increase in the use of ICT at industrial enterprises in Ukraine, this figure remains low compared to many developed countries. For example, in

the United States, 90% of businesses use computers and the Internet, and 94% use e-mail.

However, some industrial organizations in Ukraine are actively implementing modern ICT solutions. For example, according to the Association of Internet Enterprises of Ukraine, in 2020, 29% of industrial enterprises used cloud technologies for data storage and 16% for software hosting. Another 21% have implemented machine learning and other innovative production technologies. “ArcelorMittal Kryvyi Rih” is one of the successful examples of ICT implementation in a Ukrainian industrial company. By using ICT solutions, such as monitoring production processes and optimizing logistics, the company has managed to reduce costs and increase efficiency.

In order for Ukrainian industrial organizations to make better use of ICT, it is important to provide adequate infrastructure and training. In particular, adequate access to the Internet and computers should be provided, as well as opportunities for employees to receive training and qualifications in ICT.

Government support is another way to promote the development of ICT in industrial enterprises in Ukraine. The Ukrainian government has already implemented a number of initiatives aimed at supporting the country’s ICT sector. For example, the Dia program is aimed at

attracting investment in the ICT sector, supporting start-up companies, and providing access to qualified personnel.

The survey showed that most industrial enterprises in Ukraine already use ICT in their operations. According to the survey, 85% of industrial enterprises stated that they use ICT at various stages of their operations.

Let us consider in more detail the use of ICTs at industrial machine-building enterprises in 2018–2021 in Table 1.

According to Fig. 1, in 2018, the production of computers, electronic and optical products at industrial machine-building enterprises amounted to 91.6%, the production of electrical equipment was 94.7%, the production of machinery and equipment not elsewhere classified was 102.5%, and the production of motor vehicles, trailers and semi-trailers and other vehicles was 96.8%. In general, the indexes of industrial production for machine building enterprises amounted to 97.8%.

In 2019, the production of computers, electronic and optical products at industrial machine-building enterprises amounted to 72.2%, a decrease of 19.4%, the production of electrical equipment amounted to 98.3%, which led to a decrease of 3.6%, the production of machinery and equipment not elsewhere classified amounted to 83.0%, an increase of 19.5%, the production of motor vehicles, trailers and semi-trailers and other vehicles amounted

Table 1 – Industrial production indices by main types of activity and main industrial groups

Industry.	2018	2019	2020	2021
Mechanical engineering	97.8%	81.5%	91.3%	68.8%
Production of computers, electronic and optical products	91.6%	72.2%	122.6%	41.6%
Production of electrical equipment	94.7%	98.3%	136.4%	81.5%
Manufacture of machinery and equipment n.e.c.	102.5%	83%	81.2%	69.8%
Manufacture of motor vehicles, trailers and semi-trailers and other vehicles	96.8%	74.3%	74.9%	70.3%

Source: compiled by the author on the basis of (Official website of the State Statistics Service of Ukraine) [7]

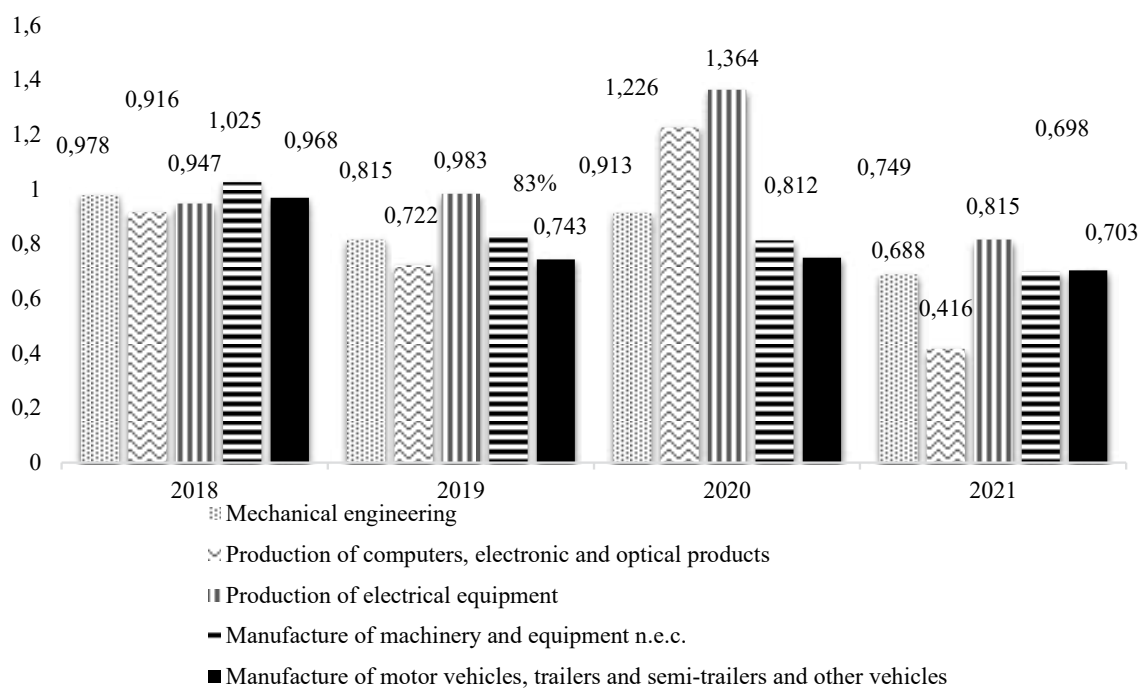


Fig. 1 – Industrial production indices by main types of activity and main industrial groups for 2018–2021

Source: compiled by the author on the basis of (Official website of the State Statistics Service of Ukraine) [7]



to 74.3%, an increase of 22.5%. In total, the indexes of industrial production for machine building enterprises amounted to 81.5%.

In 2020, the production of computers, electronic and optical products at industrial machine-building enterprises amounted to 122.60%, an increase of 50.4%, the production of electrical equipment amounted to 136.40%, which led to an increase of 38.1%, the production of machinery and equipment not elsewhere classified amounted to 81.20%, a decrease of 1.8%, the production of motor vehicles, trailers and semi-trailers and other vehicles amounted to 74.90%, an increase of 0.6%. In total, the industrial machine-building enterprises had industrial production indices of 91.30%.

According to Fig. 1 at industrial machine building enterprises in 2021, the production of computers, electronic and optical products amounted to 41.6%, a decrease of 81%, the production of electrical equipment amounted to 81.5%, which led to a decrease of 54.9%, the production of machinery and equipment not elsewhere classified amounted to 69.8%, a decrease of 11.41%, the production of motor vehicles, trailers and semi-trailers and other vehicles amounted to 70.3%, a decrease of 4.6%. In general, the industrial machine-building enterprises' industrial production indices amounted to 68.8%.

The volume and structure of industrial products sold by main types of activities are shown in Tables 2 and 3 for 2018–2021.

As shown in Table 2 for 2018 machine building, except for repair and installation of machinery and equipment, accounted for 7.2% of sales, 43.8% outside the country; production of computers, electronic and optical products – 0.5%, 23.6% outside the country; production of electrical

equipment – 1.5%, 38.9% outside the country; Manufacture of machinery and equipment not elsewhere classified – 2.3%, outside the country – 43.8%; manufacture of motor vehicles, trailers and semi-trailers and other vehicles – 2.9%, outside the country – 49.7%.

As for the indicators of Table 2 for 2019 machine building, except for repair and installation of machinery and equipment accounted for 7.4% of sales, 42.4% outside the country; production of computers, electronic and optical products – 0.5%, 24.3% outside the country; production of electrical equipment – 1.4%, 34.8% outside the country; Manufacture of machinery and equipment not elsewhere classified – 2.4%, outside the country – 40.0%; manufacture of motor vehicles, trailers and semi-trailers and other vehicles – 3.1%, outside the country – 50.4%.

According to the data in Table 3 for 2020 machine building, except for repair and installation of machinery and equipment, accounted for 6.9% of sales, 47.5% outside the country; production of computers, electronic and optical products – 0.5%, 21.5% outside the country; production of electrical equipment – 1.3%, 37.5% outside the country; Manufacture of machinery and equipment not elsewhere classified – 2.4%, outside the country – 48.8%; manufacture of motor vehicles, trailers and semi-trailers and other vehicles – 2.7%, outside the country – 56.0%.

According to the data in Table 3 for 2021 machine building, except for repair and installation of machinery and equipment accounted for 5.7% of sales, 45.0% outside the country; production of computers, electronic and optical products – 0.5%, 24.6% outside the country; production of electrical equipment – 1.1%, 35.6% outside the country; Manufacture of machinery and equipment not elsewhere classified – 2.0%, outside the country – 42.2%;

Table 2 – Volume and structure of industrial products sold by main types of activity in 2018–2019

	Volume of fishery products sold (goods, services) without VAT and excise for January–November 2018		From it, the volume products, realized by country borders		Volume of industrial products sold (goods, services) without VAT and excise for January–November 2019		From it, the volume products, realized by country borders	
	million UAH	in % to all of products sold	million UAH	in % to volume realized by industrial products by type activities	million UAH	in % to all of products sold	million UAH	in % to volume of industrial products sold by type activities
Mechanical engineering, except repair and installation of machinery and equipment	162946.6	7.2	71319.6	43.8	169233.3	7.4	71795.5	42.4
Production of computers, electronic and products	11444.9	0.5	2699.3	23.6	11459.9	0.5	2786.0	24.3
Production of electrical equipment	33058.0	1.5	12867.1	38.9	31238.9	1.4	10859.6	34.8
Manufacture of machinery and equipment, not elsewhere classified	52896.0	2.3	23177.7	43.8	56057.3	2.4	22405.1	40.0
Production of motor vehicles, at of trailers and semi-trailers and other vehicles	65547.7	2.9	32575.5	49.7	70477.2	3.1	35744.8	50.7

Source: compiled by the author on the basis of (Official website of the State Statistics Service of Ukraine) [7]

Table 3 – Volume and structure of industrial products sold by main types of activity 2020–2021

	Volume of industrial products sold (goods, services) without VAT and excise for January–November 2020		From it, the volume products, realized by country borders		Volume of industrial products sold (goods, services) without VAT and excise for 2021		From it, the volume products, realized by country borders	
	million UAH	in % to all of products sold at	million UAH	in % to volume realized by the thought product by type activities	million UAH	in % to all of products sold at	million UAH	in % to volume realized by the thought product by type activities
Mechanical engineering	151770.2	6.9	72166.7	47.5	204785.8	5.7	92202.3	45.0
production of computers, electronic and optical products	10691.0	0.5	2296.2	21.5	14860.1	0.4	3657.5	24.6
production of electrical equipment forging	28139.5	1.3	10549.9	37.5	40682.6	1.1	14496.1	35.6
Manufacture of machinery and equipment n.e.c.	53847.4	2.4	26254.1	48.8	71657.3	2.0	30207.3	42.2
production of motor vehicles, trailers and semi-trailers and other vehicles	59092.3	2.7	33066.5	56.0	77585.8	2.2	43841.4	56.5

Source: compiled by the author on the basis of (Official website of the State Statistics Service of Ukraine) [7]

manufacture of motor vehicles, trailers and semi-trailers and other vehicles – 2.2 %, outside the country – 56.5 %.

### Conclusions

The development of ICT at industrial enterprises in Ukraine is vital for the competitiveness of the national economy. The introduction of ICT at enterprises in various industries has significantly increased their productivity and reduced production costs.

Analyzing the dynamics of ICT use in Ukrainian industrial enterprises, it can be concluded that positive

trends have been observed in recent years. However, many enterprises are still in the early stages of this process, and it is therefore important to continue to promote ICT adoption and support the development of this sector.

Unfortunately, Ukraine consistently ranks high among countries with low levels of ICT use, which suggests that additional measures are needed to improve the level of ICT development. At the same time, the availability of qualified personnel in this area in Ukraine is recognized as an important advantage that can accelerate the use of ICT and the development of the sector as a whole.

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## ORGANIC PRODUCTION AS A MODERN ECONOMIC MODEL AND POSSIBILITY OF SUSTAINABLE DEVELOPMENT OF AGRO-INDUSTRIAL COMPLEX

**Batrakova T.I., Pronoza N.O.**

*Zaporizhzhia National University*

*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*

*t.batrakova61@gmail.com, pronoza.nataha@gmail.com*

### Key words:

organic produce,  
organic production,  
domestic market, export,  
financial aid, full scale invasion,  
consumption

Before the full-scale invasion of the Russian Federation, Ukraine's reputation as a worthy exporter and producer of organic products was constantly improving and new levels were needed. Almost all Ukrainian organic operators are certified according to EU standards, some of them according to the National Organic Program of the USA (NOP), Canada (COR), Switzerland (Bio Swiss), Germany (Naturland), Japan (JAS) and Sweden (KRAV). The zone of growing organic products is far from industrial cities, residential areas, highways – that is, in ecologically favorable regions where there is no need to use hermetically modified organisms (GMOs), chemical impurities to stimulate growth, harmful substances and antibiotics. So, products obviously can not contain agrochemicals, because they are grown without their use. In their composition there is a full set of vitamins provided by nature. The cultivation itself takes place on clean land, the fruits are euthanized as much as provided by nature. Organic products have less water and a brighter pulp taste. The shelf life of organic products is much longer, because they better contain useful vitamins and substances. Ukraine has a large number of benefits for the cultivation and production of organic products, such as good geographical location, widespread black soil and the introduction of new climatically advantageous zones. Ukraine has clearly declared its leadership in the supply of organic products to the EU. In 2021, it ranked 5<sup>th</sup> overall and 1<sup>st</sup> among non-tropical countries in terms of product imports to the EU (according to the European Commission report) [10]. Despite the challenges that the agricultural industry has faced during the hostilities, Ukraine seeks to expand its capabilities through high potential and enter the international arena, as it is considered a global supplier and understands the importance of its place in ensuring a sustainable food system and security not only within the EU, but throughout the world.

## ОРГАНІЧНЕ ВИРОБНИЦТВО ЯК СУЧАСНА ЕКОНОМІЧНА МОДЕЛЬ ТА МОЖЛИВІСТЬ СТАЛОГО РОЗВИТКУ АПК

**Батракова Т.І., Проноза Н.О.**

*Запорізький національний університет*

*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### Ключові слова:

органічна продукція,  
органічне виробництво,  
внутрішній ринок, експорт,  
фінансова допомога,  
повномасштабне вторгнення,  
споживання

До повномасштабного вторгнення РФ репутація України як достойного експортера та виробника органічної продукції неспинно покращувалася та займала нові рівні. Майже всі оператори з органічної продукції України є сертифіковані згідно стандартам ЄС, деякі з них відповідно до Національної органічної програми США (NOP), Канади (COR), Швейцарії (Біо Свісс), Німеччини (Натурланд), Японії (JAS) та Швеції (KRAV). Зона вирощування органічних продуктів знаходиться далеко від промислових міст, житлових зон, автомобільних доріг – тобто в екологічно сприятливих регіонах, де нема ніякої потреби у використанні герметично модифікованих організмів (ГМО), хімічних домішок для стимулювання росту, шкідливих речовин та антибіотиків. Отже, продукти свідомо не можуть містити агрохімікатів, адже вирощуються без їх застосування. В їх складі є повний набір вітамінів, що забезпечені природою. Саме вирощування відбувається на чистій землі, плоди приспівають стільки, скільки це передбачено природою. Органічні продукти відрізняються меншою кількістю води та мають яскравіший смак м'якоти. Строк збереження органічних продуктів набагато довший, адже вони

краще утримують в собі корисні вітаміни та речовини. Україна має велику кількість бенефітів для вирощування та виробництва органічної продукції, таких як гарне географічне розташування, широке поширення чорноземів та впровадження нових кліматично вигідних зон. Україна чітко заявила про своє лідерство у постачанні органічної продукції до ЄС. У 2021 році вона посіла 5 місце загалом та 1 місце серед нетропічних країн за обсягом імпорту продукції до ЄС (за звітом Європейської Комісії) [10]. Незважаючи на проблеми, з якими сільськогосподарська галузь зустрілася під час військових дій, Україна прагне розширювати свої можливості через високий потенціал та виходити на міжнародну арену, адже вважається світовим постачальником та розуміє значимість свого місця у забезпеченні сталої продовольчої системи та безпеки не тільки в межах ЄС, але і в усьому світі.

### Formulation of the problem

The full-scale invasion of the Russian Federation on the territory of Ukraine on February 24, 2022 caused enormous losses to the organic sector of the Ukrainian economy, but could not knock it out of the export leaders. Of course, the occupation of most agricultural land, constant shelling and fighting in their territories, as well as problems with logistics should have a negative impact on the dynamics of organic production. But despite all this, for 8 months of the war, Ukraine delivered 24% more organic food compared to last 2021.

At the beginning of 2021, the Government (Cabinet of Ministers of Ukraine) approved a resolution on the National Economic Strategy for the period until 2030, in which it was planned to increase the export of organic products to 1 billion US dollars. US and increase organic area by 3%. The goals were set by the time of the full-scale invasion of the Russian Federation on the territory of Ukraine and, despite this, the plans of the employees of the Office for Enterprise Development and Export do not depart from the goals. They, together with partners, continue to actively work and develop the field of organic production [1].

It is important for Ukraine to maintain its position of organic export in the inter-family arena. For the Office for Entrepreneurship and Export Development, together with foreign and external partners, the task is to help Ukrainian organic producers, and work on the development and promotion of the organic sector: from improving the skills of producers to presenting the country's potential in foreign markets and improving the image of Ukraine as a reliable exporter and supplier of organic products with high added value.

### Analysis of recent research and publications

The issue of organic production of the country became the subject of research in the scientific works of such domestic and foreign scientists and economists: Yu.V. Slavgorod, which revealed the restraining factors of the development of the production of organic products, V. Grushko and O. Komelina, in whose work the organic market of Ukraine is analyzed, G. Kornienko, who was engaged in the legal regulation of relations in organic production, also A. Remizov, O. Deineko and S. Hungerbüler.

### Formulation of goals

The article is aimed at analyzing and describing the current situation in the organic sector of Ukraine and studying two periods: pre-war and a year after the full-scale invasion. The goal is to better understand the current situation in the country and explore all the changes that have occurred over the past year, the main trends and opportunities for the agricultural sector based on the analysis. Also make reasonable predictions about the need to introduce a number of measures in the areas of the organic sector of Ukraine.

### Presentation of the main material of the research

In the late 1990s, the process of conscious organic production had just begun in Ukraine. Developing within the country, organic producers have gradually declared themselves in the international market of organic products, increasing the range of products offered, supply logistics and entering the world leaders in terms of the size of areas for organic production [4].

In recent years, Ukraine has progressively demonstrated the dynamics of growth and the number of areas on which certified cultivation of organic products is carried out, and the number of operators with producers and consumption of organic products by Ukrainians themselves. This is facilitated by the system of filling the domestic market with its own organic products by establishing the processing of organic raw materials (in most cases these are cereals – cereals, flour, dairy and meat products, eggs, juices, honey, oil, tea and medicinal herbs are also present). The dynamics of organic production development is shown in Fig. 1 and 2.

As of the end of 2021, the number of organic operators was 528, which is slightly less than 2020 (549 operators), among which there were 418 agricultural producers (419 in 2020). Operators include producers, processors, importers and exporters of organic products (Fig. 1).

In general, from 2016 to the present, the quantitative development of Ukrainian organic production has been observed (Fig. 2). Organic products and sector integrity improved during the consolidation process. Organize a lot of activities to promote organic trade to promote organic production. During this period, an organic regulatory framework was created in the field of organic farming, circulation and labeling of organic products [5].

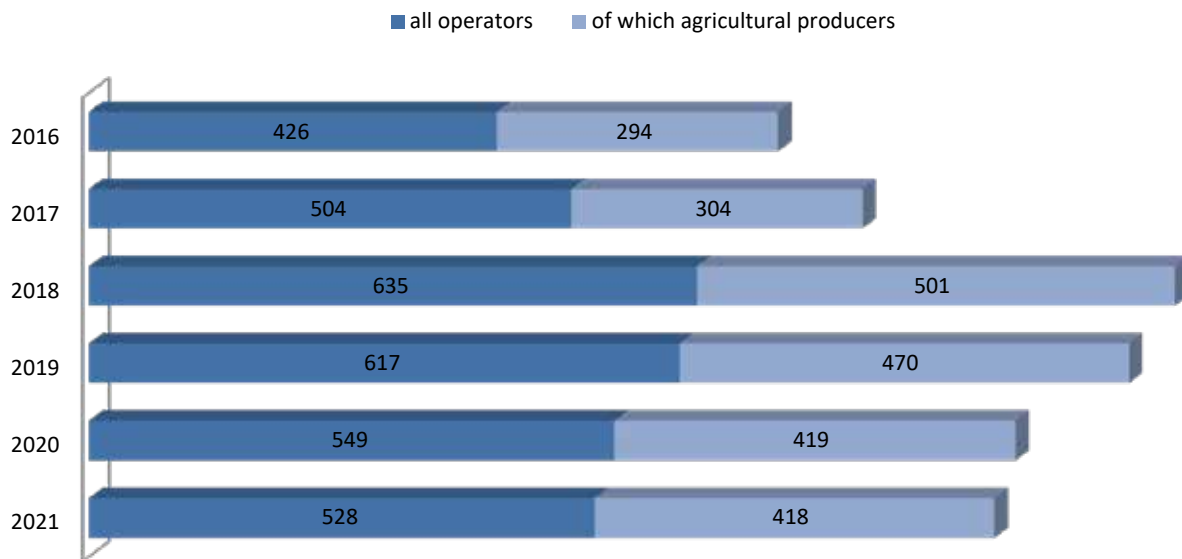


Fig 1. – Number of organic operators 2016–2021

Source: [3]

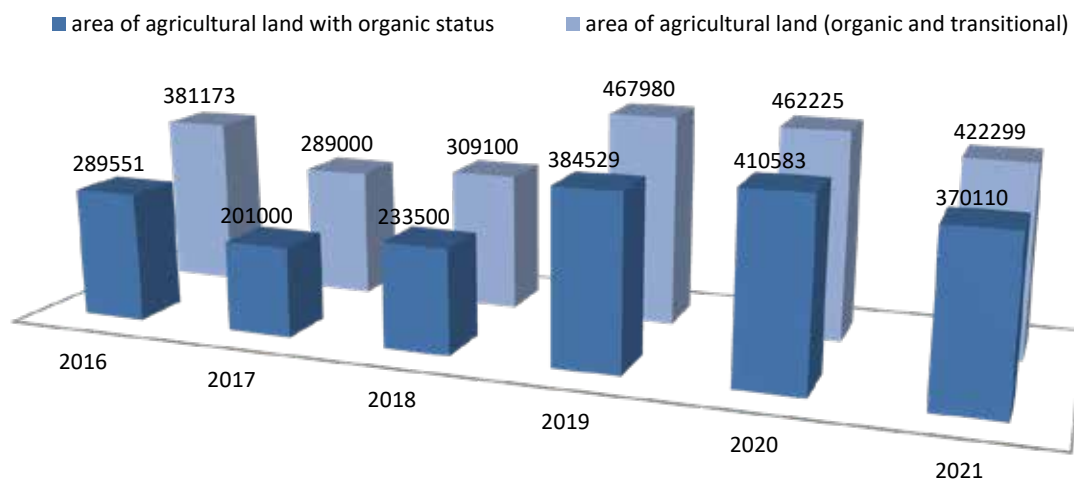


Fig. 2 – Total area of agricultural land and occupied for organic production, ha

Source: compiled on the basis of the source [3]

In Ukraine, the share of organic agricultural land is 1% of the total agricultural area in the country. As of the end of 2021, the total area of organic agricultural land was 522,299 hectares (organic status – 370,110 hectares).

It is 2021 that has become an important stage for Ukrainian organic noodling. All the necessary by-laws for the implementation of the Za-kon of Ukraine No. 2496-VIII “On the basic principles and requirements for organic production, circulation and labeling of organic products” were adopted. Together with the law adopted on July 10, 2018, this is the legislative foundation of organic production, circulation and labeling of organic products in Ukraine [2]. But despite all the regulations adopted, the legislation of Ukraine on organic production, unfortunately, has not yet been fully implemented and requires additional amendments and changes to fully adapt to the organic legislation of the EU.

Despite this, over the past few years, Ukraine has become one of the most influential suppliers of organic products to Western markets among non-tropical countries. Thus, as of the end of 2021, according to the latest report on imports of organic agri-food products, 189,200 tons of organic food were imported to the EU.

Since the beginning of Russia’s full-scale invasion of Ukraine, the Ukrainian organic sector, as well as the entire agricultural sector, have been suffering from Russian aggression. The agricultural sector suffers from the mining of fields, destruction of fixed assets, lack of fuel and vehicles, etc. Most of all suffered losses those areas that are located closest to the border with Russia and Belarus, as well as the south of Ukraine where a significant part of organic agricultural land was or is still under occupation. The most affected agricultural enterprises in Kyiv, Sumy, Kherson, Kharkov, Zaporizhzhya and Chernihiv regions. But despite the

losses, a large number of enterprises immediately after the de-occupation began to actively resume work, and some of them moved their production to other regions of Ukraine.

The state provided emergency financial assistance to the main participants of the organic sector to save and preserve business, to overcome the consequences of the current situation and to strengthen the capacity of the organic sector in the medium and long term: these are two grant programs. The first is “Support for the organic sector in Ukraine” [6] and “Emergency aid for organic agriculture in Ukraine” [7].

According to the results of the grant program “Support for the organic sector in Ukraine,” about 120 manufacturers-operators received support for a total amount of \$350.000. USA. This amount was used to cover the costs of organic certification, the purchase of products from organic producers, the purchase of fertilizers and PPPs, and the funds were distributed for the further development of marketing in the domestic sector. A significant proportion of this support was provided by the OT4D and QFTP programs [6].

As part of the fundraising campaign “Emergency Aid for Organic Agriculture in Ukraine,” initiated by the project “German-Ukrainian Cooperation in the Field of Organic Agriculture,” 170 enterprises were supported: organic producers and organic sector organizations, for a total of 560.000 euros [7].

Among the producers of organic products, grants were received: “Ethnoprodukt” – a producer of dairy eclectic products [8], specialized stores “Natur Boutique” [11] and eco-hotels “Maison Blanche” [12], which operate in the organic market since 2008 and whose activities are directly related to health and organic products.

Innovation Development Center, Office for Entrepreneurship and Export Development, national project Action. Business together with Advanter Group analyzed situation in the organic sector in the fifth month of the war and established a possible plan for the implementation of the marketing strategy (as of summer 2022). More than 80 small and medium-sized

manufacturers-operators from 20 regions of Ukraine and small exporters were studied. According to the results, as of July 2022, 70% of operators fully or partially continued organic production and processing (Fig. 3) [3].

In the coming marketing season, the domestic market will be most influenced by the low purchasing power of the population (the reason is the income tax) and the decline in demand for organic products (the reason is the movement of the majority of the population abroad/ other cities and disruption of supply chains) [6] (Fig. 4).

Also, low demand in the domestic market was affected by the closure of some retail chains and the tendency to change target markets. But it is important to understand that even before the occupation, the organic market was rather weak and needed support, and new circumstances worsen the situation and reduce the competitiveness of organic producers.

But despite all the above problems, Ukrainian manufacturers have found ways not to lose their ties with foreign partners. They did everything possible to establish new logistics routes for exporting products to the EU and Switzerland, so in the first eight months of 2022, products were sent to these countries for almost the entire 2021 (Fig. 5). EU countries also helped Ukrainian agricultural producers, so from-mine import tariffs and duties on Ukrainian products entering the EU were important for Ukraine because of the simplification of exports of organic products.

State experts predicted that the total volume of exports of organic products and its value in 2022 will be higher than in 2021, even despite the fact that most Ukrainian seaports remained blocked, and the markets of the USA and Canada are still inaccessible.

According to the data, Ukraine managed to export to the EU countries in the first 8 months of 2022 more than in the same period of 2021 (Fig. 6). Analyzing these statistics, you can divide it into the following periods:

- the beginning of the year – almost the same indicators of export volume;
- the first months of occupation – a period of uncertainty;

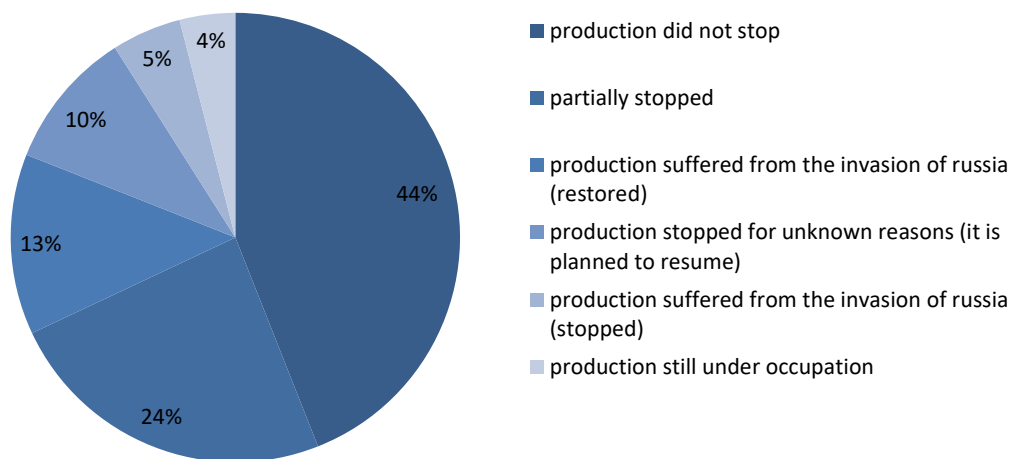


Fig. 3 – Condition of farms/enterprises (July 2022)

Source: compiled on the basis of the source [3]

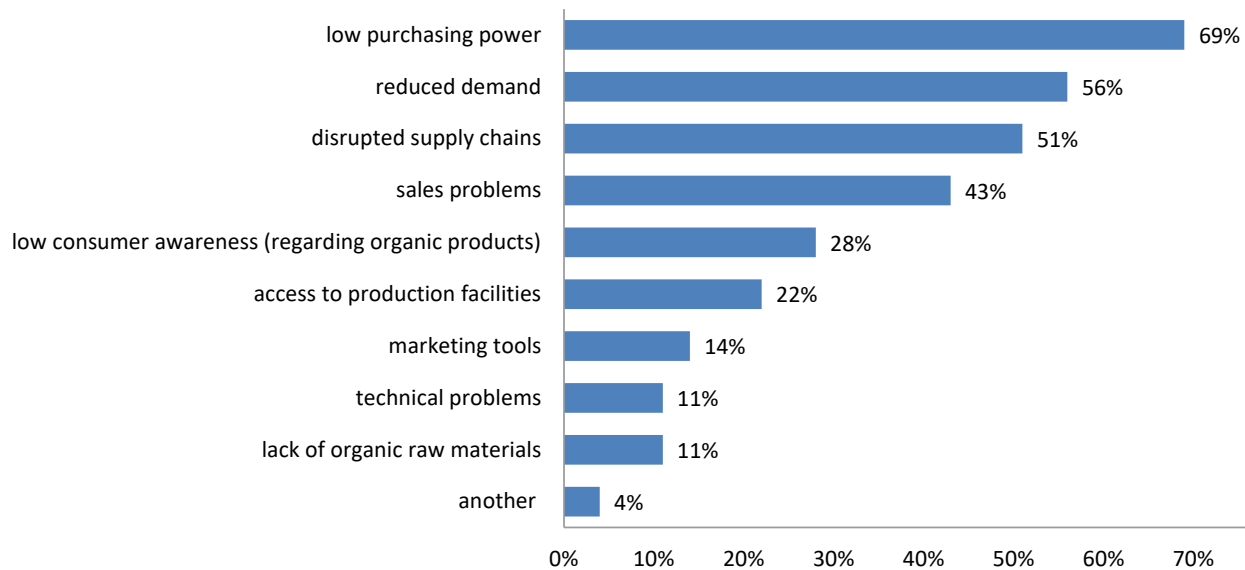


Fig. 4 – Problems/needs related to the sale of organic products in the marketing and marketing season 2022/2023  
Source: compiled on the basis of the source [6]

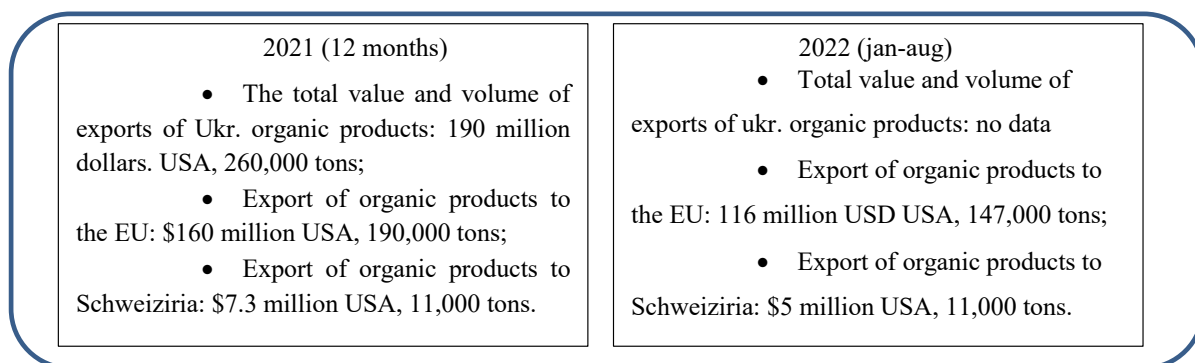


Fig. 5 – Comparison of the value and volume of exports of Ukrainian organic products in 2021 and 2022  
Source: [9]

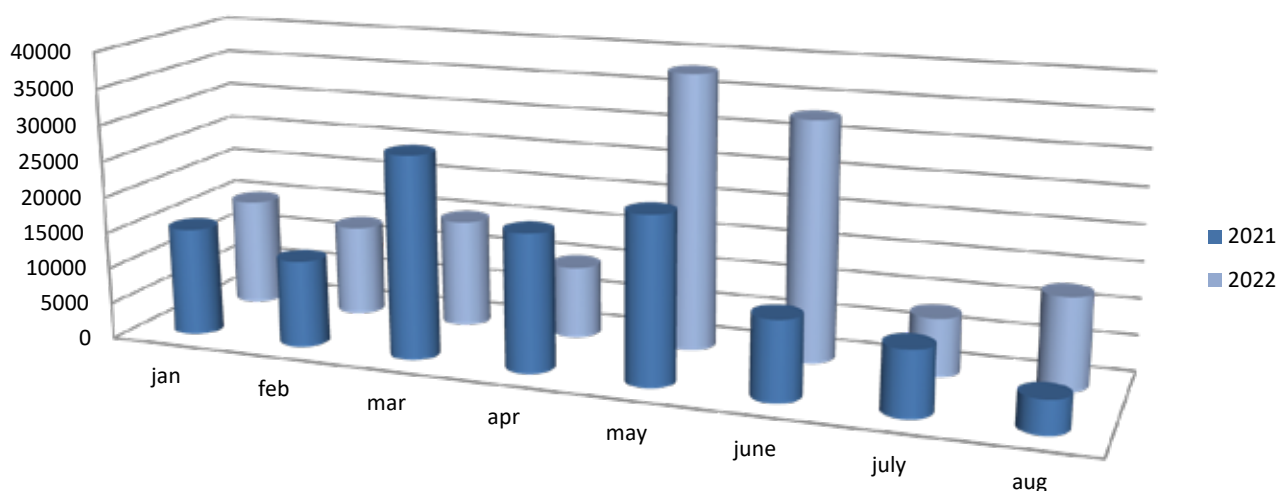


Fig. 6 – Dynamics of organic exports from Ukraine to the EU  
Source: compiled on the basis of the source [9]

- since May – adaptation to new realities and a significant jump in the ex-port in 2022 compared to the same period in 2021.

The reasons for the export growth are a very good harvest of organic products in Ukraine in 2021 (the export of the 2021 harvest continues). The logistic problem with seaports was solved by finding a similarly convenient method – railways or road transport (then transportation takes place in small quantities). Ukrainian exporters and their international buyers managed to take advantage of all types of transportation and even increase the volume of exports of organic products for each type of transport (Fig. 7).

Ukrainian export operators are still looking for various new logistics solutions to deliver their products, and the Ukrainian government is facilitating and supporting this process. Exporters are considering the possible development of infrastructure projects on the territory of neighboring states (in particular EU members), which could reduce the level of risks that are possible in the implementation of exports and contribute, at least a little, to solving logistical problems. Ukraine remains an active player in the international market and a reliable supplier of organic products, seeking

and finding various export opportunities, as well as establishing partnerships.

Summarizing all the above, we can conclude that, of course, now the agro-industrial complex of Ukraine and its constituent organic production is in difficult conditions, but continues to work, create new products and look for new opportunities for further development and strategic partnership.

### Conclusions from the study

It is important to understand that at the state level Ukraine holds its leading positions and leaves organic production one of the priorities for the development of the agro-industrial sector. The state is expected to introduce support, because both before martial law and during the organic sector needs it. External and internal assistance in the form of new grants, cooperation with foreign partners and financing should be expected.

For the country, the main understanding of the importance of supporting the organic sector both inside the country and in the international arena. Support from abroad can be realized if systematic cooperation between Ukrainian participants in the organic sector and international partners is achieved.

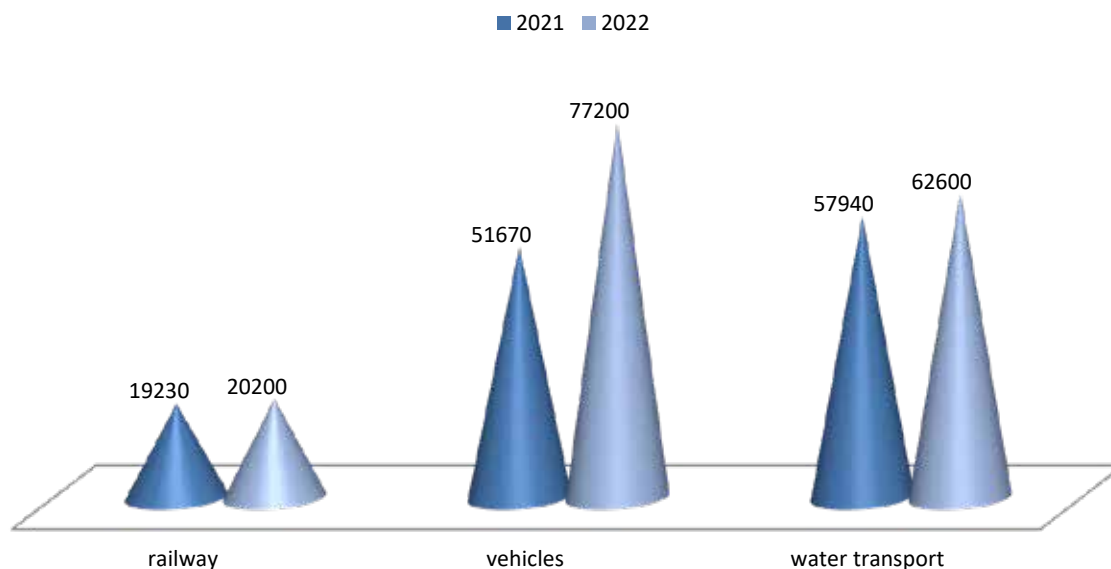


Fig. 7 – Export of organic products from Ukraine to the EU and Schveytaria, tons

Source: [9]

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## ANALYSIS OF APPROACHES OF FORMATION A MODEL OF ECONOMIC GROWTH OF THE ENTERPRISE

**Gorbunova A.V.**

*Zaporizhzhia National University*  
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66  
gor\_an\_v@ukr.net

**Key words:**

enterprise, economic growth, model of economic growth, financial state of the enterprise, functioning, development

In the current crisis of management, many domestic enterprises are on the verge of survival. Therefore, the question of creating conditions to ensure their survival and gradual growth, assessment of its level is relevant and it will determine in advance the main factors that contribute to the improvement of such a process in order to develop and implement appropriate measures. It is substantiated that the algorithm for determining the level of economic growth of the enterprise includes the definition and evaluation of integrated indicator. Economic growth of enterprises should be based on the development and implementation of appropriate models. It is established that the classical models of economic growth that based on the maximization of individual volume indicators (profit, volume production and sales) have a number of limitations. The main ones are: no ordered indicators within time intervals; there are restrictions function parameters that change in dynamics; the level of risk is not taken into account that may significantly affect the formation of financial results enterprise activity; the question of definition is problematic the minimum level of profit that suits the stakeholders. The advantages of modern models that reflect the correlation between the measure growth and various characteristics of financial and economic activities are such indicators as profit, investment and dividends, leverage, liquidity, production and sales, etc. It is established that the task of the financial manager – to provide sustainable, balanced growth rate, which is determined by the rate of its growth equity. The main components of balanced growth are operating indicators (profitability of sales and turnover ratio assets) and financial policy (dividend policy and financial leverage), which is an important condition for economic development of the enterprise.

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## АНАЛІЗ ПІДХОДІВ ДО ФОРМУВАННЯ МОДЕЛІ ЕКОНОМІЧНОГО ЗРОСТАННЯ ПІДПРИЄМСТВА

**Горбунова А.В.**

*Запорізький національний університет*  
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

**Ключові слова:**

підприємство, економічне зростання, модель економічного зростання, фінансовий стан підприємства, функціонування, розвиток

В сучасних кризових умовах господарювання багато вітчизняних підприємств перебувають на межі виживання. Тому актуальним є питання формування умов для забезпечення їх виживання і поступового зростання, оцінки його рівня, що дозволить завчасно визначити основні чинники, що сприяють поліпшенню такого процесу з метою розроблення і реалізації відповідних заходів. Обґрунтовано, що алгоритм визначення рівня економічного зростання підприємства включає визначення і оцінку інтегрального показника. Економічне зростання підприємств повинно базуватися на розробленні і впровадженні відповідних моделей. Встановлено, що класичні моделі економічного зростання, що базуються на максимізації окремих об'ємних показників (прибутку, обсягів виробництва та продажу), мають ряд обмежень. Основними серед яких є: не впорядковані показники в межах часових інтервалів; існують обмеження параметрів функції, які змінюються в динаміці; не враховується рівень ризику, що суттєво може впливати на формування фінансових результатів діяльності підприємства; проблематичним є питання визначення мінімального рівня прибутку, який влаштовує зацікавлені сторони. Перевагами сучасних моделей, які відображають залежність між мірою зростання і різними характеристиками

фінансово-господарської діяльності, є такі показники як прибуток, обсяг інвестицій і дивідендів, леверидж, ліквідність, обсяги виробництва та продажів та ін. Встановлено, що завдання фінансового менеджера – забезпечити стійкі, збалансовані темпи зростання, що визначається темпами нарощування його власного капіталу. Основними складовими збалансованого зростання є операційні показники (рентабельність продажу і коефіцієнт оборотності активів) і фінансова політика (дивідендна політика і фінансовий важіль), що є важливою умовою економічного розвитку підприємства.

### Statement of the problem

Changing transformational management conditions in which domestic enterprises operate may bring to the fore search and justification priority areas of development that could be provided implementation and adaptation of enterprise development goals to external and internal environment, as well as their industry characteristics functioning. In these circumstances, one of these areas is the economic growth of the enterprise, which makes it attractive for investment and allows to meet the growing demand for products, is one of the key factors changing the market value of the business.

### Analysis of recent studies and publications

In-depth attention to the study of the problem of model building of economic growth of the enterprise was given by such foreign scientists as J. Schumpeter [1], R.S. Higgins [2].

The study of the problems of economic growth of enterprises engaged in such domestic scientists as O.M. Alimov, A.I. Danilenko, B.M. Tregobchuk [3], V.M. Hobta [4], S.I. Bai [5], L.G. Melnik [6], O.M. Yastremskaya, G.V. Vereshchagina [7], O.V. Raevneva [8], N.V. Kasyanova [9] and others.

Scientists note that the construction of models of economic growth of enterprises is the basis for making sound management decisions regarding its operation and development. In their research, they note that each model has its own conditions and limits of application. Most scientists believe that when building a model of economic growth of the enterprise, first of all it is necessary to justify a system of variable parameters that can determine the optimal proportions between increasing production and sales of products, property and capital. It is important to ensure balanced growth.

All researchers point out that there is a direct connection between the economic growth of the enterprise with the provision of financial resources, their structure.

### Objectives of the article

The aim of the article is to study the methodological approaches to forming a model of economic growth of the enterprise, identifying their advantages and disadvantages and drawing conclusions about the feasibility of their use in the practice of assessing the functioning and development of corporate structures.

### The main material of the research

Economic growth of enterprises is the basis of their efficient management in the long run.

In most cases, the essence of economic growth is to expand the scale of activity, increase in time the volume of the enterprise, such as sales revenue, total assets, profits, equity and more.

Foreign scholars understand the economic growth of the enterprise as an indicator of the maximum increase in sales that it can achieve while maintaining the proportions of its financial condition [2]. This definition is well illustrated by the so-called “golden rule” of enterprise economics, which assumes the following assumptions: the requirement for asset growth is caused by the need to increase production capacity and other resources for planned sales growth. At the same time, sales should grow faster than total assets, due to the growth of return on investment in the assets of the enterprise – the same assets allow you to get more sales revenue. Greater profit growth compared to sales revenue is due to lower specific fixed costs with increasing production and sales.

However, the “golden rule of enterprise economics” is criticized by many researchers, in particular, because it is not always possible to achieve economies of scale, however, it contains a rational aspect – indicators that characterize economic growth must be organized in dynamics. That is, the economic growth of the enterprise occurs only when there will be interconnected and mutually agreed growth of different volume indicators (revenue from sales of products, assets, capital, profits, etc.).

Some scientists, such as O.M. Alimov, A.I. Danilenko, B.M. Tregobchuk and others consider the development achievements as the ability of the economic entity to increase production and sales of products while improving the efficiency of available resources and reducing the degree of influence of external factors on the conditions and parameters of activity [3].

Thus, we can agree with the opinion that the economic growth of the enterprise is one of the mandatory and primary conditions of its development, which involves quantitative and qualitative changes. And economic growth is characterized primarily by quantitative changes in the main indicators of the enterprise – increasing production and sales, while improving the efficiency of available resources. Such conditions, in turn, characterize the qualitative aspect of economic growth of the enterprise, which is also a necessary condition for its development.

Thus, economic growth is an integral characteristic of the enterprise, which should be assessed by an adequate system of interrelated indicators. The ensuring of such correlation can be achieved through economic growth modeling, which addresses the appropriate proportions between them.

At the same time, such modeling should be aimed at achieving diverse goals of enterprise development, which

may include, for example, increasing sales, maximizing profits and ensuring long-term existence (optimizing the relationship between profitability and liquidity). Thus, work on models, in addition to the possibility of obtaining an effective management tool, should balance the goals of the enterprise in terms of sales, production, costs, investments, sources and amounts of funding and so on.

In the economic literature there are different approaches to building models of economic growth of the enterprise and the composition of their variable parameters (factors), which have their advantages and disadvantages. Thus, the classical models of economic growth, based on the maximization of individual volume indicators (profit, production and sales), have a number of limitations, namely: the maximum of indicators in one time interval is not necessarily achieved in another; the maximum of indicators is reached at existing restrictions of parameters of function which change in dynamics that will lead to change of its maximum value; obtaining the maximum benefit is accompanied by a high level of risk due to the implementation of which the inevitable deterioration of the results of the enterprise; the issue of determining the minimum level of profit that suits stakeholders is problematic.

The disadvantages of classical models of economic growth of the enterprise are offset by modern models, which have been transformed into a dependence between growth and various characteristics of financial and economic activities, such as profit, investment and dividends, leverage, liquidity, production and sales.

It should be noted that there is no unanimity among economists on the factors that determine the economic growth of enterprises. Thus, the results of research indicate that in the medium and long term the main purpose of the enterprise is to maximize the market value of equity. In turn, a number of studies focus not so much on absolute, but on relative performance indicators – performance indicators that allow more accurate comparisons of such indicators.

A professor I.O. Blank [10] to determine the factors that determine the economic growth of the enterprise, uses a more specific indicator – increasing equity through reinvested earnings, which allows to assess the company's ability to increase production as a key indicator of economic growth. The main criterion is to increase the return on equity due to its more efficient use, rather than due to additional debt, which is characterized by a predominantly extensive type of development.

There is a direct dependence between economic growth and investment policy of the enterprise: the greater the amount of profit reinvested in the enterprise, which pursues short-term goals (maximization back into production, the more sustainable the growth of indicators, ie the greater the company's opportunities for expanded reproduction and introduction of new technologies to ensure its development [3].

Another aspect of this duality is following: from the point of view of shareholders, this approach is not optimal, because their main goal is to make a return on investment,

so there is a conflict between the interests of owners of funds invested in the production of profits and business owners who pursue long-term goals (eg, increasing the value of the enterprise) [3]. From this we can conclude that the economic growth of the enterprise can occur mainly at the expense of own funds (increase in equity through capitalized profits), which provides an intensive type of development and expanded reproduction of the enterprise. On the other hand, borrowing may be used to increase a company's volume, but this may reduce its solvency and financial stability.

Thus, when forming the dynamics of economic growth of the enterprise in the scientific literature, it is proposed to adhere to the following provisions:

- ensuring the growth of production and sales of the enterprise by increasing mainly equity, in particular, net capitalized profit;
- the growth of equity will be stable, balanced, if it is proportional to the growth of sales.

But this is sometimes difficult to ensure, because the growth of equity and sales growth is not balanced over time, and therefore the economic growth of the enterprise may vary from year to year. Therefore, it is necessary to take into account the initial sales, the initial amount of equity, the absolute amount of dividends or the share of capitalized profit that the company plans to direct to production development, as well as the amount of other additional equity. This may balance the initial financial and economic condition of the enterprise with the future growth of key performance indicators, coordinating the growth rate of key indicators such as sales, asset turnover, financial stability, solvency, etc.

Taking into account these provisions is important in forming a model of economic growth of the enterprise, which is noted in the approach reflected in the works of I.O. Blanka [11], O. Yu. Garkushi, O.V. Sergeeva [12].

It is widely believed that the growth of a company always increases its income. However, the rapid growth of the firm may be accompanied by a lack of resources, which can lead to financial difficulties or even bankruptcy. At the same time, very cautious firms, slow-growing firms lag behind more vigorous competitors and are also candidates for bankruptcy. Therefore, the task of the financial manager is to ensure a stable, balanced growth rate. According to R. Higgins, these are the growth rates of sales that do not exhaust financial resources [2].

Management practice shows that the dynamic growth of the enterprise requires additional resources. If management wants to increase its sales over the next year, it will also be necessary to increase the amount of assets, ie inventories, receivables and production capacity. If the company does not issue a new share, the cash needed to pay for the increase in assets must come from retained earnings and new liabilities.

Thus, the growth of equity and debt capital determines the rate of increase in asset value. As equity increases, an enterprise can raise borrowed capital without risking loss of financial stability due to deteriorating capital structure. Thus, the rate of sustainable growth of the enterprise is the rate of increase of its own capital.

The equation of balanced growth can be written as following:

$$g = R \times T \times ROA, \quad (1)$$

where  $g$  is the rate of balanced growth;  $P$  – profitability of sales;  $T$  – the ratio of assets to equity at the beginning of the year;  $ROA$  – return on assets.

Here,  $R$  and  $T$  reflect the company's financial policy, and  $ROA$  describes its operating performance.

This equation shows that, given a stable financial policy, the rate of balanced growth varies significantly depending on the return on assets.

Thus, sustainable growth is a series of changes in all combinations of growth and profitability that lead to balanced growth, and the problem of sustainable growth is the problem of managing the surplus or lack of cash, which leads to unbalanced growth.

Thus, balanced growth, the main components of which are operational indicators (return on sales and asset turnover ratio) and financial policy (dividend policy and financial leverage), is an important component of economic development.

### Conclusions

The analysis of scientific work on the studied problem shows that the economic growth of enterprises involves

quantitative and qualitative changes and is the basis of their effective management in the long term.

Classic models of economic growth, based on the maximization of individual volume indicators (profit, production and sales), have a number of limitations, namely: the maximum of indicators in one time interval is not necessarily achieved in another; the maximum of indicators is reached at existing restrictions of parameters of function which change in dynamics that will lead to change of its maximum value; obtaining the maximum benefit is accompanied by a high level of risk due to the implementation of which the inevitable deterioration of the results of the enterprise; the issue of determining the minimum level of profit that suits stakeholders is problematic.

When forming the dynamics of economic growth of the enterprise, which is offered in the scientific literature, it is problematic to ensure the growth of production and sales of the enterprise by increasing mainly equity, in particular, net capitalized profit.

When building models of economic growth of enterprises should focus on balanced growth, which is based on taking into account the profitability of sales and return on assets, as well as the ratio of assets to equity at the beginning of the year.

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## INNOVATIVE IMPLEMENTATION OF STRATEGIC PRIORITIES OF COMPETITIVENESS MANAGEMENT IN INDUSTRIAL ENTERPRISES OF UKRAINE

**Tkachenko S.M.**

*Zaporizhzhia National University*  
*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*  
space7770@ukr.net  
ORCID: 0000-0002-3798-5902

### Key words:

strategic assessment,  
innovative development,  
competitiveness,  
industrial enterprises,  
management implementation,  
economic model

The article examines the innovative implementation of strategic priorities of competitiveness management in industrial enterprises of Ukraine. The strategic assessment of the level of innovative development of industrial enterprises at the national level by the method of increasing the competitiveness rating is determined. For the purpose of innovative implementation of the management of the competitiveness of industrial enterprises, a national economic model of strategic management of increasing the rating of the competitiveness of industrial enterprises has been developed. In order to implement the strategic goals of the state, the development of a national innovative economic model for managing the competitiveness of industrial enterprises through the socialization of business has been substantiated and carried out. A strategic social-ecological-innovative model of the implementation of management of the competitiveness of industrial enterprises has been developed.

## ІННОВАЦІЙНА ІМПЛЕМЕНТАЦІЯ СТРАТЕГІЧНИХ ПРІОРИТЕТІВ УПРАВЛІННЯ КОНКУРЕНТОСПРОМОЖНІСТЮ ПРОМИСЛОВИХ ПІДПРИЄМСТВ УКРАЇНИ

**Ткаченко С.М.**

*Запорізький національний університет*  
*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### Ключові слова:

стратегічна оцінка,  
інноваційний розвиток,  
конкурентоспроможність,  
промислові підприємства,  
впровадження менеджменту,  
економічна модель

У статті розглянута інноваційна імплементація стратегічних пріоритетів управління конкурентоспроможністю у промислові підприємства України. Визначена стратегічна оцінка рівня інноваційного розвитку промислових підприємств на національному рівні методом підвищення рейтингу конкурентоспроможності. З метою інноваційної імплементації управління конкурентоспроможністю промислових підприємств розроблена національна економічна модель стратегічного управління підвищення рейтингу конкурентоспроможності промислових підприємств. Задля реалізації стратегічних цілей держави обґрунтована і здійснена розробка національної інноваційної економічної моделі управління конкурентоспроможністю промислових підприємств через соціалізацію бізнесу. Розроблена стратегічна соціально-екологічно-інноваційна модель імплементації управління конкурентоспроможністю промислових підприємств.

### Statement of the problem

In March 2000, the Lisbon Strategy set an ambitious purpose for European countries to become the most competitive and dynamic economy [1], based on knowledge and capable of constant growth, while providing more of the best jobs [2].

The issue of building the competitiveness of Ukraine is increasingly being discussed in the mass media [3]. The dynamics of macroeconomic indicators over the last year show that the period of extensive development has exhausted itself [4]. At present, all the work of the state is concentrated on providing activities for social support of the population due to the low standard of living [5]. Tax increases and

reorientation of budget funds to social needs can improve the situation only for a short time, since it is impossible to divide and redistribute what is not there [6]. Therefore, the only way out of the difficult situation in the state is replenishment of the state budget by increasing the competitiveness of industrial enterprises on the world market [7].

### Analysis of recent research and publications

Issues of public administration, such as plans and projects of economic development were studied by such scientists as O.S. Vlasiuk, T.V. Deriuhina, I.V. Zapatrina and others, who studied the constituent elements of the formation of a new system of public administration based

on world-leading experience in the conditions of Ukraine's transition to sustainable economic development [1]. A thorough analysis of the global experience of state administration in reforming both individual sectors of the economy and implementing structural reforms aimed at ensuring accelerated economic growth at a qualitatively new technological level was conducted. The mechanisms used by various countries in the implementation of the tasks were considered. An overview of institutional and organizational instruments of international cooperation in the sphere of economy, finance, science, education, culture, as well as intellectual property issues was made. The assessment of the socio-economic situation in Ukraine and its regions based on ranking and rating methods accepted by international practice is scientifically substantiated [1–8].

### Objectives of the article

The purpose of the article is the theoretical and methodological justification and strategic assessment of the level of innovative development of industrial enterprises by the method of increasing the competitiveness rating.

To achieve the purpose, the main tasks were set and solved in the article:

- to develop a national innovative model of competitiveness of industrial enterprises;
- improve the experimental base of Ukrainian industrial enterprises;
- to overcome the gap between science and the production of industrial enterprises by combining them into a new type of innovative system;
- to implement the integration of science and education in the sphere of industry, but without fundamentally breaking the existing system of their organization;
- to adapt the scientific and technological sphere to the conditions of the market economy.

### The main material of the research

Considering the Ukrainian innovation system, the author of the article assumes that it is not about creating something fundamentally new, but about transforming an administrative-command type innovation system into a national market-type innovation system [9].

In this regard, two opposite views can be distinguished regarding the formation of the Ukrainian innovation system. The first point of view is that the lag in the economic and innovative development of industrial enterprises of Ukraine from developed industrial enterprises of developed countries during the years of reforms has become so significant that it can be considered final and irreversible. Therefore, it is possible to form an innovative system using the Japanese way – based on the predominant external borrowing of new knowledge and new technologies. The second point of view is that the industrial enterprises of Ukraine have large innovative resources and quite competitive intellectual potential, therefore they can form a national innovation system, which should be based mainly on the development and use of their own scientific and technological potential. The basis for such a conclusion is the presence in the country of strong fundamental science, qualified personnel, and a developed modern database [10].

Innovative activity is a complex systemic activity aimed at implementing the results of scientific research and development, which involves a set of actions related to the origin, creation, development and dissemination of innovations, the result of which are new products, services, technologies, forms of organization and management, that satisfy public needs and provide economic, social and other types of effect [11].

The question of building the competitiveness of industrial enterprises of Ukraine through the construction of a national innovation model in today's conditions is extremely urgent. The recent dynamics of macroeconomic indicators show that the period of extensive development of industrial enterprises has exhausted itself, and we must move on to intensive development of the economy. It is necessary to create a favorable climate for the development of business and entrepreneurship, orient the state policy to change the structure of production, transition to innovative development. These are the priorities set in this article, as this path can ensure a fundamentally different level of competitiveness of industrial enterprises on world markets, and therefore of all Ukraine as a whole [1].

The main goal of national innovation systems can be formulated as follows: ensuring sustainable economic development (that is, in the terminology of the UN, “a forward movement that meets the needs of the current generation without depriving future generations of this opportunity”) [2]), achieving competitive advantages of the country and improving the quality life of the country's population. This is achieved by using:

- creation of additional jobs, both in the field of science and in the field of production and services;
- increase in state income due to growth in the production of science-intensive products and increase in income of the population;
- raising the educational level of the population;
- solving own environmental and social problems by using the latest technologies [12].

In each specific case, the functioning of the national innovation system is determined by the macroeconomic policy pursued by the state, regulatory and legal support, forms of direct and indirect state regulation, the state of scientific, technological and industrial potential, internal product markets, labor markets, as well as historical and cultural traditions and features [13].

Objects with competitiveness can be divided into four groups: goods, enterprises (as a producer of goods), industry (as a set of enterprises offering goods or services) and regions (districts, regions, countries or their groups) [14]. Products can be very similar (both our company's products and those of our competitors), and we will be able to improve them. In this case, the product itself does not compete. The enterprise must acquire an image, a brand, a certain character. To increase competitiveness, it is necessary to position your enterprise, which has a certain goal and certain characteristics that we want to broadcast to society. If the branch of our enterprise is a priority for the state, then we can compete, if the branch is ordinary, without certain specifics, then, accordingly, the competitiveness of our enterprise will be much lower. It is necessary to take

into account how much development is going on, how important this industry is for the economy of Ukraine, how much we have competitors and this industry is open to our competitors. The level of solvency of the population of the region, the level of education, the level of certain social benefits, and the social health of the region is also of great importance. The region does not always determine our competitiveness. Sometimes we can influence the region and, accordingly, increase our competitiveness [15].

The consumer evaluates the competitiveness of the product from the point of view of his needs and the completeness of their satisfaction [16]. The competitiveness of the enterprise is evaluated from the point of view of the enterprise's position on the market [17]. The competitiveness of an enterprise is a complex comparative characteristic of an enterprise that reflects competitive advantages in a certain market for a certain period of time [18]. Competitiveness is always a comparison, a comparison of oneself with someone else [19]. That is, every month we check competitiveness, and we do not stop at what we have achieved, because we constantly have to carry out control. New competitors are constantly appearing on the market [20].

The competitiveness of the industry is assessed by the consumer from the point of view of prioritizing his own needs. Thus, we distinguish four types of entities that evaluate the competitiveness of certain objects: the state, consumers, investors, and producers. The state evaluates with a certain interest an enterprise, especially a very large one, which provides a large number of jobs. The state is interested in making large systems work. Therefore, competitiveness is a matter not only of one enterprise (especially a large one), but also of the entire state. If the enterprise produces a quality product, then consumers are not interested in the competitiveness of the enterprise, but if the enterprise produces something on the basis of which the product will be produced by another enterprise in the future, then it is important not to let down its client, who, in turn, will be able to produce his product, sell, and, satisfy their customers. Investors always want to understand to whom and for what they give money, and not just to a person, but to a company that has a high level of competitiveness. Manufacturers must guarantee the quality of a product that is competitive on the market.

In order to study the management of the competitiveness of industrial enterprises, the author of the article developed a national innovative model of the implementation of the management of the competitiveness of industrial enterprises, the purpose of which is to increase the competitiveness (Fig. 1).

In order to realize the strategic goals of the state, 2 factors are needed:

- 1) meeting the needs of society (jobs, high standard of living);
- 2) production resources (industrial enterprises).

This led to the need to develop a national innovative model of implementation of the management of competitiveness of industrial enterprises, the consequence of which is an increase in competitiveness through the socialization of business (Fig. 2). Competitive industrial enterprises have responsibility before the state: a socially responsible enterprise (innovations benefit society) and an

ecologically responsible enterprise (innovations benefit the external environment).



Fig. 1 – National innovative model of implementation of management of competitiveness of industrial enterprises (the purpose of which is the need to increase competitiveness)

Source: developed by the author based on [1–20]



Fig. 2 – The national innovative model of the implementation of the management of the competitiveness of industrial enterprises (the consequence of which is the increase of competitiveness through the socialization of business)

Source: developed by the author based on [1–20]

Since the industrial enterprise solves both social and environmental problems, the state goes to meet it, because the enterprise improves the social and economic condition of the region. Also, in turn, enterprises are interested in the implementation of state projects is the development of regions and certain industries in which these enterprises are involved.

The developed social-ecological-innovative model of the implementation of the management of the competitiveness of industrial enterprises (Fig. 3) has the following consequences:



Fig. 3 – Social-ecological-innovative model of implementation of management of competitiveness of industrial enterprises

Source: developed by the author based on [1–20]



– increasing the competitiveness of industrial enterprises on the world market will lead to replenishment of the state budget through fiscal policy;  
– increasing the competitiveness of industrial enterprises in the domestic market will lead to an increase in the quality of the products of the national producer, and the withdrawal from the market of those

enterprises whose quality does not satisfy the conditions of the consumer;

– increasing the competitiveness of industrial enterprises in the domestic market will lead to a decrease in the price of finished products, which will thereby lead to a greater demand for this product, and, as a result, to the support of the national producer.

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# ECONOMIC AND MATHEMATICAL MODELING AND INFORMATION TECHNOLOGIES IN ECONOMICS

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## ANALYSIS ANOMALIES OF THE CRYPTOCURRENCY PRICES TIME SERIES

**Ocheretin D.V.**

*Zaporizhzhia National University*  
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66  
odvisua@gmail.com  
ORCID: 0000-0001-6705-6381

**Key words:**

cryptocurrency, bitcoin,  
coin market, decomposition,  
anomaly, time series

The article is devoted to the research of anomalies in the cryptocurrency market that affect the behavior of digital financial market agents. The relevance of the work is explained by digital transformation, which affects the conditions for the existence and development of financial sector agents, as well as the growing need for new knowledge, skills and abilities to study the behavior of such agents in various conditions. The object of the research is the time series of cryptocurrency prices based on data from CoinMarketCap, a major provider of cryptographic data. For the analysis of time series anomalies, the top 5 cryptocurrencies by capitalization were selected: Bitcoin (BTC), Ethereum (ETH), Tether (USDT), Binance Coin (BNB), U.S. Dollar Coin (USDC). The input data for research are daily time series of the cryptocurrency prices. To identify time series anomalies, the software environment for statistical processing and data visualization R was used. Based on the results of the research, it was revealed that the Bitcoin (BTC) price time series has the smallest share of anomalies. And the time series of cryptocurrency prices that appeared later (altcoins), Ethereum (ETH) and Binance Coin (BNB) largely repeat the periods of Bitcoin (BTC) anomalies. Particular periods of anomalies were shown by time series of prices for stablecoins Tether (USDT) and U.S. Dollar Coin (USDC). They are tied to fiat currency and have a reserve fund that ensures the stability of the token rate.

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## АНАЛІЗ АНОМАЛІЙ ЧАСОВИХ РЯДІВ ЦІН КРИПТОВАЛЮТ

**Очеретін Д.В.**

*Запорізький національний університет*  
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

**Ключові слова:**

криптовалюта, біткоїн,  
криптовалюта, декомпозиція,  
аномалія, часові ряди

Стаття присвячена дослідженню аномалій на ринку криптовалют, що впливають на поведінку агентів цифрового фінансового ринку. Актуальність роботи пояснюється цифровою трансформацією, яка впливає на умови існування та розвитку агентів фінансового сектору, а також у зростанні потреби в нових знаннях, уміннях та навичках для дослідження поведінки таких агентів в різних умовах. Об'єктом дослідження виступають часові ряди вартості криптовалют за даними CoinMarketCap – крупного постачальника криптографічних даних. Для аналізу аномалій часових рядів було обрано топ-5 криптовалют за капіталізацією: Bitcoin (BTC), Ethereum (ETH), Tether (USDT), Binance Coin (BNB), U.S. Dollar Coin (USDC). Вхідними даними дослідження є щоденні часові ряди цін криптовалют. Для виявлення аномалій часових рядів використано програмне середовище R, яке призначено для статистичної обробки та візуалізації даних. За результатами дослідження було виявлено, що найменшу частку аномалій містить часовий ряд ціни Bitcoin (BTC). А часові ряди цін криптовалют, що з'явилися пізніше (альткоїни), Ethereum (ETH) та Binance Coin (BNB) у значній мірі повторюють періоди аномалій Bitcoin (BTC). Особливі періоди аномалій показали часові ряди цін стейблкоїнів Tether (USDT) та U.S. Dollar Coin (USDC). Вони прив'язані до фіатної валюти та володіють резервним фондом, який забезпечує стабільність курсу токєну.

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### Statement of the problem

The global financial market is constantly in a state of digital transformation, which is associated with an increase in the use of digital currency in the form of electronic currency or virtual currency. A type of virtual currency built on a blockchain system is a cryptocurrency. As of December 2022, the number of all cryptocurrencies in the world has reached 22000 and continues to grow [1]. The role of bitcoin and other digital currencies in global financial processes can be characterized as integrating, which is based primarily on its contribution to the formation of a network business of financial institutions.

Institutional investors are actively investing in crypto assets – organizations that pool funds into a single pool and invest with depositors' money (hedge funds, mutual funds, credit communities, banks, etc.). According to statistics, about 40% of institutional investors have crypto assets in their portfolio, most of which are stored in fundamentally strong coins. In 2021, the top three sectors in which hedge funds invest in cryptocurrencies are Store of Value (86%), Decentralized Finance (78%), and Infrastructure (74%). Cryptocurrency investment in Exchanges and Entertainment accounts for 51% and 48% of hedge fund investments, respectively. Less than 30% of cryptocurrency investment hedge funds are invested in such niche industries as Data & Clouds, Banking, Enterprise [2].

Rapid changes in the digital market draw attention directly to the behavior of market agents, the possibility of development within the new established boundaries. New challenges and updated values have actualized the demand for specific goods and services that provide a solution to complex issues of socio-economic security, have led to a fundamental change in the behavior of subjects in the financial market. Today, timely monitoring of changes in market behavior contributes to the formation of a new quality of management, rapid adaptation of business, changes in the basic principles of interaction and functioning of subjects in all areas, explanation of current trends and prediction of the formation of new trends in key indicators.

Since the cryptocurrency market is under the influence of a significant number of adverse events (regulatory pressure, macroeconomic instability, collapse and bankruptcy of cryptocurrency platforms), it is essential to quickly identify market changes in order to correct the socio-economic behavior of each agent. Therefore, tracking unexpected fluctuations in the cryptocurrency market requires identifying unusual observations (outliers, anomalies) in the time series of cryptocurrency rates.

### Analysis of recent studies and publications

Anomaly detection is a problem that exists in a large number of industries and involves the identification of new or unexpected observations (or sequences) in data. Most modern anomaly detection methods are very application specific, requiring the expert to know the method as well as the situation to which it applies. Despite the origin of the data, there are three types of time series anomalies: point, contextual and collective anomalies [3–5]. For financial time series, the most common are collective anomalies,

when the sequence of related data instances is anomalous with respect to the whole data set.

The article [3] considers such time series factors as temporality, dimension, non-stationarity and noise. The authors carried out a comparative analysis of modern methods for detecting deep time series anomalies using several reference data sets, and also proposed recommendations for choosing an appropriate model and learning strategy for detecting time series anomalies based on deep learning.

The research [4] compares the application of 20 anomaly detection methods for several sets of univariate time series, which belong to three categories of methods: statistical, machine and deep learning.

The article [5] discusses approaches to detecting anomalies in univariate and multivariate time series, which are related to the Internet of Things. Particular attention is paid to the use of recurrent neural networks (RNN), long short-term memory networks (LSTM) and gated recurrent units (GRU) to detect anomalies in time series.

In [6], to detect anomalies in uncontrolled time series, an Anomaly Transformer was proposed that contains an Anomaly-Attention with a two-layer structure to implement an associative mismatch. The minimax strategy is used to further enhance the difference between normal and abnormal time points.

The team of authors in [7] considers the classification of outliers in time series (point and subsequences), as well as software for detecting outliers in time series in Java, R, Python, C++.

The article [8] gives a classification of outlier detection methods and models: traditional (distance-based models, statistical models, classification models, angle-based models) and deep learning (deep learning for feature extraction, learning feature representations of normality, end-to-end anomaly score learning). Special attention is paid to the choice of metrics for assessing the correctness of outlier detection, the best mathematical models and methods for solving the problem of identifying outliers in test samples when management of processes in systems by state.

The study [9] is devoted to the use of statistical methods of data analysis for the detection of anomalies (survival analysis, fractal analysis of time series, decision tree method, cluster analysis and entropy method). According to the results of simulation modeling of network traffic of telecommunication networks of various protocols with 75% of legitimate traffic and 25% of attacks, it was found that the decision tree method is the best in terms of anomaly identification probability, fewer false positives and anomaly detection time. The entropy analysis method is somewhat slower and gives slightly more false positives, while the cluster analysis method detects anomalies somewhat worse.

The algorithm for detecting time series anomalies proposed in [10] consists in converting the numerical values of the time series into symbols of a predetermined alphabet and further deriving the rules of a certain language, according to which this linguistic chain is formed. The grammar that is output is a linguistic model and is a matrix of transitions between states of a discrete

Markov process. Each character of the alphabet in the linguistic chain corresponds to the state of the process at a given time. At each new level of the series, the system enters a new state with a certain probability. The authors of the study proved the effectiveness of the proposed method for the analysis of time series of prices for shares of world-famous companies.

The way to detect anomalies in the time series of financial data, which is proposed in [11], is to detect anomalies using the ensemble approach. An LSTM-based autocorrect is used to eliminate input signal noise, an ARIMA model is used for prediction, the CNN network is used to correct the output of the predictive model, and confidence intervals are used as an anomaly detector.

However, despite the large number of existing methods for detecting time series anomalies, the “weak” point remains the choice of methods that are used for a particular time series. Also, it should be taken into account that the behavior of agents of the digital financial market is subject to structural changes in the context of a rapid change in the price of cryptocurrency, so the practical value of the study lies in the timely detection of anomalies in the market to correct the behavior of agents.

**Objectives of the article**

The purpose of the article is to study anomalies in the cryptocurrency market that affect the behavior of digital financial market agents. The object of the research is the time series of cryptocurrency prices based on data from CoinMarketCap – the world’s most popular crypto price tracking site, a major provider of cryptographic data. The subject of the research is the methods of nonlinear dynamics.

**The main material of the research**

Consider the price dynamics of five cryptocurrencies with the largest capitalization in 2023: Bitcoin (BTC), Ethereum (ETH), Tether (USDT), Binance Coin (BNB), U.S. Dollar Coin (USDC) [12]. The volumes of capitalization of these cryptocurrencies are given in Table 1.

Daily data on the closing price of the selected cryptocurrencies was obtained using the *crypto2* library of the R environment [13] according to CoinMarketCap [14] and downloaded from the *Investing.com* website [15].

Table 1 – Capitalization volumes of the top 5 cryptocurrencies in 2023

The name of the cryptocurrency	Amount of capitalization, billion dollars USA
Bitcoin (BTC)	506.7
Ethereum (ETH)	209.5
Tether (USDT)	83.5
Binance Coin (BNB)	37.7
U.S. Dollar Coin (USDC)	28.3

Bitcoin (BTC), which was created in 2009 by Satoshi Nakamoto, is the original cryptocurrency. Like most cryptocurrencies, BTC runs on a blockchain, or ledger of transactions, distributed over a network of thousands of computers. The dynamics of the price of Bitcoin (BTC) for the period from May 01, 2016 to June 10, 2023 (2597 daily observations) is shown in Figure 1. The BTC price reached its highest value on March 13, 2021 (\$61243.08) and November 8, 2021 (\$67566.83). The significant increase in the price of BTC in 2017 was affected by: growing interest in the currency; an increase in the number of sellers who accepted payment in BTC; decrease in Bitcoin mining reward.

Ethereum (ETH) was created in 2013 and is the second most popular cryptocurrency that competes with Bitcoin. The main value of Ethereum is not only coins (ether), but also smart contracts. These are programs on the blockchain that transfer regular contracts to their digital version. In this case, the contract is monitored by a computer, not a person. The dynamics of the price of Ethereum (ETH) for the period from May 01, 2016 to June 10, 2023 (2597 daily observations) is shown in Figure 2. The Ethereum (ETH) price reached its highest values on May 11, 2021 (\$4167.78) and November 8, 2021 (\$4808.38). Users have the ability to deposit their ETH to an Ethereum 2.0 deposit contract. Keeping coins on this contract allows investors to receive passive rewards for staking the coin.

Tether (USTD) is the world’s first stablecoin (cryptocurrency that is pegged to the value of fiat currency), which was created in 2014. Also, it is a cryptocurrency asset that is issued on the basis of the Bitcoin blockchain through the Omni Layer, Ethereum (ERC-20) protocols, TRON, EOS, Algorand, Solana and OMG Network. Each USTD unit is backed by a US dollar held in Tether Limited’s

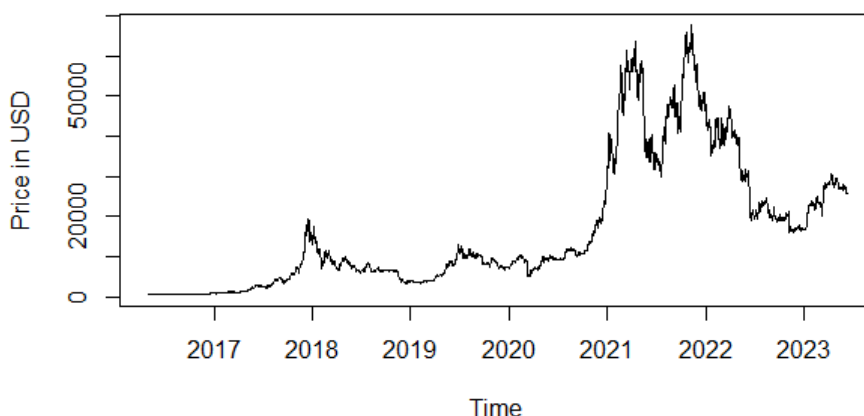


Fig. 1 – Bitcoin (BTC) price for the period from May 01, 2016 to June 10, 2023

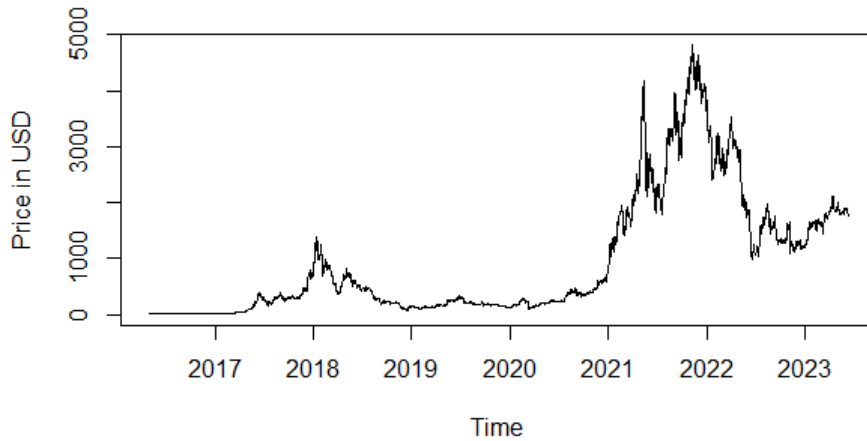


Fig. 2 – Ethereum (ETH) price for the period from May 01, 2016 to June 10, 2023

reserve and can be withdrawn using the Tether platform. Tether (USTD) is an important part of the cryptocurrency ecosystem. Tether (USTD) price dynamics for the period from April 14, 2017 to June 10, 2023 (2248 daily observations) is shown in Figure 3.

Binance Coin (BNB) is a form of cryptocurrency that can be used to trade and pay fees on Binance, one of the largest crypto exchanges in the world. Since its launch in 2017, the use of Binance Coin (BNB) has expanded beyond the boundaries of the Binance exchange platform.

This cryptocurrency can now be used to trade, process payments, book travel, and sell and exchange for other forms of cryptocurrencies such as Ethereum or Bitcoin. The dynamics of the price of Binance Coin (BNB) for the period from November 09, 2017 to June 10, 2023 (2040 daily observations) is shown in Figure 4. The BNB price reached its highest values on May 3, 2021 (\$676.56) and November 14, 2021 (\$650.8).

U.S. Dollar Coin (USDC) is a stablecoin that is fully backed by dollar assets. USDC reserve assets are held

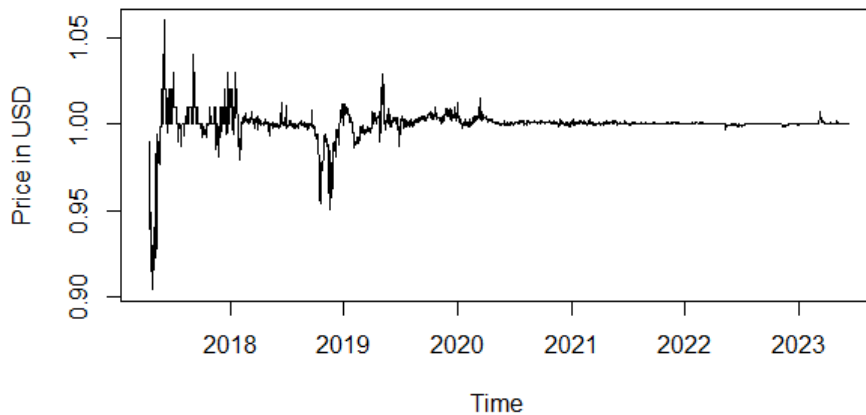


Fig. 3 – Tether (USTD) price for the period from April 14, 2017 to June 10, 2023

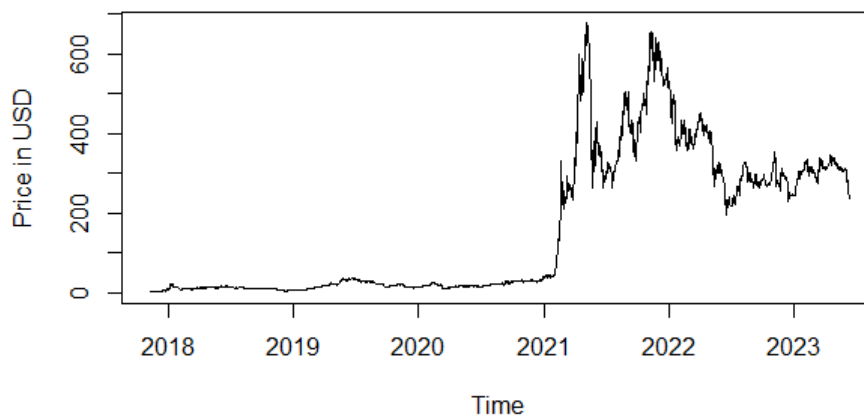


Fig. 4 – Binance (BNB) price for the period from November 09, 2017 to June 10, 2023

in accounts with regulated US financial institutions. U.S. Dollar Coin is operated by Centre, a consortium founded by cryptocurrency exchange Coinbase and fintech company Circle. Price dynamics U.S. Dollar Coin (USDC) for the period from December 6, 2018 to June 10, 2023 (1648 daily observations) is shown in Figure 5.

Despite the fact that the stablecoin Tether (USTD) is more widespread and recognized in the crypto community, U.S. Dollar Coin (USDC) is considered one of the most secure alternatives to centralized stablecoins that are pegged to the US dollar due to higher transparency, increased interoperability with different types of blockchain, and an improved legal framework.

The study of anomalies in the time series of selected cryptocurrencies was carried out in the R environment using the *timetk* library [16]. The *tk\_anomaly\_diagnostics()* method for anomaly detection implements a two-step process for identifying time series outliers.

At the first step, the trend and seasonality are removed using the STL decomposition (Seasonal-Trend decomposition using LOESS) [17]. Decomposition removes the trend and seasonal components from observed values, leaving residuals for anomaly detection. The user

can control two parameters: *frequency* and *trend*. The *frequency* adjusts the seasonal component, and the *trend* adjusts the trend window both automatically and according to user settings. The whole procedure of seasonal decomposition using STL consists of two cycles: external and internal. The external cycle consists of calculating the robust weights in terms of the median absolute deviation. The internal cycle includes the calculation of the trend and seasonal components.

The second step uses an interquartile range (IQR) of +/-25 from the median to detect anomalies. The default setting is  $\alpha = 0.05$ , and the limits are set by extending the 25/75 baseline by a coefficient of  $IQR = 0.15 / \alpha = 3$ .

Application of the anomaly detection method for the Bitcoin (BTC) time series revealed 334 abnormal values, which accounted for 12.86% of the considered data. In Figure 6, anomalous values are marked with red dots.

Consider long-term (a week or more) anomalous periods. The first anomalous period is December 6–21, 2017, which accounts for the peak price of Bitcoin in 2017 (\$19497.4, December 16, 2017). Between December 8–15, 2020, Bitcoin crossed the \$19000 mark per coin. The decline in business activity due to the COVID-19 led to the

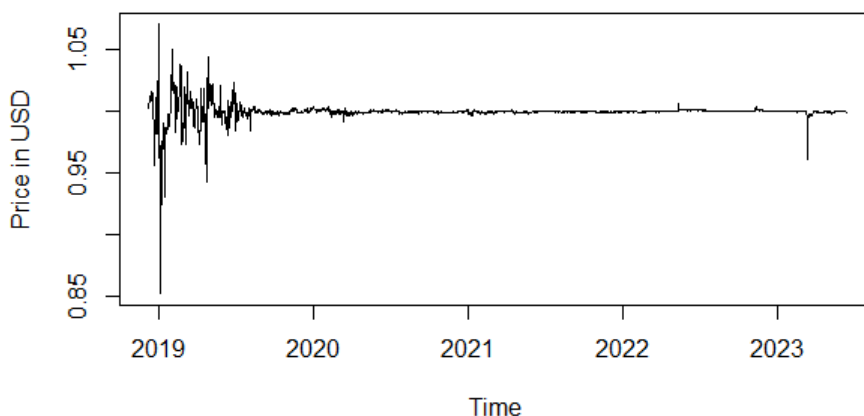


Fig. 5 – U.S. Dollar Coin (USDC) price for the period from December 06, 2018 to June 10, 2023



Fig. 6 – Bitcoin (BTC) price anomaly analysis

devaluation of the US currency. Against this background, institutional investors began to invest in Bitcoin. Also, one of the largest payment systems PayPal in 2020 allowed the use of cryptocurrencies for payments on its platform, which created a significant demand for such payment transactions.

Anomalies in the first half of 2021 are associated with the rapid growth of the Bitcoin price and the setting of monthly records in January-April 2021 (Table 2).

Table 2 – Bitcoin (BTC) price anomaly in January-April 2021

Abnormal periods	Monthly maximum price, 2021	
	Date	Price, \$
23.01.2021–02.02.2021	08.01.2021	40797.67
11.02.2021–22.02.2021	21.02.2021	57539.94
09.03.2021–23.03.2021	13.03.2021	61243.08
26.03.2021–21.04.2021	13.04.2021	63503.46

However, after that, there is a fall in the digital asset to trading in the region of \$48000 (anomalous period 26.04.2021–11.05.2021) with a further fall on 08.06.2021 up to \$33472.63 (abnormal period 19.05.2021–02.06.2021). The anomalous period 19.06.2021–26.07.2021 is characterized by fluctuations in the price of Bitcoin in the range of \$30000 – \$40000.

The fall 2021 anomalies are associated with a new cycle of Bitcoin price growth and the setting of new monthly records in September-November 2021 (Table 3).

Table 3 – Bitcoin (BTC) price anomaly in September-November 2021

Abnormal periods	Monthly maximum price, 2021	
	Date	Price, \$
08.09.2021–14.09.2021	06.09.2021	52633,54
19.09.2021–04.10.2021; 15.10.2021–26.10.2021	20.10.2021	65992,84
28.10.2021–17.11.2021	08.11.2021	67566,83

The Bitcoin exchange rate was affected by restrictions introduced in May 2021 in China. First, there was a ban on banks and payment systems to provide services with cryptocurrencies, and then new bans were introduced for miners and traders, which led to a large-scale exit of miners from the country. The sharp drop in the network hashrate was accompanied by a decline in the price of Bitcoin.

In addition, in 2021, Bitcoin was accepted as legal instrument of payment in El Salvador. Before Bitcoin was supported at the state level for the first time in the world, its value grew, but after the entry into force of the law, the value of the cryptocurrency collapsed.

The anomalous drop in the price of bitcoin at the beginning of 2022 (20.01.2022–03.02.2022) is associated with protests in Kazakhstan (January 2–11, 2022), since Kazakhstan ranks second in the world in Bitcoin mining. Also, the general collapse of the stock market influenced the fall of BTC due to the expectation of strengthening the US monetary policy. In February 2022, the price of Bitcoin rose above \$45,000, then fell again to \$35,000 amid geopolitical deterioration. The turning point occurred on March 22, 2022, when Bitcoin took a bullish course. At the peak on March 29, 2022, the price of the coin reached \$47465.73 for the first time since the beginning of January. This corresponds to the anomalous period from March 27, 2022 to April 5, 2022.

The main reason for the fall in the price of Bitcoin in May-June 2022 is inflation in the United States, which increased to 8.6% in May. Against this background, the Federal Reserve System raised the key rate several times. One of the strongest collapses occurred on June 18, 2022 – to \$19017.64 per coin. These events correspond to the anomaly of the time series, which was observed from June 13 to July 14, 2022.

The application of the anomaly detection method for the Ethereum (ETH) time series revealed 443 outliers, which accounted for 17.06% of the considered data. In Figure 7, anomalous values are marked with red dots.

Consider long-term (a week or more) anomalous periods of the Ethereum (ETH) time series. The rapid rise in the price



Fig. 7 – Ethereum (ETH) price anomaly analysis

of the ETH cryptocurrency at the end of 2017 ended on January 13, 2018 with a maximum exchange rate of \$1380 at that time. This corresponds to the anomalous period of the time series from January 3, 2018 to February 1, 2018. Then the rate began to repeat the movements of bitcoin, which went into a deep peak. The systematic descent to the level of \$378.68 (04.04.2018) corresponds to the anomalous period of the time series from March 24, 2018 to April 11, 2018.

The anomalous period of the time series from December 20, 2020 to January 2, 2021 precedes the price of Ethereum (ETH) again crossing the \$1,000 per coin mark (Jan 4, 2021, \$1,042.4).

In February 2021, the ETH altcoin reached \$2000 (February 21, 2021, \$1933.45), which corresponds to the anomalous period of the time series from February 3 to February 22, 2021. The time series anomaly from March 22 to March 28, 2021 corresponds to ETH price fluctuations from \$1,500 to \$1,700 per Ether.

The catalyst for the Ethereum (ETH) price spike in April 2021 and the local peak on May 11, 2021 (\$4167.78) was an important network update – the developers of the cryptocurrency carried out the Berlin hard fork, which was part of the transition plan to Ethereum 2.0. This corresponds to the anomalous period of the time series from April 26 to May 18, 2021.

The time series anomaly from June 16 to September 3, 2021 corresponds to the ETH price fluctuations from \$2,000 to \$3,000 per Ether, and the time series anomaly from September 20 to October 4, 2021 corresponds to an approach to \$3,500 per Ether.

The Ethereum (ETH) price reached its highest historical value on November 8, 2021 (\$4808.38), which corresponds to the anomaly of the time series from October 28 to November 17, 2021. At the same time, the market capitalization of Ethereum (ETH) for the first time was \$500 billion, which is equivalent to 20% of the total cryptocurrency market.

The anomalous period of the time series from November 19 to November 25, 2021 is characterized by an increase in

the price of the altcoin ETH by almost \$500 per week. The time series anomalies from November 27 to December 9, 2021 are characterized by sharp fluctuations in the price of ETH during this period. The time series anomaly from December 21 to December 27, 2021 precedes the collapse in the value of ETH to \$3080.02 on January 8, 2022.

The reaction of the cryptocurrency market to the US Federal Reserve System meeting in January 2022 affected Ethereum (ETH). In 2022, the following anomalous periods were observed:

- 1) 17.01.2022–04.02.2022;
- 2) 18–27.02.2022;
- 3) 04–15.03.2022;
- 4) 24.03.2022–08.05.2022;
- 5) 11.06.2022–17.07.2022
- 6) 10–18.08.2022;
- 7) 26.10.2022–07.11.2022;
- 8) 28.12.2022–03.01.2023.

Thus, we can conclude that Ethereum (ETH) is more susceptible to market influences than Bitcoin (BTC).

The application of the anomaly detection method for the Tether (USDT) time series revealed 384 abnormal values, which accounted for 17.08% of the considered data. In Figure 8, outliers are marked with red dots.

Consider long-term (a week or more) anomalous periods for the Tether (USDT) time series. The anomaly of the series from April 17 to May 7, 2017 is characterized by the USDT price approaching \$1 per unit of cryptocurrency. The next anomalous period from May 19 to July 12, 2017 is characterized by a stable USDT price near \$1. In the period from September 1 to September 11, 2017, a maximum value of \$1.04 per USDT is reached (September 4, 2017). The anomalous period from December 19 to 25, 2017 is characterized by USDT price less than \$1 (December 20 and 21, 2017). In the period from December 27, 2017 to January 4, 2018, USDT price fluctuates at the level of \$1.01 – \$1.02 per coin. On January 16, 2018, USDT reached the level of \$1.03, after which the cryptocurrency price began to fall (abnormal period from January 16 to

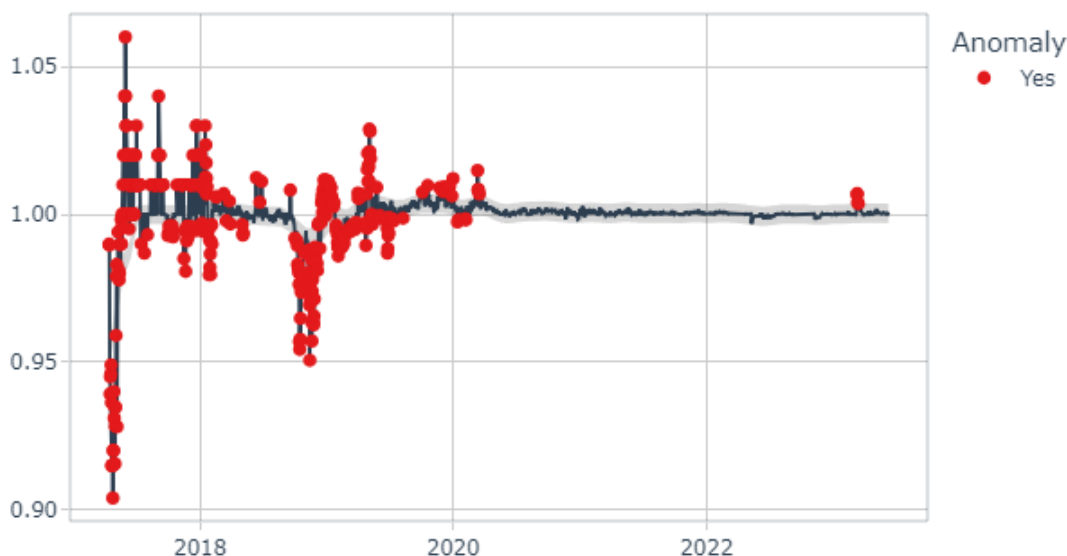


Fig. 8 – Tether (USTD) price anomaly analysis



22, 2018). Abnormal periods, which are characterized by USDT price around \$0.99:

- 1) 27.01.2018–5.02.2018.
- 2) 29.01.2019–22.02.2019.
- 3) 23.03.2019–29.03.2019.
- 4) 23–30.06.2019.

Anomalous periods of the USDT time series, which are characterized by fluctuations of \$0.99 – \$0.97:

- 1) 08–26.10.2018.
- 2) 09–27.11.2018.

Anomalous periods of the time series, which are characterized by the return of the USDT price to the level of more than \$1:

- 1) 17.12.2018p. – 19.01.2019.
- 2) 25.04.2019p. – 08.05.2019.

Since Tether (USDT) is a fiat-pegged stablecoin, there were no significant time series anomalies in 2020–2023. The Tether (USDT) crypto coin was created on the basis of the Omni Layer software protocol, which operates on the basis of the Bitcoin blockchain. Therefore, the stablecoin has a number of disadvantages that are inherent in bitcoin. For example, the authors of the cryptocurrency do not take steps to eliminate problems with the scalability of the crypto network, which in the future may cause a slowdown in the popularization of the asset among users. According to some experts, the need to deposit fiat funds to the account of the crypto network indicates that the anonymity of the participants in the cryptocurrency platform is inadequately ensured. Another disadvantage of Tether (USDT) is the lack of mining capability.

Application of the anomaly detection method for the Binance Coin (BNB) time series revealed 408 anomaly values, which accounted for 20% of the data considered. In Figure 9, anomalous values are marked with red dots.

Consider long-term (a week or more) anomalous periods for the Binance Coin (BNB) time series. Binance Coin (BNB) is the token of one of the largest crypto exchanges Binance and is one of the key elements of the cryptocurrency ecosystem. One of the important features

of this cryptocurrency is that the coin can be used to reduce the commission on the Binance exchange. In addition, BNB is part of the Binance blockchain, which competes with Ethereum. The exchange coin has a higher level of scalability along with lower transaction fees.

The Binance Coin (BNB) time series anomaly from January 22 to February 9, 2021 is characterized by the fact that the price of the cryptocurrency crossed the border of \$100 per coin (09.02.2021, \$107.6). The next anomaly of the time series (February 19–25, 2021) is associated with the local high of \$332.74 per coin on February 19, 2021 and a further decline in its value. During the anomalous period from March 18 to April 5, 2021, the price of Binance Coin (BNB) increased by almost \$100.

The anomalous period from April 9 to June 1, 2021 is associated with an increase in the price of BNB to an all-time high (03.05.2021, \$676.56) and a further fall in the price. Periods that are characterized by new waves of increase in the price of Binance Coin (BNB):

- 1) 08.07.2021–06.08.2021.
- 2) 19.08.2021–06.09.2021.
- 3) 20.09.2021–30.09.2021.
- 4) 29.10.2021–04.12.2021.
- 5) 04.08.2022–17.08.2022.
- 6) 30.10.2022–08.11.2022.

Periods characterized by a decrease in the price of Binance Coin (BNB) less than \$400:

- 1) 20.01.2022–05.02.2022.
- 2) 20.02.2022–27.02.2022.
- 3) 12.04.2022–07.05.2022.

A period characterized by an increase in the price of Binance Coin (BNB) over \$400: 27.03.2022–10.04.2022.

Periods characterized by a decrease in the price of Binance Coin (BNB) less than \$250:

- 1) 12.06.2022–15.07.2022.
- 2) 15.12.2022–07.01.2023.

The state of affairs on the Binance platform directly affects the price of BNB. When the activity of traders on the crypto exchange increases, the demand for Binance

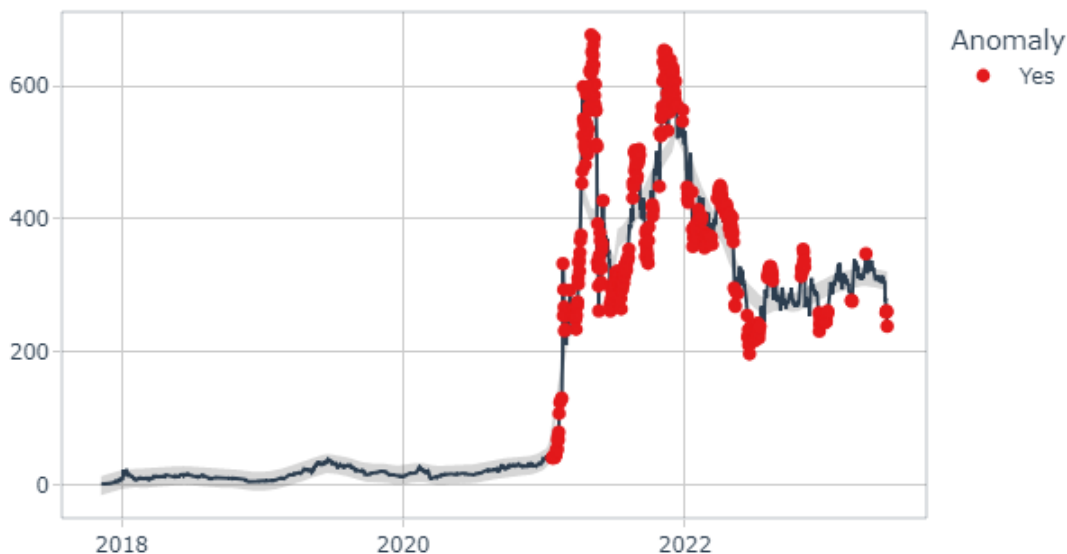


Fig. 9 – Binance Coin (BNB) price anomaly analysis

Coin also increases. Regular announcements related to the crypto exchange also positively affect Binance Coin. For example, the coin rate was influenced by the launch of the Binance Launchpad ICO platform, thanks to which startups were able to enter the market faster. Such projects increase interest in BNB as the scope of the cryptocurrency expands rapidly. Another reason for the rise in the price of BNB is the future burning of tokens. Burning is a process of reducing the number of coins in the public domain, which is usually carried out once a quarter.

The application of the anomaly detection method for the U.S. Dollar Coin (USDC) time series revealed 247 anomalies, which accounted for 14.99% of the considered data. In Figure 10, outliers are marked with red dots.

Consider long-term (a week or more) anomalous periods for the U.S. Dollar Coin (USDC) time series.

Anomalous periods of the USDC time series, which are characterized by price values less than \$1:

- 1) 26.12.2018–20.01.2019.
- 2) 17.02.2019–02.03.2019.
- 3) 21–31.03.2019.
- 4) 02–12.04.2019.
- 5) 20–27.05.2019.
- 6) 05–14.06.2019.

Anomalous periods of the USDC time series, which are characterized by price values over than \$1:

- 1) 06–18.12.2018.
- 2) 29.01.2019–14.02.2019.
- 3) 04–12.03.2019.
- 4) 14.04.2019–10.05.2019.
- 5) 17.06.2019–01.07.2019.

Since the U.S. Dollar Coin (USDC) is a stablecoin, the anomalies of the coin are similar to those of the Tether (USDT) coin. The difference is that USDC runs on the Ethereum blockchain.

### Conclusion

The research revealed unexpected fluctuations in the cryptocurrency market for the top 5 cryptocurrencies by capitalization: Bitcoin (BTC), Ethereum (ETH), Tether (USDT), Binance Coin (BNB), U.S. Dollar Coin (USDC).

The dynamics of time series of prices of selected cryptocurrencies was analyzed. To identify anomalies in the time series of the bool, the R software environment was used, which is designed for statistical processing and data visualization. The anomaly detection method combines the STL decomposition (Seasonal-Trend decomposition using LOESS) and the interquartile range (IQR)  $\pm 2.5$  from the median.

According to the results of the research, it was revealed that Bitcoin (BTC) has the smallest share of anomalies in the total volume of the time series – 12.86%. The largest share of anomalies in the amount of 20% of the total volume of the time series belongs to the Binance Coin (BNB) cryptocurrency, which is explained by the peculiarity of the activity of the Binance crypto exchange.

The periods of time series anomalies for the altcoins Ethereum (ETH) and Binance Coin (BNB) largely repeat the periods of anomalies for the first cryptocurrency Bitcoin (BTC).

Time series anomalies for Tether (USDT) and U.S. Dollar Coin (USDC) stablecoins largely occur in 2018–2019 and are absent in 2020 and beyond. This can be explained by linking these cryptocurrencies to fiat currencies, namely the US dollar. And the presence of a reserve fund ensures the stability of the token exchange rate.

Identification of unusual observations (outliers, anomalies) in the time series of cryptocurrency prices allows you to track the impact of adverse events on the cryptocurrency financial market and correct the socio-economic behavior of digital financial market agents.

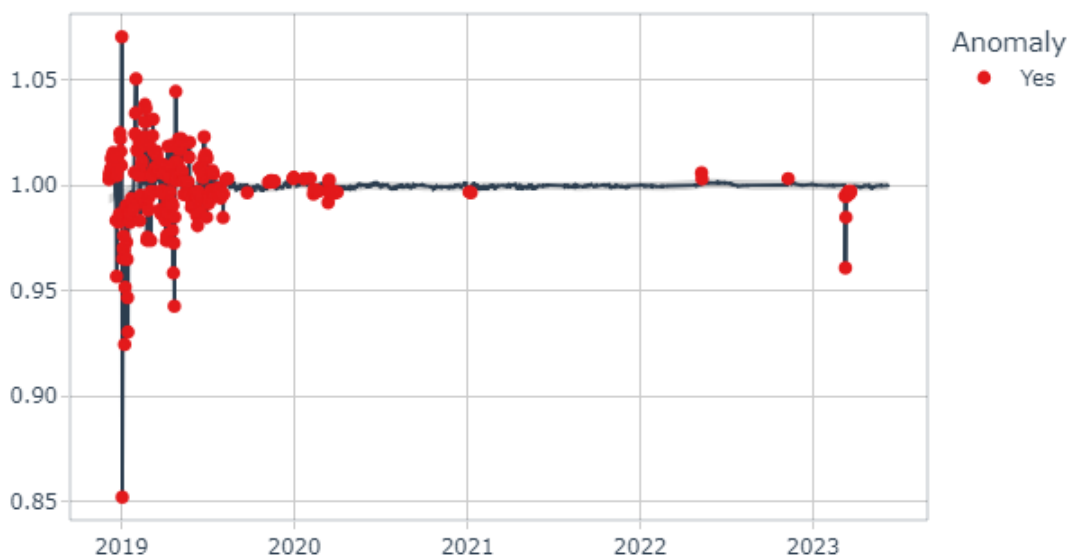


Fig. 10 – U.S. Dollar Coin (USDC) price anomaly analysis

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# NATIONAL ECONOMY'S MARKET MECHANISMS OF ACCOUNTING, ANALYSIS AND AUDIT

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## FEATURES OF CALCULATION AND PAYMENT OF SALARY BY THE BUDGETARY INSTITUTION UNDER THE CONDITIONS OF THE MILITARY STATE

**Varlamova I.S., Duzhych K.P., Rybalko O.M.**

*Zaporizhzhia National University*

*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*

*irina.varlamova.zp@gmail.com; katya.du23@gmail.com*

*ORCID: 0000-0002-9921-3297, 0000-00307571730*

### **Key words:**

wages, wages, deductions,  
payroll, budgetary institutions,  
systematization of accounting  
processes, software product

The article examines the peculiarities of accounting, calculation and payment of wages in a budget institution. The feasibility of developing and implementing a unified system software product for identifying and changing employee personal data, changing the number of employees, calculating wages under martial law and providing high-quality reporting information in the appropriate, legally established forms is substantiated. One of the ways of stimulating employees and modernizing accounting systems is to increase the financing of the corresponding expenditure codes of the budget institution. An analysis of the appropriations of the revenue part was carried out and the amount of expenditure coverage of the corresponding expenditure code was determined. An analysis of the mechanism of financing the stimulating function of the salary of scientific and pedagogical workers and administrative workers was carried out. The organizational mechanism of salary transfer between budgetary institutions, banking institutions and employees of budgetary institutions, as well as documentation and confirmation of calculation and payment of wages, were considered.

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## ОСОБЛИВОСТІ НАРАХУВАННЯ ТА ВИПЛАТИ ЗАРОБІТНОЇ ПЛАТИ БЮДЖЕТНОЮ УСТАНОВОЮ В УМОВАХ ВІЙСЬКОВОГО СТАНУ

**Варламова І.С., Дужич К.П., Рибалко О.М.**

*Запорізький національний університет*

*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### **Ключові слова:**

заробітна плата, оплата праці,  
відрахування,  
нарахування заробітної  
плати, бюджетні установи,  
систематизація облікових  
процесів, програмний продукт

У статті досліджуються особливості обліку, нарахування та виплати заробітної плати в бюджетній установі. Обґрунтовано доцільність розробки та впровадження уніфікованого системного програмного продукту, що ідентифікації та зміни особистих даних працівника, зміни кількості працюючих, нарахування заробітної плати в умовах військового стану та надання якісної звітної інформації у відповідних, законодавчо закріплених формах. Одним з напрямків стимулювання працівників та модернізації систем бухгалтерського обліку є збільшення фінансування відповідних кодів видатку бюджетної установи. Проведено аналіз асигнувань дохідної частини та визначено розмір покриття видатків відповідного коду видатку. Проведено аналіз механізму фінансування стимулюючої функції заробітної плати науково-педагогічних працівників та адміністративних працівників. Розглянуто організаційний механізм перерахування заробітної плати між бюджетними установами, банківськими установами та працівниками бюджетних установ, а також документування та підтвердження нарахування та виплати заробітної плати.

**Formulation of the problem**

The organization of wage accounting is quite relevant not only for budget organizations in Ukraine, because the functioning of any enterprise is not possible without the use of hired labor, which requires appropriate compensation. However, accounting and payroll requires a large burden on the employees of the relevant structural unit, due to the large array of primary information and the speed of changes in relation to changes in the employee’s personal data and legislative changes in accordance with the requirements of martial law.

The problems of the organization of document circulation, their processing and systematization of accounting registers, the lack of a single software product, regarding primary accounting and reporting do not make it possible to qualitatively and quickly carry out the accounting processes of the corresponding area of work.

**Analysis of latest research and publications**

The theoretical and methodological basis of writing the qualification work is made up of legislative and regulatory acts related to accounting, taxation and analysis of wages and benefits to employees, the work of such scientists as: V.F. Andrienko, A.V. Basiluk, D.P. Boginya, T.F. Plakhtiy, V.V. Kalashnyk, F.F. Butynets, A.S. Galchynskiy, T. Gul, N.Yu. Mardus, V.V. Krygina, V. Koshyk, T.I. Karpenko, N. Vorona, N. Bilova, N. Chernyshova and others.

The vast majority of modern domestic scientists, who devote their work to the accounting and analytical aspects of wages, choose as the subject of their research questions related to the organization and methodology of accounting for wages of budget institutions. For example, T.F. Plakhtiy considers wage accounting models and methods of improving such calculations. M.M. Demchenko examines the issue of calculating wages and taxation of financial incentives for employees.

Highly appreciating the scientific contribution of the named scientists, it should be noted that the outlined problematic issues require further intensification of research on the adaptation of existing principles and goals of accounting to the needs of effective and rational use of budget allocations in relation to the provision of salaries of budget institutions. Therefore, the primary task of the research on this topic is to achieve an understanding of budgetary institutions of the essence of guaranteed payments to employees in compliance with the

requirements of regulatory and legal acts, in accordance with the requirements of wartime.

**Formulation of the purposes of the article**

The purpose of the article is to study the issues of organization of accounting for payroll calculations in budgetary institutions and payment of wages, systematization and automation of the process of processing, accrual, payment of wages, development of certain proposals for improving the accounting mechanism for accounting for labor payments, taking into account national standards in wartime conditions.

**Outline of the main material of the research**

At every enterprise, payroll accounting plays an important role in the accounting process of the enterprise, and budgetary institutions are no exception. Regulation of relations between an employee and an employer is a strategic direction of the enterprise’s economic and social responsibility. Calculation and payment of wages, their timeliness and completeness, especially in wartime conditions, ensure economic and social stability in society and support the economy of our country.

Salary payments and financial incentives to employees of budgetary institutions are the main tool of social protection, which are provided by the state through managers of funds of the appropriate level to finance code 1011. Based on the conditions of martial law, funding of budgetary institutions is reduced due to a reduction in revenues to the state budget. In accordance with the new conditions, allocations to budgetary institutions are being reduced and estimates of budgetary institutions are being adjusted. In accordance with the changes in the economic and social condition of the country, the policy in the field of wages and sources of funding of budget institutions in terms of wages also changes significantly.

The definition of “salary” includes all types of payments: regular salaries, bonuses, additional payments, allowances, annual vacations, holidays and others, calculated in cash, regardless of the sources of funding. Taking into account the large number of accounting processes, the processing of a large amount of information about employees (recruitment, change of staff rosters, change of personal information of the employee) at enterprises of the budget sector, there was a need to introduce accounting software products (Fig. 1).

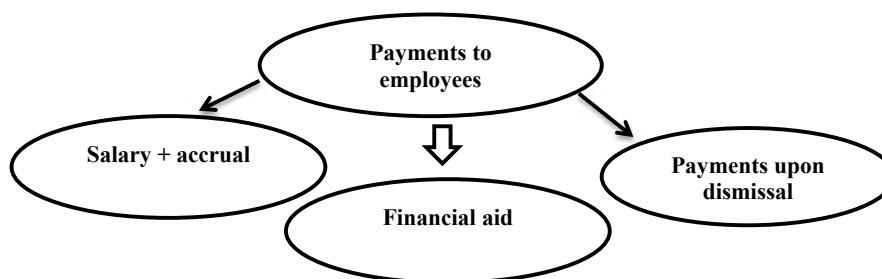


Figure 1 – Composition of employee benefits

Source: Built on the basis of information [1]

Automation of processing of accounting and economic information is a factor in improving the quality of accounting of wages of a budgetary institution, systematization of data and prompt management decision-making in accordance with the use of the wage fund.

Taking into account the fact that the lion’s share of payments falls on wages, its accounting is one of the main components of the accounting process. The organization of the accounting and salary payment process of the budgetary institution must meet the following requirements: proper registration of the received information for each employee; error-free calculation of wages and carrying out appropriate deductions; timely and full transfer of wages to the employee’s payment cards; reliable preparation and submission of reports on calculation, maintenance and payment of wages.

In a budgetary institution, the object of remuneration and the financing mechanism has a number of features.

Among the main ones we include:

- the object of work is the provision of informational, managerial and educational services that require mental activity from employees;
- financing of wages is carried out mainly in the form of budget allocations from the state or local budget;
- in the budgetary sphere, expenditure code 1110 is protected, i. e. subject to mandatory financing. However, due to the state of war, the financing of budgetary institutions has decreased, so the organizations of the budgetary sphere supplement their expenses from a special fund.

Currently, in the accounting process of wages, there are many problems related to the military situation in Ukraine, namely, underfunding of budget institutions; changes in the form of providing educational services; adjusted labor relations regarding vacations; accounting of territorial location of employees, etc. For the high-quality implementation of payroll records, it is necessary to establish the timely entry of this information into the accounting registers, which in turn requires significant (extraordinary) time spent by employees of the accounting and reporting department in the conditions of saving the wage fund, due to underfunding from the budget.

In order to overcome such a stalemate, it is necessary to consider the issue of introducing improved software modules for accounting for labor remuneration.

There is no doubt that the main advantages of the computerized form of accounting organization are:

- clear systematization of accounting registers, the ability to quickly and qualitatively change the forms of internal accounting to take into account legislative changes in accordance with the conditions of wartime;
- accumulation and multiple use of account data; one synthetic account – many analytical accounts (the number of analytical accounting accounts depends on the goals

set by management before accounting, and is not limited to anything);

- automatic receipt of information about deviations from established norms, standards, tasks, etc.;
- receiving reporting indicators in interactive mode; automatic formation of all accounting registers and reporting forms based on the data displayed in the account system [2].

For the Zaporizhia National University (ZNU), it is advisable to develop software for calculating wages, which combines salary and hourly forms of payment. Since the calculation department of ZNU calculates wages for employees of the university and the Economic and Legal College of ZNU, the Trade College of ZNU, the Hydropower College of ZNU, the Metallurgical College of ZNU where different calculation rules apply. In addition to the main employees, part-time workers, both external and internal, work at the university. Therefore, for a convenient calculation, it is necessary to take into account all the places of work of the employee in order to reliably reflect the accrued wages and withheld taxes from wages in the reporting.

The introduction of a single software product will allow to shorten the processing time of the primary information from the accounting of salaries, the accruals of bodies, would allow to increase the efficiency of the employees of the accounting department, prevent the occurrence of errors and the display of relevant operations in remote mode, and would not expose the accounting employees to danger during the announcement of air anxiety. However, it is impossible to transfer accounting transactions only to electronic format due to regulatory requirements regarding the preservation of primary documentation and the lack of sufficient funding from the state.

The most important task in solving the issue of automation of information processing in budget institutions is the creation of a single software product that will systematize accounting procedures and provide an opportunity for cross-sectional analysis in relevant industries at the level of the entire country [3].

An analysis of the financing of a budget institution allows us to conclude that the amount of appropriations received by the institution to cover its expenses does not exceed 80% (Table 1).

In conditions of insufficient financing of budget institutions by the main managers of budget funds, it becomes impossible to perform the stimulating function of wages at the expense of budget funds. Given the peculiarities of accounting processes, incentive payments are optional payments and cannot be taken into account for increasing funding during the formation and approval of the budget of institutions for the next year.

Another feature of the calculation of material incentives is payment for rehabilitation, which scientific and

Table 1 – Expenditure coverage ratio by revenue part in ZNU for 2020-2021 (based on ZNU estimate data)

No.		2020	2021
1	Receipt of funds from the general fund of the budget	80%	88%
2	Receipt of funds from the special fund of the budget	20%	12%
Together		100%	100%

pedagogical workers of educational, cultural, and health care institutions receive in a mandatory manner. However, this payment does not apply to administrative employees of accounting services as a mandatory payment. According to the decision of the head of the budgetary institution, this payment can be used as an element of stimulation of individual divisions [4]. In the conditions of martial law, as part of the financing of budgetary institutions, it is impossible to save money under expenditure code 1110, therefore, the payment of material assistance in the amount of the official salary is impossible.

Salary payments are made regularly on banking days and the terms established by the Collective Agreement, agreed with the elected body of the primary trade union organization, but not less than twice a month after a period of time, the exception is vacation at one's own expense, the terms of which are regulated by the Law of Ukraine "On the Organization of Labor Relations in the conditions of martial law" [5].

Wages are paid in 2 stages:

Stage 1 – advance payments in the amounts established in the Collective Agreement.

Stage 2 – payments consist of the difference between the actual accrued wages, advance payments and wage accruals.

Primary documents drawn up in electronic form are used in accounting, subject to compliance with the requirements of the legislation on electronic documents and electronic document management. ZNU works on a non-cash form of salary calculation. On the basis of the contract signed between ZNU and the bank on the maintenance of the salary project, the institution forms a payment statement in

the installed software. Today ZNU works with two banks "PrivatBank" and "Ukrsibbank".

Since there is no standard form of payment information, each banking institution develops and approves it for its customers. In accordance with this information, the responsible employee checks the availability of funds in the client's current account and transfers the accrued wages to the employees' current card accounts [6].

After carrying out the relevant operations, the responsible employee certifies the crediting of funds to card accounts with the appropriate bank mark. The final stage for the budget institution is to receive a statement confirming the transfer of wages to employees.

### Conclusion

Having studied the main issues of organization, conducting accounting operations for accrual, basic and incentive parts of wages in a budget institution, we came to conclusions about: inefficient use of human resources, due to the large amount of information processed manually; lack of 100% financing of certain parts of budget institution expenditure codes; the impossibility of making changes to the estimate in terms of motivating employees with a material factor; lack of a unified form of client-bank payment information; lack of a single software product for primary information processing and reporting; lack of a balanced system for making changes to personal information.

The introduction of a single software product will increase the efficiency of the accounting department, reduce information processing time, and prevent "mechanical" errors in the process of calculation and payment of wages.

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## FEATURES OF THE METHOD OF FORMATION AND ACCOUNTING OF FINANCIAL RESULTS ON TDV “ZAPORIZK BREAD FACTORY № 1”

**Goncharova V.G., Stativka A.A.**

*Zaporizhzhia National University*

*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*

*vika-znu72@ukr.net, saenkohelen3@gmail.com*

ORCID: 0000-0003-4860-0964, 0000-0001-8979-9354

### Key words:

fixed assets, efficiency of use, material assets, accounting, analysis, agriculture, management

The article examines the methodology for the formation of financial results in accordance with the various examples of the activity of the Zaporizky Bread Combination No. 1 TDV. It has been proven that the basis of financial and economic development, as well as the stability of the enterprise in conditions of competition, is the preservation of financial independence, which is ensured by a positive financial result – profit. It was concluded that in order to make effective management decisions, reliable information about the results of activities is needed, formed taking into account the specifics of enterprise management and their organizational structure. An account of the financial results of activity, as well as their distribution and write-off, is provided. An example is given at the TDV enterprise “Zaporizky Hlibokombinat No. 1”, which, during the implementation of economic activity, carries out operational, financial, investment activities, and economic operations. The practical examples of accounting for operational, financial, and investment activities presented in the article should be useful for domestic enterprises, the purpose of which is to provide reliable, truthful information to their owners.

## ОСОБЛИВОСТІ МЕТОДИКИ ФОРМУВАННЯ ТА ОБЛІКУ ФІНАНСОВИХ РЕЗУЛЬТАТІВ НА ТДВ «ЗАПОРІЗЬКИЙ ХЛІБОКОМБІНАТ № 1»

**Гончарова В.Г., Статівка О.А.**

*Запорізький національний університет*

*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### Ключові слова:

основні засоби, ефективність використання, матеріальні активи, облік, аналіз, сільське господарство, управління

У статті розглянуто методологію формування фінансових результатів відповідно із різними наведеними прикладами діяльності ТДВ «Запорізький хлібокомбінат № 1». Доведено, що основою фінансово-економічного розвитку, а також стабільності підприємства в умовах конкуренції є збереження фінансової незалежності, яка забезпечується позитивним фінансовим результатом – прибутком. Зроблено висновок, що для прийняття ефективних управлінських рішень необхідна достовірна інформація про результати діяльності, сформована з урахуванням специфіки господарювання підприємств та їх організаційної структури. Наведено облік фінансових результатів діяльності, а також їх розподілом і списанням. Наведено приклад на підприємстві ТДВ «Запорізький хлібокомбінат № 1», яке під час здійснення господарської діяльності здійснює операційну, фінансову, інвестиційну діяльність, господарські операції. Наведені у статті практичні приклади ведення бухгалтерського обліку операційної та фінансової діяльності мають бути корисними для вітчизняних підприємств, метою яких є надання достовірної, правдивої інформації своїм власникам.

### Statement of the problem

A characteristic feature of the modern development of the economy of Ukraine is global economic changes in the sphere of production based on market relations.

Market relations require a review of the accounting and auditing system, one of the central elements of which is the calculation and control of income, expenses and financial results [3]. The main goal of the company in market conditions is to achieve maximum profit at minimum



costs while improving the quality of customer service. It is important that the basis of financial and economic development, as well as the stability of the enterprise in conditions of competition, is the preservation of financial independence, which is ensured by a positive financial result – profit.

In order to make effective management decisions, reliable information about the results of activities, formed taking into account the specifics of the management of enterprises and their organizational structure, is necessary.

First of all, it concerns objective information about expenses and income as components of the financial result. In the process of reforming the accounting system in Ukraine, the methodological principles of formation, calculations and reporting of financial results for the reporting period, focused on the conceptual principles and principles of recognition of income and expenses, underwent significant changes [2]. However, this did not ensure the creation of a coherent system for the formation of financial performance indicators and their inclusion in financial reporting. Despite the fact that the principles, organization and methodology of accounting, the procedure for forming the accounting policy of Ukrainian enterprises comply with international financial reporting standards, there are still a number of contradictions in individual concepts of the approach to their recognition. Therefore, there is an urgent need for research and the formation of methodical approaches to the determination of financial results in the accounting system.

#### **Analysis of recent studies and publications**

The problems of accounting for financial results at enterprises are thoroughly researched in the works of well-known domestic scientists, in particular: I.O. Bely, F.F. Butynets, S.F. Holov, M. Ya. Demyanenko, V.M. Zhuk, H.G. Kireitsev, M.I. Kovalchuk, M.V. Kuzhelnii, L.I. Lavrinenko, Yu.Ya. Lytvyn, O.V. Lyshilenko, E.V. Mnykh, V.B. Mossakovskii, V.G. Linnyk, V.V. Sopko, L.K. Suk, P.T. Sabluk, N.M. Tkachenko, L.S. Shatkovska, V.O. Shevchuk, V.P. Yarmolenko and others.

Leading scientists have made a significant contribution to the development of accounting, but many problems remain unsolved, since the formation of the regulatory framework of accounting and reporting and the theoretical justification of these processes are at the stage of creation and development. At the same time, issues of accounting for financial results remain unclear, where there is an inconsistency of financial, management and tax accounting at the enterprise level.

Therefore, objectively, there is a need for further research and studies of issues of organization and methods of calculations based on financial results.

#### **Objectives of the article**

The purpose of the article is to provide a recommendation on the methodology and organization of accounting for the financial results of the activities of domestic enterprises using a practical example.

#### **The main material of the research**

The accounting cycle of economic activity at the enterprise ends with the accounting of the financial results of the activity, as well as their distribution and write-off. The importance of this area of accounting and its role increase significantly in the conditions of market relations and in the establishment of an environment of free competition. The management staff of the enterprise must carefully study the current needs of the market in order to plan the nomenclature, assortment and production volumes of products, taking into account their own capacities.

The tasks of accounting of the financial results of the enterprise are:

- determination of general and partial quantitative and qualitative parameters of profits or losses;
- preparation of data for the preparation of various types of reporting (financial, tax and statistical);
- formation of an information base for the implementation of the process of profit distribution and operations regarding tax settlements with the budget, as well as dividends with shareholders and founders;
- formation of equity reserves, etc.

Account 79 “Financial results” is used to record the results of the business entity’s activities by closing the relevant income and expense accounts [6]. According to its properties and structure, this account belongs to operational result accounts. These accounts are intended to determine the results of the economic activity of the business entity by comparing gross income with gross expenses and accordingly determine the result – profit or loss.

The credit of this account accounts for the amounts due to the fact of closing the income accounting accounts, and the debit accounts for the amounts due to the fact of closing the expense accounting accounts and the corresponding amount of accrued income tax. By comparing these amounts, it is possible to calculate the financial result of both economic activity in general and operational, financial and investment activities separately.

The net financial result after taxation is credited to account 44 “Retained earnings (uncovered losses)”. “This account is passive, i. e. its credit shows profit and its increase from all types of activities, and its debit shows losses and use of profit” [1].

In order to distinguish income and expenses from different types of activities, the working Chart of Accounts provides corresponding related sub-accounts. “In particular, the income and expenses of the business entity from the sale of finished products are recorded in separate subaccounts to accounts 70 “Revenues from sale”, 90 “Cost of sale”, 79 “Financial results” [2].

Account 70 “Revenue from sales “for” separation of income from the main activity” has sub-accounts: 701 “Income from the sale of finished products”, 702 “Income from the sale of goods”, 703 “Income from the sale of works and services”, 704 “Deduction from income” [3].

Account 90 “Cost of sales” for “allocation of costs for the main activity has sub-accounts: 901 “Cost of sold finished products”, 902 “Cost of sold goods”, 903 “Cost of sold works and services”.

Account 79 “Financial results” for distinguishing financial results from various types of activities in accounting has sub-accounts 791 “Financial result from main activity”, 792 “Financial result from financial operations”, 793 “Financial result from other ordinary activities”.

The display on the accounts of synthetic accounting during the year, respectively, by crediting income accounts and debiting expense accounts, is carried out in the correspondence of accounts, which is specified for each account in the Instructions for the Application of the Plan of Accounting Accounts. Also, in accounting, costs are divided into constant and variable, as well as mixed [1].

It should be noted that a large number of expenses, in particular, expenses for electricity, wages, belong to mixed expenses. “That is, they include both fixed and variable costs” [2].

In accordance with the Plan of Accounting Accounts and the Instructions for the Application of the Plan of Accounting Accounts in order to reflect in the accounting the financial results of the main activity of the economic entity from the sale of finished products and the performance of works for the reporting year, prepares the final accounting transactions.

In the course of economic activity, the enterprise may carry out operational, financial, investment activities, economic transactions for which are accounted for accordingly [5].

The main examples of operational activities carried out by, include:

- sale of finished products;
- providing (taking) non-current assets for rent;
- sale of fixed assets by transferring them to the composition of assets for sale.

So, the first group includes the sale of finished products. Let’s consider a practical example of the implementation of operational activities at the ZAPORIZKY HLIBOKOMBINAT № 1 SLC.

During the month, the company received products in its warehouse, the actual production cost of which is UAH 9.999.450.00.

In the same month, products worth UAH 12.090.650.00 were sold (including VAT – UAH 2.015.108.33). The cost of implementation is UAH 11.540.685.00 and consists of:

- production cost of sold products UAH 6.956.632.00;
- undistributed permanent general production costs in the amount of UAH 584.053.00 (Table 1).

The second group includes the provision of premises for operational lease. ZAPORIZKY HLIBOKOMBINAT № 1 SLC leases premises worth UAH 11.000,000.00 with a monthly rent of UAH 50.500.00 (including VAT – UAH 8.416.67).

At the same time, for example, according to the agreement of the parties, ZAPORIZKY HLIBOKOMBINAT № 1 SLC independently bears the costs of paying for communal services for the leased object, which, according to the results of the current month, amounted to UAH 13.600.00 (including VAT 20% – UAH 2.266.67).

It should be noted that for enterprise “X” the provision of real estate for rent is a non-core type of activity (Table 2).

For example, ZAPORIZKY HLIBOKOMBINAT № 1 SLC has operations for the sale of non-current assets. The machine was transferred from:

- with a residual value of UAH 127.300.00;
- amount of accumulated wear and tear – UAH 98.500.00;
- to non-current assets held for sale.

During the year, the net sales value of the machine first decreased to UAH 103.960.00, and then increased to UAH 105.650.00.

The machine was sold for UAH 169.000.00 (including VAT – UAH 28.166.67) (Table 3).

The main stages of accounting for financial results are:

- accounting of the company’s income and expenses from operational, financial and investment activities on accounts of the 7th and 9th class of accounts of the working Plan of accounts of the company;
- formation of the financial result of the enterprise on account 79 “Financial results”;
- calculation of income tax;
- transfer of the net financial result – profit or loss – to account 44 “Retained earnings (uncovered losses)”;
- distribution and use of profit.

Table 1 – Accounting procedures for determining the financial result from operational activities (realization of finished products) of the ZAPORIZKY HLIBOKOMBINAT № 1 SLC

#	The content of the business transaction	Correspondence of accounts		Amount, UAH
		Dt	Kt	
1	Receipts of finished products into the warehouse are shown at the actual production cost	26	23	9.999.450.00
2	Income from the sale of finished products is shown	361	701	12.090.650.00
3	Tax liabilities from VAT are displayed	701	641/ VAT	2.015.108.33
4	The production cost of products sold in the reporting month is written off	901	26	6.956.632.00
5	Undistributed permanent general production costs are written off to the cost of realization	901	91	584.053.00
	Credited to the financial result:			
6	– income from the sale of finished products	701	791	10.075.541.67
	– cost of goods sold	791	901	7.540.685.00
7	A profit has been made	–	–	2.534.856.67

Table 2 – Accounting procedures for determining the financial result from operational activities (rental of premises)

#	The content of the business transaction	Correspondence of accounts		Amount, UAH
		Dt	Kt	
1	Rent received in advance for the current month	311	681	50.500.00
2	The amount of tax liabilities from VAT is reflected as part of the value of the rent received	643	641/ VAT	84.16.67
3	The amount of income from renting out the premises is displayed	361	713	50.500.00
4	The previously reflected amount of VAT tax liability is written off	713	643	8.416.67
5	Debt settlement was carried out	681	361	50.500.00
6	The payment of utility services related to the premises provided for rent is reflected	949	631	13.600.00
7	The amount of VAT is displayed	644	631	2.266.67
8	The cost of the services of third-party organizations received in connection with the provision of the premises for rent has been paid	631	311	5.680.0
9	Credited to the financial result:			
	– income from operational lease of the warehouse	713	791	42.083.33
	– expenses related to the operational lease of the warehouse	791	949	13.600.00
10	A profit has been made	–	–	28.483.33

Table 3 – Accounting procedures for determining the financial result from operating activities (realization of a non-current asset for sale)

#	The content of the business transaction	Correspondence of accounts		Amount, UAH
		Dt	Kt	
1	The amount of accumulated wear and tear is written off	131	104	98.500.00
2	The FA object was transferred to the composition of non-current assets held for sale	286	104	127.300.00
3	The value of the object was reduced due to a decrease in the net realizable value (103,960.00 UAH - 127,300.00 UAH)	946	286	23.340.00
4	The value of the object was increased due to the increase in the net sales value (105,650.00 UAH - 103,960.00 UAH)	286	719	1.690.00
5	Received advance payment for the machine	311	681	169.000.0
6	Tax liabilities from VAT are displayed	643	641/ПДВ	28.166.67
7	The machine was sent to the buyer	377	712	169.000.0
8	The previously reflected VAT tax liability is written off	712	643	28.166.67
9	The cost of the object is written off	943	286	105.650.00
10	Debt settlement was carried out	681	377	169.000.0
11	Assigned to the financial result:			
	– the amount of income from the sale of the property	712	791	140.833.33
	– the cost price of the sold property	791	943	105.650.00
	– expenses from a decrease in the value of the object of the FA in connection with a decrease in the net sales value	791	946	23.340.00
	– income from the increase in the value of the property of the health care facility in connection with the increase in the net realizable value	719	791	1.690.00
12	A profit has been made	–	–	10.153.30

After carrying out accounting transactions, the profit before taxation is determined on account 79 “Financial results”. After that, the amount of income tax is calculated:

- Dt 98 “Income tax” Ct 641 “Tax settlements”;
- Dt 79 “Financial results” Kt 98 “Income tax”.

Based on the results of calculating the income tax at the rate of 18%, the company determines the net financial result, which is debited from account 79 “Financial results” by the final accounting entry:

- Dt 79 “Financial results” Kt 441 “Retained earnings” – for the amount of net financial result – profit;
- Dt 442 “Uncovered losses” Ct 79 “Financial results” – for the amount of the net financial result – loss.

Let's consider the example of ZAPORIZKY HLIBOKOMBINAT № 1 SLC, which receives loans in its economic activity (Table 4).

Since November 5, 2020 a loan for the purchase of equipment in the amount of UAH 5.000.000.00 has been held in the bank for a period of 1 year. Interest for using a loan of 100.000.00 UAH were paid a month later (December 5, 2022).

The loan was repaid on 12/05/2022. The equipment purchased with loan funds does not meet the criteria of a qualifying asset, therefore interest on the loan is not capitalized, but is included in the expenses of the period.

Table 4 – Accounting procedures for determining the financial result from financial activities (obtaining a loan)

#	The content of the business transaction	Correspondence of accounts		Amount, UAH
		Dt	Kt	
1	Received a short-term bank loan	311	601	5.000.000.00
2	Interest has been accrued and paid for the month of loan use	951	684	100.000.00
		792	951	
		684	311	
3	A short-term bank loan has been repaid	601	311	416.666.67

### Conclusions

The system of accounting for financial results is a necessary and important part of the functioning of domestic enterprises. The accounting cycle of economic activity at the enterprise ends with the accounting of the financial results of the activity, as well as their distribution and write-off. The value of this area of accounting and its role increase significantly in the conditions of market relations and in the establishment of an environment of free competition [8].

Account 79 “Financial results” is used to record the results of the business entity’s activities by closing the relevant income and expense accounts. According

to its properties and structure, this account belongs to operational-result accounts.

The article examines the methodology for the formation of financial results in accordance with the various examples of the activity of the ZAPORIZKY HLIBOKOMBINAT № 1 SLC. After carrying out accounting transactions, the profit before taxation is determined on account 79 “Financial results”. After that, the amount of income tax is calculated.

The practical examples of accounting for operational and financial activities presented in the article should be useful for domestic enterprises, the purpose of which is to provide reliable, truthful information to their owners.

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DOI <https://doi.org/10.26661/2414-0287-2023-2-58-09>**TAX PLANNING IN THE SYSTEM OF MANAGEMENT OF FINANCIAL AND ECONOMIC ACTIVITIES OF INDUSTRIAL ENTERPRISES****Saienko O.R., Somchenko V.V., Borsuk E.V., Koziriev V.O.***Zaporizhzhia National University**Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66**vika\_znu72@ukr.net*

ORCID: 0000-0001-8979-9354, 0000-0003-4860-0964

**Key words:**

tax planning, tax minimization, industrial enterprises, management, financial and economic activities, methods, tools, profitability

The article is devoted to the study of the place of tax planning in the system of management of financial and economic activities of industrial enterprises. The author considers the essence and procedure of planning the overall development of an industrial enterprise. The plan is a quantitative expression of goals and development of directions for their achievement, which should ensure the sustainability of the enterprise and its competitiveness. Effective operation of an enterprise cannot be ensured without a planning mechanism. The article substantiates tax planning as a component in the system of management of financial and economic activity. The theoretical and organizational aspects of tax planning at industrial enterprises are studied, the essence, purpose, tasks of tax planning are considered, and the forecasting of the main indicators of financial and economic activity is assessed, taking into account the impact of tax policy. It is determined that tax planning at an enterprise is a system of measures aimed at maximizing the use of current legislation to minimize tax liabilities to the budget. A mechanism for planning the activities of an industrial enterprise with regard to tax planning is proposed. The necessity of using tax planning for domestic industrial enterprises is substantiated. Tax planning is based on compliance with the current tax legislation. The author analyzes the stages of tax planning and the need for its application in order to make informed management decisions and optimize the results of the enterprise.

**ПОДАТКОВЕ ПЛАНУВАННЯ В СИСТЕМІ УПРАВЛІННЯ ФІНАНСОВО-ЕКОНОМІЧНОЮ ДІЯЛЬНІСТЮ ПРОМИСЛОВИХ ПІДПРИЄМСТВ****Саєнко О.Р., Сьомченко В.В., Борсук Є.В., Козирєв В.О.***Запорізький національний університет**Україна, 69600, м. Запоріжжя, вул. Жуковського, 66***Ключові слова:**

податкове планування, мінімізація податків, промислові підприємства, управління, фінансово-економічна діяльність, методи, інструменти, прибутковість

Стаття присвячена вивченню місця податкового планування в системі управління фінансово-господарською діяльністю промислових підприємств. Розглянуто сутність та порядок планування загального розвитку промислового підприємства. План є це кількісним виразом цілей та розробкою напрямів їхнього досягнення, які повинні забезпечити стійкість діяльності підприємства і його конкурентоспроможність. Ефективна діяльність підприємства не може бути забезпечена без механізму планування. Обґрунтовано податкове планування як складову в системі управління фінансово-економічною діяльністю. Досліджено теоретичні і організаційні аспекти податкового планування на підприємствах промисловості, розглянуто сутність, мету, завдання податкового планування та надана оцінка прогнозування основних показників фінансово-економічної діяльності з урахуванням впливу податкової політики. Визначено, що податкове планування на підприємстві є системною заходом, що спрямовано на максимальне використання можливостей чинного законодавства для мінімізації податкових зобов'язань перед бюджетом. Запропоновано механізм планування діяльності промислового підприємства з урахуванням податкового планування. Обґрунтовано необхідність використання податкового планування для вітчизняних промислових підприємств. Податкове планування базується на дотриманні чинного податкового законодавства. Проаналізовано етапи податкового планування та необхідність його застосування з метою прийняття обґрунтованих управлінських рішень та оптимізації результатів діяльності підприємства.

### Formulation of the problem

Tax planning is an integral part of financial and business activities at industrial enterprises. The purpose of tax planning is to rationalize business activities based on the current tax legislation and the strategic plan for the economic development of the enterprise. Tax planning helps domestic enterprises to ensure normal operation in an unstable social and economic environment. Forecasting tax payments, assessing the factors influencing the level of taxation, analyzing the results of economic activity and determining the level of tax burden allow an industrial enterprise to choose the best option for conducting financial and economic activities in compliance with the current legislation.

Tax planning allows the company's management to make informed management decisions, helps to avoid difficult financial circumstances, improves coordination of work and promotes the appropriate use of financial resources.

### Analysis of recent research and publications

The theoretical and practical aspects of tax planning at enterprises are reflected in the works of many Ukrainian scholars, such as I. Blank, O. Vasylyk, V. Vyshnevsky, O. Galushko, V. Heets, A. Zagorodnyi, S. Dziuba, A. Yelisieiev, A. Kizima, M. Chumachenko, etc.

However, the study of tax planning as a component of the system of management of financial and economic activities of enterprises is relevant, and the methodology of tax planning needs to be systematized and adapted to modern enterprises and the economic climate.

### Formulation of the goals of the article

The purpose of the article is to study approaches to the organization of tax planning at industrial enterprises and to determine the mechanism for forecasting the main indicators of financial and economic activity of enterprises with due regard for the impact of tax policy.

### Presenting main material

Sustainable operation of an enterprise and its further prosperity in a market economy are possible only if it has a developed system of internal corporate planning, including tax planning. It allows you to predict changes in market conditions, establish the optimal volume of production and consumption of resources, and determine the amount of net profit.

The plans formed at the enterprise are subject to close monitoring during their implementation and after the end of the planning period. This is the most important condition for ensuring the high efficiency of the planning system. At the same time, the operational assessment made in the course of plan implementation is of particular importance. Prompt response to deviations from the planned indicators contributes to a significant increase in the efficiency of managing the business entity's activities.

In our opinion, planning of the main indicators taking into account the impact of tax planning on the performance of industrial enterprises is intended to fulfill the following tasks:

- to substantiate the main parameters of planning the overall development of the enterprise on the basis of taking into account all indicators of economic and social development;
- assess the financial condition and balance of the enterprise's resources;
- assess the procedure for establishing relations between the company and the tax authorities;
- control the use of material, human and financial resources.

Industrial enterprises independently plan their activities based on actual performance indicators for the previous reporting periods. The main issue in the planning process is the amount of demand for the products of production, which is calculated in accordance with the concluded contracts for the supply of products. The main purpose of internal corporate planning is to obtain the most optimal opportunities for conducting business activities, obtaining sufficient resources to implement the plan and, ultimately, to increase the company's profit [1].

The plan allows the company's management to determine the reality of the goals set and assess the positive and negative factors affecting its implementation. On the basis of the developed plan, it is possible to determine:

- the amount of cash that the company needs to have to fulfill the task;
- the main sources of cash flow;
- the level of resources required to fulfill the planned tasks;
- the amount of funds to be transferred to the budget, creditors, insurance companies;
- the procedure for profit distribution;
- the balance of income with the company's expenses.

Thus, tax planning is a component of the system of management of financial and economic activities of industrial enterprises, which is determined by active actions of business entities to reduce tax payments or distribute them over time from the standpoint of their own needs [2].

In foreign economic reference books, the most well-known definition of tax planning is as follows: "tax planning is a logical analysis of the financial situation or a plan of tax prospects for achieving financial goals by planning tax payments" [3].

In the domestic literature, tax planning is most often understood as an integral part of financial and economic activities aimed at maximizing profitability by minimizing taxes. A broader definition is the definition of tax planning as an integrative process of rationalization of economic activity from the standpoint of compliance with the current tax legislation and the viability strategy of business entities [4].

Developing a tax planning strategy is one of the key issues in the overall development strategy of an enterprise. Tax planning as a subsystem of financial management, subject to compliance with the current tax legislation, is able to ensure profit optimization in order to increase the competitiveness of both an individual enterprise and the state as a whole. The essence of tax planning is that each company has the right to use methods and techniques permitted by law to minimize its tax liabilities.

Information support of tax planning at an enterprise is a link between different stages and complexes of general economic planning of an enterprise, both tactical and strategic. The need to distinguish between operational and strategic planning, which takes into account the results of tax planning, is due to a significant difference in their impact on the implementation of business processes, which in turn requires the use of different information processing tools [5].

Thus, the main elements of information support for operational tax planning are tools that ensure verification of the reliability of the data used in planning, which allows to form three types of forecasts – optimistic, pessimistic and most realistic.

In accordance with these forecasts, plans are developed and measures are determined to ensure the implementation of these plans, taking into account various options for the development of the situation [6].

The mechanism of planning the activities of an industrial enterprise with due regard for the results of tax planning is shown in Fig. 1.

Tax planning as an integral part of the financial and economic management system is one of the conditions for the effective development of an enterprise. Tax planning is the process of calculating the amount of tax liabilities based on the analysis and evaluation of alternative taxable objects, priority business activities, certain business transactions and opportunities to use tax benefits to achieve optimal results of the company’s financial and economic activities under the current taxation system.

The following measures are taken to improve the efficiency of the tax planning process:

- analyze situations arising at the enterprise due to the impact of the current taxation system;
- forecast alternative directions of economic activity development;
- estimate the size of commodity and financial flows;
- analyze relationships with suppliers, buyers and other creditors.

An important stage of the planning process is the analysis of the external environment. The external environment is constantly changing: political, economic, legal, technological and social. The purpose of analyzing the external environment is to identify potential threats and opportunities that the company may face in the future.

The analysis of the internal environment makes it possible to assess the potential of the enterprise, its strengths and weaknesses, and internal capabilities. In addition, when planning the development of an enterprise, the dynamics of macroeconomic processes, trends in the development of domestic markets, industry trends and market conditions should be taken into account.

Management should define a clear concept of the company’s development that takes into account information about possible risks, losses and benefits of its activities. All this makes it possible to formulate a financial strategy of the enterprise, which takes into account the forecast indicators of settlements with the budget.

Planning of settlements with the budget at an industrial enterprise involves conducting business activities in such a way that the profitability indicator is constantly growing, and business risks are minimal.

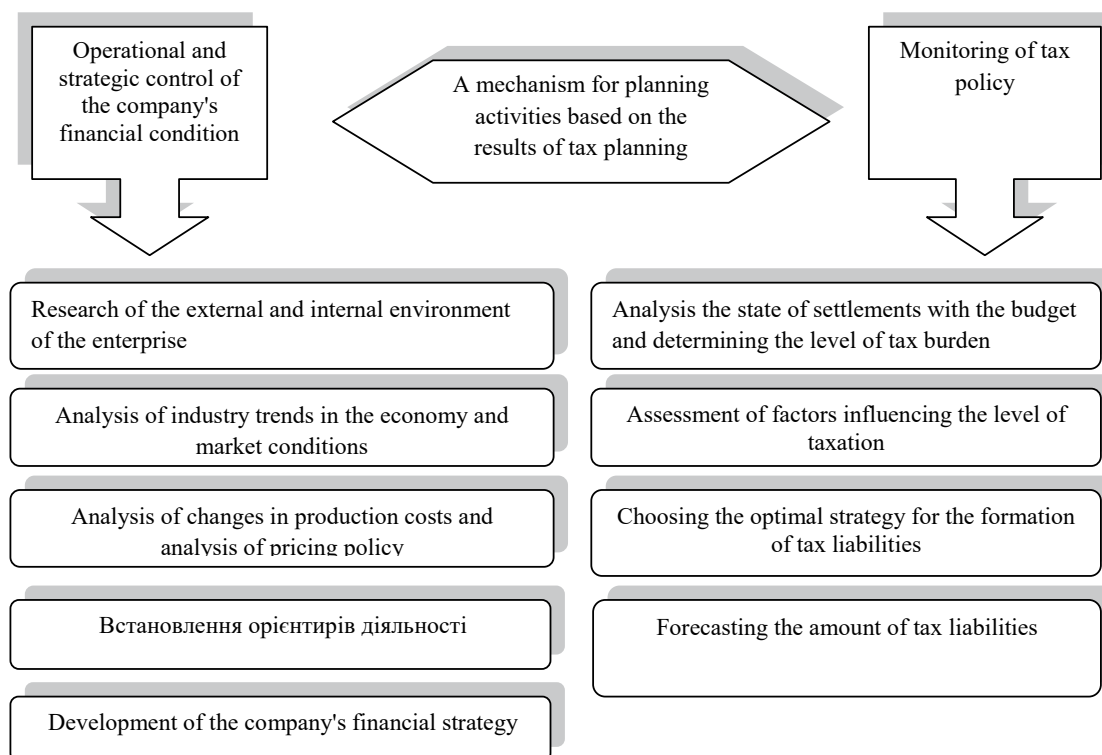


Fig. 1 – The mechanism of planning the activities of an industrial enterprise with regard to the results of tax planning  
Source: developed by the authors

Tax planning allows you to choose methods and ways of forming a tax policy, taking into account the peculiarities of settlements with the budget for certain taxes, to predict the amount of taxes for the future period and to minimize the tax burden on the company.

Taxes, according to their purpose, reduce the amount of financial result before taxation. Such reduction occurs as follows: indirect taxes included in the price of goods (VAT, excise tax, customs duty) reduce income; taxes and rent payments included in expenses increase expenses; income tax reduces the net profit of the company. Thus, in the process of tax planning, the tax bases of each individual tax or fee paid by the company to the budget are modeled.

The use of tax planning in the company's management system enhances economic security and ensures its long-term economic growth and development. The use of tax benefits in accordance with applicable law allows the company to increase profits, reduce costs and, under certain favorable circumstances, increase sales. The opportunity to increase net profit by reducing taxes stimulates investment activity.

It is recommended to analyze the effectiveness of tax planning by the following indicators [7]:

- general coefficient of efficiency of taxation of the enterprise (the ratio of the amount of net profit of the enterprise received for a certain period to the amount of accrued taxes for the same period);
- tax intensity of product sales (the ratio of the amount of tax payments of the enterprise for a certain period to the volume of product sales for the same period);
- cost taxation ratio (the ratio of the amount of taxes attributed to production (turnover) costs to the amount of production (turnover) costs for a certain period);
- revenue taxation ratio (the ratio of taxes included in the price of products to the volume of product sales for a certain period);
- profit taxation ratio (the ratio of the amount of profit tax for a certain period to the amount of balance sheet profit for the same period).

It should be noted that in the current economic environment, optimization of the impact of taxes on the financial results of business entities is a key to ensuring their innovation and investment development.

### Conclusions and suggestions.

It is noted that the improvement of the planning process is carried out on the basis of a comprehensive analysis of the efficiency of an industrial enterprise, which is the most important function of the management system and allows to assess the results of financial and economic activities of the enterprise, identify problems and formulate plans for further economic development.

The study of the process of planning the activities of an industrial enterprise allows us to conclude that the effective operation of an enterprise cannot be ensured without taking into account tax planning.

It is substantiated that the implementation of the process of planning the key performance indicators of an enterprise, taking into account the impact of the results of tax planning in the overall management system, will ensure its economic growth and development in the long term.

Thus, tax planning at industrial enterprises is a complex, integrative process based on a systematic approach to the formation of a development strategy. The use of tax planning in the management system of an industrial enterprise makes it possible to ensure the effective development of the enterprise's development strategy and reduce the risk of making incorrect management decisions.

The use of a significant number of methods and techniques of tax planning, among all the factors affecting the company's solvency, allows to increase net profit, ensures improvement of the financial and economic activity management system, contributes to increasing profitability, strengthening the financial condition, identifying and mobilizing growth reserves, and strengthens the company's position in fulfilling its obligations to the budget, bank, and contractors.

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## TAX ASPECT OF THE INFLUENCE OF ACCOUNTING POLICY ON THE DETERMINATION OF FINANCIAL RESULTS IN ACCOUNTING AND FINANCIAL REPORTING

**Skornyakova Y.B.**

Zaporizhzhia National University  
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66  
uliask@ukr.net  
ORCID: 0000-0002-8433-0183

**Key words:**

financial results, profit, loss,  
accounting, financial reporting,  
accounting policy, taxation,  
income tax

The article examines the tax aspect of the impact of the accounting policy and its individual elements on the determination of the financial results of the enterprise in accounting and financial reporting. It was established that the specified influence of accounting policy on the process of taxation with income tax occurs in two stages – firstly, through the influence of accounting policy on the size of the accounting assessment of financial results, secondly, due to the mechanism of adjustment of financial results formed on the basis of accounting data, on differences determined by tax legislation. The classification of accounting policy elements is presented, depending on the presence and predictability of the impact on the size of the financial results of individual reporting periods. A normative differentiation scheme of the impact of accounting policy on the process of taxation of financial results has been developed, which delimits the mechanism of the impact of accounting policy on the size of the tax burden from income tax, depending on whether the taxpayer adjusts financial results before taxation for «tax» differences. A justified classification of accounting policy elements based on the consequences of adjusting financial results for «tax» differences, which involves the separation of elements whose impact is compensated by the adjustment, and elements whose impact remains despite the adjustment of the financial result determined in accounting for «tax» differences. The question of the subjectivity of the impact of the accounting policy and its individual elements on the size of the tax burden in separate reporting periods was investigated and it was established that the existing impact is generally subjective, i. e. the impact on the tax burden in one reporting period is compensated in subsequent reporting periods, however only if there are no changes in tax legislation (the amount of the income tax rate, the list of differences for which adjustments are made, and other essential elements of taxation). The question of the contradiction of the purpose of influencing the size of the financial results of individual reporting periods due to the formation of the accounting policy is considered. Accordingly, it was established that in order to increase investment attractiveness and competitiveness, it is expedient to increase the size of the accounting assessment of financial results, and in order to optimize the level of the tax burden, on the contrary, it is expedient to reduce the size of the accounting assessment of financial results at the expense of those elements of the accounting policy, the impact of which is not compensated by adjusting differences. The obtained results can be used in practice as a tax planning tool at the micro level, and through the formation of a balanced accounting policy, they will contribute to increasing the quality of accounting and reporting information on the results of the enterprises' activities.

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## ПОДАТКОВИЙ АСПЕКТ ВПЛИВУ ОБЛІКОВОЇ ПОЛІТИКИ НА ВИЗНАЧЕННЯ ФІНАНСОВИХ РЕЗУЛЬТАТІВ В БУХГАЛТЕРСЬКОМУ ОБЛІКУ ТА ФІНАНСОВІЙ ЗВІТНОСТІ

**Скорнякова Ю.Б.**

Запорізький національний університет  
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

У статті досліджено податковий аспект впливу облікової політики та її окремих елементів на визначення фінансових результатів діяльності підприємства в бухгалтерському обліку та фінансовій звітності. Встановлено,

**Ключові слова:**

фінансові результати, прибуток, збиток, бухгалтерський облік, фінансова звітність, облікова політика, оподаткування, податок на прибуток

що зазначений вплив облікової політики на процес оподаткування податком на прибуток відбувається в два етапи – по-перше, шляхом впливу облікової політики на розмір облікової оцінки фінансових результатів, по-друге, за рахунок механізму коригування фінансових результатів, сформованих за даними обліку, на різниці, визначені податковим законодавством. Презентована класифікація елементів облікової політики в залежності від наявності та прогнозованості впливу на розмір фінансових результатів окремих звітних періодів. Розроблена схема нормативної диференціації впливу облікової політики на процес оподаткування фінансових результатів, яка розмежовує механізм впливу облікової політики на розмір податкового навантаження з податку на прибуток в залежності від того, чи здійснює платник податку коригування фінансових результатів до оподаткування на «податкові» різниці. Обґрунтована класифікація елементів облікової політики за ознакою наслідків коригування фінансових результатів на «податкові» різниці, яка передбачає виокремлення елементів, вплив яких компенсується шляхом коригування, та елементів, вплив яких залишається, незважаючи на коригування визначеного в обліку фінансового результату на різниці. Досліджено питання суб'єктивності впливу облікової політики та її окремих елементів на розмір податкового навантаження в окремих звітних періодах і встановлено, що наявний вплив в цілому є суб'єктивним, тобто вплив на податкове навантаження в одних звітних періодах є компенсованим в наступних звітних періодах, однак лише за умови відсутності змін у нормах податкового законодавства (розміру ставки податку на прибуток, переліку різниць, на які здійснюється коригування, та інших суттєвих елементів оподаткування). Розглянуто питання суперечливості мети впливу на розмір фінансових результатів окремих звітних періодів через формування облікової політики. Відповідно встановлено, що з метою підвищення інвестиційної привабливості та конкурентоспроможності доцільним є збільшення розміру облікової оцінки фінансових результатів, а з метою оптимізації рівня податкового навантаження навпаки доцільним є зменшення розміру облікової оцінки фінансових результатів за рахунок тих елементів облікової політики, вплив яких не компенсується шляхом коригування на різниці. Отримані результати можуть бути використані на практиці як інструмент податкового планування на мікрорівні, а також через формування виваженої облікової політики сприятимуть підвищенню якісного рівня облікової та звітності інформації щодо результатів діяльності підприємств.

**Statement of the problem**

Determining the financial results of the company's activity is one of the main tasks of accounting, because the goal of any company as a business entity is to generate a stable profit and thereby increase the equity and, accordingly, the value of the net assets belonging to the owners. In terms of keeping records in accordance with the principle of double entry, profit is not only the sum of the excess of income over expenses, but also the source of the formation of additional assets – economic resources capable of bringing economic benefits. Losses, in turn, are not only the sum of the excess of expenses over income, but also the financial reason for the reduction of equity capital and, accordingly, the value of the company's net assets.

The calculation of the financial result of a certain reporting period in the conditions of the continuation of active economic activity by the enterprise is logically connected with the accounting procedures for the assessment of assets and liabilities. In this way, it is about the influence of the so-called accounting policy, i. e. the set of "principles, methods and procedures used by the enterprise for accounting, preparation and presentation of financial statements" [1], on the formation of the

size of the financial results reflected in the accounting and presented in financial reporting as a result of the company's activity.

The question of the impact of accounting policy on the determination of financial results in accounting acquires a logical continuation in the field of taxation, because for the vast majority of enterprises, including in domestic taxation practice, profit is the object of taxation. In conditions where the amount of income tax depends in a certain way on the accounting determination of the size of the financial results of the activity, elements of the accounting policy also affect the amount of income tax, which in turn affects the amount of net profit formed in the accounting and financial statements of the enterprise.

Thus, the study of the mechanism of influence of individual elements of the accounting policy on the amount of tax liabilities from the income tax of enterprises is a relevant issue both for economic science and for business practice, because in the end, the amount of net profit (loss) depends on the level of the specified tax burden, which is one of the key elements of financial reporting. It should be noted separately that it is not only about the results of the company's activity, but also about the further assessment of its financial stability and competitiveness.

### Analysis of recent studies and publications

The issue of the influence of accounting policy on the process of determining in accounting and presentation in reporting of the financial results of the enterprise is actively considered in modern scientific research. So, in a scientific monograph devoted to the theory and practice of accounting policy formation, M.S. Pushkar and M.T. Shchyrbina note that “the complete and truthful presentation of information about the financial results and financial condition of the enterprise in the financial statements largely depends on the level of formation and application of the accounting policy” [2, p. 178], and among the principles of formation of the accounting policy, they indicate the principle of reliability, according to which “the accounting policy should ensure the reliability of the formation of indicators characterizing the results of the enterprise” [2, p. 172]. A similar opinion is present in the scientific study of O.P. Ratushna, who claims that “when forming the company’s accounting policy, responsible persons must take into account the consequences of choosing one or another element of the accounting policy method for financial results, because some of them provide an opportunity to manipulate the amount of profit, which will lead to unreliability of information” [3, p. 208].

Other scientists, analyzing the influence of accounting policy on the formation of financial results, focus attention on the influence of individual elements of accounting policy and, accordingly, focus on the main ones. So, F.F. Butynets and N.M. Maliuha note that “the main elements of the accounting policy, which have the greatest impact on the financial results of the enterprise, include the following: the choice of the moment of implementation, the determination of the method of assessing the disposal of stocks, the determination of the method of calculating depreciation” [4, p. 20]. And V.V. Sopko names among the most important basic elements of accounting policy, which affect the formation and size of financial results, “methods of inventory valuation upon disposal, method of calculating depreciation of fixed assets, recognition and reflection of expenses and income, creation of reserves for future expenses, assessment of the degree of completion of operations for providing services and performance of works, the method of calculating the reserve for doubtful debts” [5, p. 141].

The issue of the relationship between accounting policies and the determination of financial results and the process of their taxation is also studied in the scientific literature. So, in the scientific article of S.V. Shevchuk and A.D. Zaitseva claim that “accounting policy is both an object of state control over the correctness of tax calculation and a tool for modeling the amount of taxes on the part of the enterprise” [6, p. 319], and according to the results of the conducted research, they note that “the dependence of the taxation system on the methodical tools of accounting requires enterprises to carefully formulate an accounting policy for taxation purposes” [6, p. 322]. In a scientific study by V.V. Sopko substantiates the conclusion that “special attention should be paid to the elements of the accounting policy, the formation of which must be carried

out on the basis of the analysis of the impact of alternative accounting methods on the company’s profit and taking into account the assessment of the consequences for taxation” [5, p. 145]. In the development of these opinions, O.V. Kravchenko examines the impact of individual accounting policy elements on corporate income taxation and notes that “taking into account the considered aspects will in the future enable the enterprise to use accounting policy not only to perform accounting functions and generate reports, but also to optimize the taxation system and reduce the fiscal impact of the state” [7, p. 145].

Considering the mentioned scientific studies, it is worth noting that the issue of the tax aspect of the influence of accounting policy on the determination of financial results in accounting and reporting is not finally resolved, because it requires systematization and careful analysis of individual elements, which justifies the relevance of further scientific studies.

### Objectives of the article

The purpose of the research is a critical analysis of the impact of the accounting policy and its individual elements on the process of taxation of the profits of enterprises and the corresponding impact on the size of net financial results in order to create conditions for tax planning at the micro level and increase the quality level of the formation of accounting information regarding the results of the enterprise.

### The main material of the research

The nature of the influence of the accounting policy and its individual elements on the process of taxation of the company’s profit fundamentally depends on the norms of the current tax legislation. The diametrically opposite options in the mentioned plane are, on the one hand, the complete or almost complete exclusion of such influence, provided that autonomous principles are established for determining profit as an object of taxation by the norms of tax legislation (it is this approach that was used in domestic tax practice under the conditions of the Law of Ukraine dated 22.05.1997 № 283/97 “On Taxation of Enterprise Profits”, valid until 01.04.2011) and, on the other hand, the option of recognizing as an object of taxation the profit formed according to accounting data, without any additional restrictions, adjustments, etc. The current domestic approach to determining the object of taxation with income tax involves a certain combination of the indicated opposite options, which actualizes the issue of a thorough study of tax legislation and, accordingly, the impact of accounting policy and its individual elements on the process of taxation of income tax and, accordingly, the formation of the net financial result of the enterprise’s activities for separate reporting periods.

Thus, in accordance with clause 134.1.1 of the Tax Code of Ukraine (TCU), the subject of taxation is “profit with a source of origin in Ukraine and outside of Ukraine, which is determined by adjusting (increasing or decreasing) the financial result before taxation (profit or loss), determined in the financial statements of the enterprise in accordance with national provisions (standards) of accounting or

international standards of financial reporting, on the difference, which is determined by the relevant provisions of this Code” [8].

In accordance with Articles 138–140 of the Tax Code of Ukraine, the adjustment of the financial result, formed on the basis of accounting results under the corresponding influence of the accounting policy, is provided for the so-called differences:

- differences that arise when calculating depreciation of non-current assets (Article 138 of the Tax Code of Ukraine);
- differences arising in the formation of reserves (provisions) (Article 139 of the Tax Code of Ukraine);
- differences that arise during the implementation of financial transactions (Article 140 of the Tax Code of Ukraine).

Particular attention should also be paid to the provision of Clause 134.1.1 of the TCU, according to which “for taxpayers whose annual income from any activity (excluding indirect taxes) determined according to accounting rules for the last annual reporting period does not exceed forty million hryvnias, the object of taxation can be determined without adjusting the financial result before taxation for all differences ... determined in accordance with the provisions of this section” [8].

Thus, the mechanism of influence of the accounting policy and its individual elements on the process of income taxation will depend on whether a given income tax payer adjusts the financial result of accounting for the differences provided for by tax legislation. If such an adjustment is made in a mandatory manner or by the decision of the payer,

then the impact of some elements of the accounting policy will be limited and compensated by the indicated adjustment and differences. If the payer has the right and accordingly decides to refuse the adjustment, then the impact of accounting policy elements on the financial result will be directly and without restrictions transferred to the level of taxation of such financial result. Figure 1 presents a scheme of normative differentiation of the influence of accounting policy on the process of taxation of financial results.

Investigating the influence of accounting policy on determining the object of taxation with income tax, it is also worth addressing the issue of the impact of individual elements of accounting policy on determining the financial result of individual reporting periods, because it is through the mechanism of that influence that the impact of accounting policy on the level of the tax burden and the size of the net financial result in the end. Thus, among the elements of the accounting policy there are those that, in principle, do not influence the financial result of individual reporting periods, for example, the choice of the method of displaying exchange rate differences on the date of the economic transaction – within its limits or for the entire article.

A significant part of other elements of the accounting policy exerts a quantitative influence on the size of the financial results of individual reporting periods, but such influence may be unambiguous, may in turn depend on other additional factors, but be fully predictable, or may be difficult to predict, because the direction of influence depends on many factors that can act in the opposite direction. Figure 2 presents the classification of accounting policy elements developed by the author depending on the

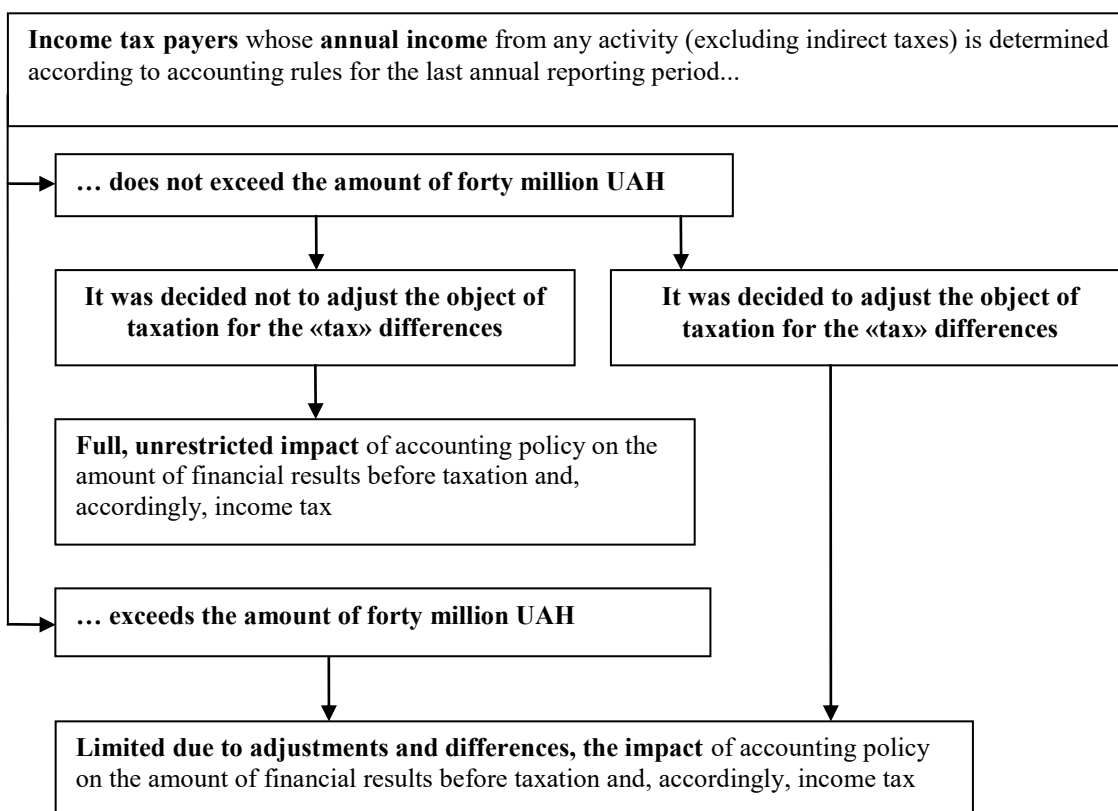


Fig. 1 – Normative differentiation of the influence of accounting policy on the process of taxation of financial results

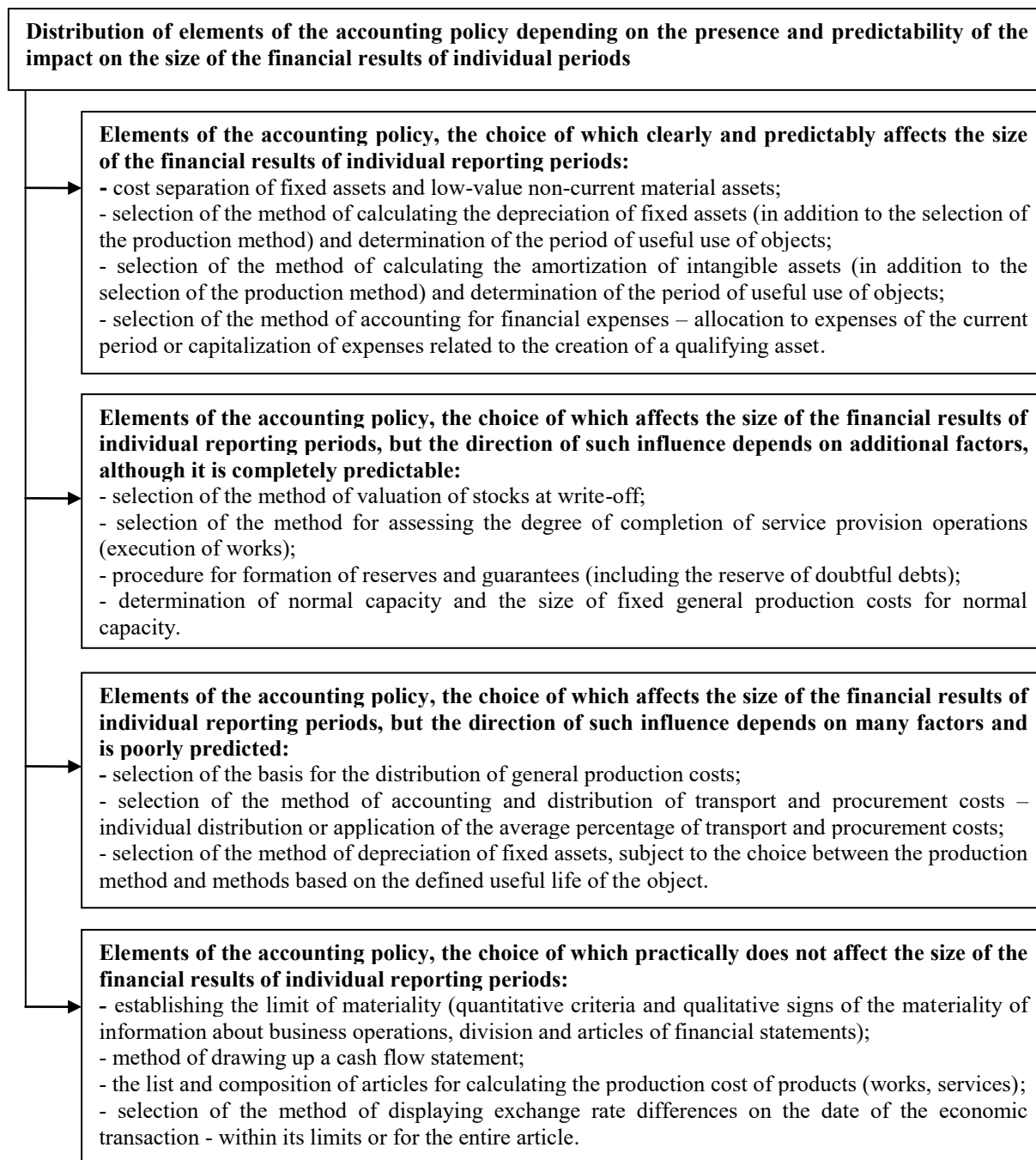


Fig. 2 – Classification of accounting policy elements depending on the presence and predictability of the impact on the size of financial results of individual periods

presence and predictability of the impact on the size of the financial results of individual reporting periods.

Commenting on the classification of accounting policy elements by the level of influence on determining the size of financial results, it is worth paying attention to the fact that it is not about the influence on the size of profit (losses) as such, but about a certain redistribution between reporting periods – periods for determining financial results of activity. That is, the specified influence is subjective and temporary, because the existing overestimation of the financial results of some reporting periods is compensated

over time by underestimating the financial results of other reporting periods or vice versa. If we consider a certain full period of action of this or that element, then in general, the overall impact on the size of financial results will be the same for different alternative options in the plane of the accounting policy element. So, choosing the accelerated depreciation method compared to the straight-line method allows you to increase costs and reduce profit in the first years of operation of the fixed asset object, but in subsequent years the difference will be compensated, accordingly, if you consider the entire period of useful use of the object

(or the period from the introduction from operation to disposal inclusive), then the entire depreciable value will be expensed, and the total amount of such expenses will not depend on the chosen method of calculating depreciation. The difference in costs under the conditions of using different methods of inventory valuation at the time of disposal (for example, the FIFO method and the weighted average cost method) is present only when the inventory balances are available at the end of the reporting period. If we consider a period with zero inventory balances at the beginning and end of the period, the costs will include the cost of all purchased and used inventory, and the choice of inventory valuation method will not affect the size of the financial results determined in the accounting. None of the methods of forming the reserve of doubtful debts can affect the financial result of the period at the beginning and end of which there are no receivables.

When investigating the impact of certain elements of accounting policy on the process of determining the object of taxation and the amount of income tax, it is also important to understand whether such an impact is subjective and temporary, or whether it has a certain objective component. Of course, at first glance, if the impact of accounting policy elements on the amount of financial results in accounting is temporary and is compensated in other periods, then the corresponding impact on the amount of income tax should be so. That is, if the use of this variant of the accounting policy allows you to reduce the amount of tax in one period, then in

subsequent periods it will be compensated by larger amounts of this tax. But this thesis has certain objections. Yes, the general principles of accounting determination of income and expenses from one period to another do not change, which is why there is compensation. Norms of tax legislation, in particular the rate of income tax, the list of differences for which adjustments are made to the object of taxation, and other significant norms of income taxation may be changed over time, which is why the impact on the tax burden in one period may not be the same in subsequent periods. be compensated or will be compensated, but not in full.

As already discussed above, the impact of the accounting policy and its individual elements on the process of determining the object of taxation and the amount of income tax for a significant part of enterprises fundamentally depends on the mechanism of adjusting the financial result determined by accounting data for differences in accordance with the norms of tax legislation. In this area, it becomes important to understand the nature and consequences of such an adjustment for various elements of the accounting policy and the appropriate distribution of the elements of the accounting policy into elements whose impact is compensated by the implementation of the adjustment, and elements whose impact remains despite the adjustment of the financial result determined in the accounting for differences. Figure 3 shows the corresponding classification formed based on the results of the conducted research.

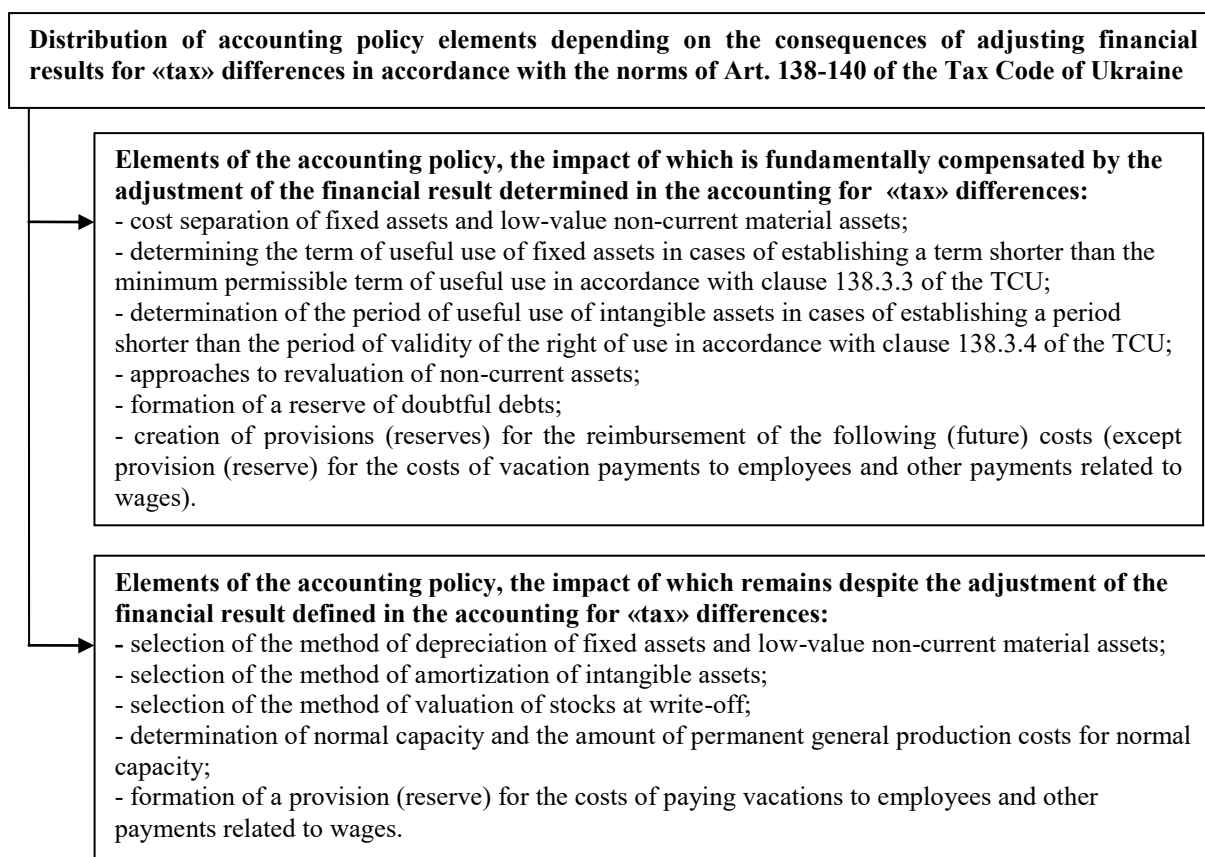


Fig. 3 – Classification of accounting policy elements according to the consequences of adjusting financial results for “tax” differences

Commenting on the presented classification, it is worth noting that those accounting policy elements were included in it, the impact of which on the formation of financial results of individual periods is predictable, even if it depends on additional factors. The study of elements that influence the size of financial results, but the direction of such influence depends on many factors and is poorly predicted, will have minimal feasibility. So, for example, the choice of the basis for the distribution of general production costs affects the size of the financial results of individual periods, provided there are balances of work in progress and finished products, but it is very difficult to assess the direction of such an influence. Accordingly, even though the impact of this accounting policy element is not offset by the adjustment, it is difficult to use it for tax planning and optimization needs. Such use is generally possible, but it will require a detailed analysis of the specified issue at the level of a separate enterprise.

The study of the impact of accounting policy elements on the size of the financial results of individual reporting periods and on the determination of the object of taxation with income tax also requires an understanding of the possible goals of such influence. If we are talking about a separate reporting period, the choice of certain elements of the accounting policy can either increase or decrease the estimate of the financial result. It is necessary to clearly understand what can be the purpose of such influence. Employees managing the enterprise are interested in increasing the financial result (that is, increasing profit or minimizing losses) due to the influence of accounting policy elements, especially if they receive bonuses from the amount of profit. In addition, an increase in the amount of profit (at the same time as an increase in the estimated value of the company's assets) improves the financial condition, increases the creditworthiness and investment attractiveness of the company, which is relevant in cases of lending, attracting additional investors and issuing shares. It is possible to achieve the desired effect of a certain increase in the financial result due to elements of the accounting policy, for example, by choosing the straight-line method of depreciation of fixed assets and longer terms of their use, choosing in conditions of constant inflation the FIFO write-off stock valuation method or by forming minimum supplies and reserves. But it is worth remembering that such actions will lead to an increase in the tax burden in the area of income tax. In the field of enterprise taxation, income tax payers are interested in forming a smaller amount of the object of taxation, which is possible if the amount of the financial result formed according to accounting data is smaller. It is also important that such minimization occurs at the expense of those methods of accounting policy, the influence of which remains, despite the adjustment of the financial result determined in accounting for the difference. It is about the choice of progressive methods of calculating the depreciation of fixed assets and intangible assets, establishing the minimum allowable periods of useful use of fixed assets, one hundred percent depreciation of low-value non-current tangible assets in the first month of operation, using the weighted average cost method to estimate the disposal of stocks, etc. It is this accounting

policy that will reduce the accounting estimate of profit and, accordingly, the object of income tax taxation and the tax burden. Separately, it is worth noting that it is not possible to influence the tax burden by increasing the reserve for doubtful debts or by forming other provisions (reserves), because Art. 139 of the Tax Code of Ukraine provides for the adjustment of the object of taxation for the differences arising during the formation of reserves (provisions). Such an adjustment is provided for all reserves (provisions), except for the provision (reserve) for the costs of paying vacations to employees and other costs related to the payment of labor. Of course, the stated thesis is valid only in cases where the income tax payer adjusts the financial results determined in accounting for the difference.

Thus, we have a certain conflict of interests in the plane of influence of accounting policy elements on the size of financial results. On the one hand, minimization of profit due to the influence of certain elements of accounting policy is expedient in order to optimize the tax burden, which in turn increases the amount of net profit. On the other hand, the formation of a larger amount of financial result through the opposite decision regarding the elements of the accounting policy, which allows the enterprise under certain conditions to remain in the profit zone and in any case to increase the estimated level of creditworthiness and investment attractiveness. As a result, the existing inconsistency, in our opinion, has a positive effect on the formation of a balanced accounting policy by enterprises, because it requires the consideration of both analyzed arguments regarding the impact.

Naturally, such a system of balances will have an effect when it comes to the formation of a weighted accounting policy in favor of the enterprise. It will certainly not be able to protect against outright fraud, because external control mechanisms are needed for this. Cases of hiding doubtful and hopeless receivables by significantly understating the amount of the reserve for doubtful debts deserve special attention in this area, which allows to increase the financial result and the total balance sheet value of assets and, as a result, to improve the financial condition, increase the investment attractiveness of the enterprise, without creating a threat of increasing the tax load, because the formation of a reserve of doubtful debts thanks to the adjustment does not reduce the object of taxation with income tax.

### Conclusions

The nature of the influence of the accounting policy and its individual elements on the taxation of the profit of enterprises, taking into account the norms of the current domestic tax legislation, should be investigated in two planes.

First, it is worth clearly understanding how certain elements of the accounting policy affect the amount of financial results that are formed in accounting and reflected in financial statements, because it is this accounting assessment of financial results that is the main basis for calculating the object of taxation with income tax. In the specified plane, the classification of individual elements of the accounting policy is fundamental, depending on the presence and predictability of the impact on the size of the financial results of individual reporting periods.

Such a classification involves the separation of accounting policy elements that have a clearly predictable impact on the size of financial results, elements whose impact on the size of financial results is predictable, but depends on the action of other factors, elements that have an impact on the size of financial results, but the direction of influence depends from many factors and is poorly predicted, as well as elements that do not affect the size of financial results.

Secondly, it is necessary to take into account the fact that the norms of tax legislation divide income tax payers into those who must adjust the financial result recognized in accounting for the differences provided for in Articles 138–140 of the Tax Code of Ukraine, and those who can do not make such an adjustment. Accordingly, if the taxpayer has the right not to make the specified adjustment and such a decision is made accordingly, the impact of the accounting policy on taxation fully corresponds to the logic of the impact of individual elements of the accounting policy on the accounting determination of the financial results of individual reporting periods. For income tax payers making adjustments (mandatory or by voluntary decision), the impact of individual accounting policy elements on the taxation process depends on the adjustment mechanism. Accordingly, it is worth understanding which impact of the elements of the accounting policy are compensated by the adjustment in full or in part, and which influence remains despite the adjustment. In the development of this conclusion, a classification of accounting policy elements

is proposed based on the consequences of adjusting financial results for “tax” differences, which involves the separation of elements whose influence is compensated by adjustment, and elements whose influence remains despite the adjustment of the financial result determined in accounting for differences.

Separately, the study considered the controversial issue of the purpose of influencing the size of financial results of individual reporting periods due to the formation of accounting policies. So, on the one hand, the goal of such an influence can be recognized as increasing the size of the assessment of financial results, because it increases the investment attractiveness and competitiveness of the enterprise according to financial reporting data, on the other hand, reducing the size of the assessment of financial results allows optimizing the tax burden in the area of income tax. In general, the existing inconsistency in practice should contribute to the formation of a balanced accounting policy, taking into account the impact of its individual elements on the size of the assessment of financial results.

Summarizing, it is worth noting that the results of the study of the influence of individual accounting policy elements on the process of corporate income taxation can be used in practice as a tax planning tool at the micro level, and also through the formation of a balanced accounting policy will contribute to the improvement of the quality level of accounting and reporting information on the results of enterprise activity.

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# THEORETICAL AND APPLIED ASPECTS OF ECONOMIC PROCESSES IN UKRAINE AND IN THE WORLD ECONOMY

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## FOREIGN TRADE ACTIVITY OF UKRAINE: CURRENT STATE, RISKS AND PROBLEMS

**Kushchik A.P., Sopina A.E.**

*Zaporizhzhia National University*

*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*

*20favorit10@i.ua, nastyasopina1310@gmail.com*

ORCID: 0000-0003-0627-2296, 0000-0002-7317-5982

### Key words:

foreign trade, export, import,  
international business,  
foreign markets,  
economic and social risks

The article discusses foreign trade relations of Ukraine and, in particular, with the countries of the European Union. The analysis is carried out on the basis of comparing the volumes of export-import operations and by assessing the commodity content of international markets. The tendencies and changes in world trade in recent years have also been investigated, as well as due to a number of reasons, including: scientific, technical and progress, integration of the self and globalization of the self, the formation of a modern personality and society as a whole. The authors have identified the main advantages of openness of Ukraine's economy and its active cooperation with foreign countries. At this, the main risks associated with international trade are highlighted and a parallel between them and the socio-economic life of the State is drawn. Based on the given characterization of directions of influence of foreign trade on society, the article characterizes the principles of foreign trade and analyzes methods of conducting foreign business. Attention is focused on the obstacles that arise in the process of entry of Ukrainian business into foreign markets. The article places a special place in the analysis of trade relations between Ukraine and the EU countries, first of all, clarification of expected risks and prospects for their further solution. At the same time, there is a positive and negative impact on the economic situation in Ukraine. Statistics on the competitiveness of Ukraine's economy in relations with foreign trade partners are represented. On the basis of the conducted research, ways to improve Ukraine's trade relations with foreign countries and strengthen its competitive positions have been proposed.

## ЗОВНІШНЬОТОРГОВЕЛЬНА ДІЯЛЬНІСТЬ УКРАЇНИ: СУЧАСНИЙ СТАН, РИЗИКИ ТА ПРОБЛЕМИ

**Кущик А.П., Сопіна А.Є.**

*Запорізький національний університет*

*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### Ключові слова:

зовнішня торгівля, експорт,  
імпорт, міжнародний бізнес,  
зарубіжні ринки,  
економічні та соціальні ризики

У статті розглядаються зовнішньоторговельні відносини України і, зокрема, з країнами Європейського союзу. Аналіз здійснено на основі порівняння обсягів експортно-імпортних операцій та шляхом оцінки товарного наповнення міжнародних ринків. Досліджено також тенденції змін у світовій торгівлі в останні роки, які обумовлені низкою причин, серед яких: науково-технічний прогрес, інтеграція та глобалізація, становлення сучасної особистості та суспільства в цілому. Авторами визначено основні переваги відкритості економіки України та її активного співробітництва із зарубіжними країнами. При цьому виокремлюються головні ризики, пов'язані із міжнародною торгівлею та проведено паралель між ними та соціально-економічним життям держави. Виходячи з наведеної характеристики напрямів впливу зовнішньої торгівлі на суспільство, в статті охарактеризовано принципи зовнішньої торгівлі та проведено аналіз методів ведення зарубіжного бізнесу. Акцентується увага на перешкодах, які виникають в процесі виходу українського бізнесу на зарубіжні ринки. У статті особливе місце надано аналізу торговельних відносин України

з країнами ЄС, насамперед, з'ясуванню очікуваних ризиків та перспектив їх подальшого вирішення. При цьому, простежується позитивний та негативний їх вплив на економічну ситуацію в Україні. Представлені статистичні дані щодо конкурентоспроможності економіки України у стосунках із зовнішньоторговельними партнерами. На основі проведених досліджень, запропоновано шляхи покращення торговельних відносин України із іноземними країнами та зміцнення її конкурентних позицій.

### Statement of problem

The modern world is influenced by large-scale processes of integration, globalization and scientific and technological progress, which affects the development of society and the emergence of new needs and opportunities in humans. Therefore, the most important task is the synchronized development of current with the environment, when the latest trends in the economic and social sphere are taken into account. New needs of society cause changes in the sphere of foreign trade, require the formation of new ties with partner countries. In this aspect of events, it is worth considering all the risks and problems that may arise in the process of cooperation with the foreign world, which makes research on this topic relevant.

### Analysis of recent studies and publications

The development of foreign trade activity and cooperation of Ukraine with foreign countries, as well as modern trends and prospects for the development of trade relations were studied by many Ukrainian scientists, among them such scientists as A.V. Savitsky [1], which considered Ukraine's foreign trade in conditions of macroeconomic instability; O.V. Kolyada [2], M.M. Omelchenko [2] investigated foreign trade in goods of Ukraine; analysis of foreign trade activity of Ukraine and opportunities for its improvement, considerable attention was paid to N.M. Bohatska [4]; G.V. Artamonova [2] explored opportunities and challenges for foreign trade; H.S. Tereshchuk [6] analyzed the positive consequences and benefits of Ukraine's accession to the World Trade Organization; O.V. Pyankova, O.S. Ralko [7] devoted attention to the problems of structural changes and priorities of foreign trade of Ukraine. At this stage, world trade needs further analysis, especially in the context of global problems, such as the consequences of the COVID-19 pandemic and Russia's wars against Ukraine.

### Objectives of the article

The article is aimed at characterizing the current state of Ukraine's foreign trade, taking into account the changes taking place in the economy due to scientific and technological progress and socio-economic shifts; studying current risks and problems related to trade relations with partner countries, as well as providing a proposal for improvement of foreign trade relations.

### The main material of the research

At the present stage of economic development of Ukraine, a number of conditions for foreign trade have emerged. These include an increase in the scale of production, the transition to a new technological method of manufacturing products, the rapid spread of high scientific

technologies that eliminate barriers to the movement of goods, services and capital; dissemination of knowledge as a result of intellectual exchange and formation of new, promising ties with other countries.

Gradually, a new society is forming: growing needs arise, modern principles appear, new customs are introduced. This is due to the high rates of development of states, which is the result of globalization and is accompanied by an increase in the number of producers, the international division of labor, specialization and cooperation in many areas of production, cultural integration. Every year competition between countries is growing more and more.

In order to be able to compete in the European market of goods and services, that is, to be competitive, each state must be distinguished from all by its infrastructure, the components of which are: production, social security (healthcare, education), engineering and technical support, scientific and technological progress, transport, tourism.

The world market of goods and services cannot exist without a production and consumer base. It is the basis of market relations [2].

The following factors should contribute to strengthening the competitiveness of an individual country: education, labor market efficiency, development of the market for goods and services, development of the financial market, scientific and technical innovations.

A significant place in Ukraine's foreign economic activity belongs to trade with the EU, which requires detailed analysis. At the same time, it is worth focusing on the factor of innovative progress and development of the market for goods and services. Simultaneously with the introduction of new technologies in the production process, the export opportunities of the state are expanding. The structure of Ukraine's exports in 2021 is presented in Figure 1.

According to the statistics service of Ukraine [10], exports of goods to the EU in 2021 amounted to 36.1% of total exports to other countries (26793 million \$). According to the results of the analysis of Ukraine's foreign trade activity, it should be noted that the European Union remains the main partner of Ukraine's foreign trade relations. In modern conditions, preference is given not only to trade in material products, but also to intellectual property products, namely: the experience of leading specialists, scientific developments of Ukrainian researchers, IT services, educational services.

The current state of foreign trade between Ukraine and the EU is connected with the development of the transport system. Regarding transport connections, Ukraine should take into account the pan-European standards of the transport system, the level of transport safety, the modernization of rolling stock, the creation of a joint air

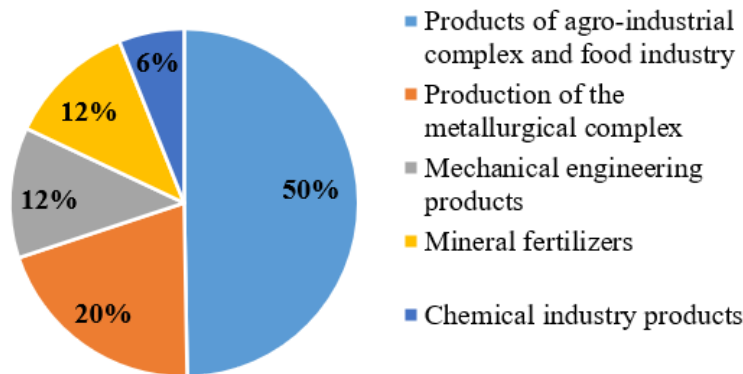


Fig. 1 – The structure of export of Ukraine in 2021

Source: concluded by the authors based on [4]

connection between Ukraine and the EU. In this regard, the European Union has adopted the program “Trans – European transport network policy”. The essence of the program is the creation of a multimodal network that will combine air, land and sea transport in order to increase the scale of foreign trade relations [3].

In order to freely exchange goods and services, a free trade area was created between Ukraine and the European Union. The essence of the formation of this space is characterized by:

- no need for additional certification of products in the EU (since product quality is based on European standards);
- abolition of import duties on most imported goods;
- creation of favorable conditions for access to markets for goods and services;
- prevention of fraud, smuggling and other trade offenses;
- strengthening the protection of intellectual property rights.

We want to focus on agricultural exports to the EU countries, namely on its development from 2014 to 2020, which is indicated in Table 1.

As of 2021, 333 agro-industrial enterprises in Ukraine had the opportunity to sell their products on European markets. In 2021, the industries that create the largest volume of trade between Ukraine and European countries were: live animals and animal products (\$1345.2 million), plant products (\$15538.03 million), fats and oils (\$7037.3 million), finished food products (\$3788.5 million) and mineral products (\$8414.4 million). However, in 2022, total exports almost halved (by 35.1 %)

mainly due to reduced exports of vegetable products, fats and oils of animal or vegetable origin and finished food products [10].

Despite the diversity of export opportunities of Ukraine, domestic producers face a number of problems in trading and trading with the EU. These problems are manifested in insufficient amounts of accumulated capital of domestic producers, which limits the possibility of purchasing the necessary raw materials and manufacturing quality products, the predominance of goods with a low level of added value, low competitiveness of manufacturers (non-compliance with European quality standards) and protection of intellectual property rights. As for the requirements for Ukrainian products, it is necessary to comply with European standards, including: sanitary norms, certification, environmental requirements.

No less urgent today is the problem of adaptation of domestic producers to modern market conditions, which manifests itself in poor awareness of supply and demand in the foreign trade space, low rates of scientific and technological progress in production and difficulties in gaining the trust of European partners.

As we can see, the expansion of the trade market by joining the European Union is a challenge for Ukraine. The experience of expanding trade activities testified not only to the positive aspects, but also led to a number of challenges for countries. Examples of such challenges and warnings are given in Table 2.

International trade is always under the influence of external and internal factors, which is explained by numerous imbalances in the process of trade relations

Table 1 – Directions of agrarian exports of Ukraine to the European Union

Year	Direction of development of agrarian exports
2014	Active development of poultry meat exports to EU countries
2015	Ukraine received permission to export milk and dairy products to the EU market
2016	Extension of quality standards to products of plant origin
2017	Development of crop exports
2018	Development of exports of finished food products
2019	Exchange of technologies, new methods of agrarian business, dissemination of achievements of scientific and technological progress in the field of agrarian production
2020	Introduction to the structure of exports of eco-products

Source: concluded by the authors based on [8]

Table 2 – Challenges for foreign trade when joining the EU

Country	The consequence of joining the EU
Lithuania	It lost a significant number of power plants, which limited its competitive opportunities in the electricity market
Latvia	The decline of the sugar industry. Reduction of sugar exports
Estonia	Loss of export opportunities in the field of mechanical engineering
Poland	The coal industry lost 90%. Reduction of coal exports
Hungary	Lost the opportunity to sell buses of its own production

Source: concluded by the authors based on [5]

between countries. Ukraine's foreign trade relations were significantly affected by external influence during 2022. Thus, exports decreased by 35.1% (\$23.9 billion), and imports by 24.1% (\$17.6 billion) [10]. Although in 2021, Ukraine's trade turnover with the main importers showed positive dynamics: China (+12.7%), Poland (+59.7%), Turkey (+70%), Germany (+38.4%), Italy (+79.9%), Egypt (+20.2%) [10].

Due to the fullness of Russia's military aggression, Ukraine has received significant problems in conducting foreign trade activities. Firstly, due to the occupation of seaports or active hostilities, the channel of sales of products by sea was disrupted. Russia's invasion of Ukraine has led to a complete halt to grain shipments from Ukraine, which previously held a significant share of exports. Since July 22, 2022, the Black Sea Grain Initiative has been operating, which provides for the safe transportation of grain and food products from Ukrainian ports. Secondly, based on the new problems of trading activity, the most difficult task is to forecast supply and demand in the market for goods and services. Thirdly, there is a rapid change in consumer needs, which complicates trade activities with abroad.

Based on the above, we can make several proposals for improving the development of Ukraine's foreign trade activity with foreign countries:

- Improving the conditions of domestic production, increasing the competitiveness of domestic products by introducing the latest achievements of scientific and technological progress into the production process, expanding the information space of the Ukrainian entrepreneur regarding trade offers abroad.

- Increased cooperation between domestic and foreign manufacturers.

- Organization of presentations of products of domestic origin abroad.

- Implementation and obtaining quality standards for goods and services.

- Detailed analysis of the consumer base taking into account new trends.

- Increasing the scale of production of eco-products, reducing the material consumption of products, efficient resource use.

By implementing this and its offers, Ukraine will be able to occupy a competitive position in the foreign trade space and be a priority among foreign consumers.

### Conclusions

The results of the analysis show that international trade is always under the influence of external and internal factors, which is explained by numerous imbalances in the process of trade relations between countries. At the moment, a global problem in foreign trade relations of states is Russia's war against Ukraine, which creates barriers to the export and import of goods and services. No less urgent for today is the problem of adaptation of domestic producers to modern market conditions, which manifests itself in poor awareness of supply and demand abroad retail space. In order to improve trade activities with countries around the world, Ukraine should focus on current trends in the development of society and support for domestic producers, which will make Ukrainian goods and services competitive in the world market and occupy an authoritative place among foreign consumers.

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DOI <https://doi.org/10.26661/2414-0287-2023-2-58-12>**UKRAINE AND THE EU. PROBLEMS AND PROSPECTS OF COOPERATION****Cherep A.V., Rudnik O.R., Lepokhin O.V.***Zaporizhzhia National University**Ukraine, 69600, Zaporozhzhia, Zhukovsky str., 66*

cherep.av.znu@gmail.com, rudnik20032001@gmail.com

ORCID: 0000-0001-5253-7481, 0000-0003-4817-5742

**Key words:**cooperation, European Union,  
integration, economy,  
scientific potential,  
sustainable development

The article examines the main problems and prospects of Ukraine's cooperation with the countries of the European Union, highlights the ways of positive and negative influence of the European Union on the formation of the competitiveness of the Ukrainian economy. The authors reveal the large-scale influence of globalization processes on the formation of relations between countries, examine the process of integration of Ukraine and the EU, analyze the conditions of international relations with EU countries. Special attention was paid to the prospects of Ukraine in cooperation with the EU. The main problems of Ukraine's integration relations with the European Union are noted in the work. The article provides examples of the positive and negative impact of the European Union on the member states of the organization and suggests assumptions about the negative impact of the EU on some sectors of the Ukrainian economy. The result of the study is the development of a vector of Ukraine's further cooperation with the European Union, the justification of the main threats facing Ukraine as a future EU member, and the provision of proposals for Ukraine's achievement of European standards. The authors expand the directions of integration with the EU, which, unlike the existing ones, are supplemented by the involvement of schools and higher education institutions in the expansion of the list of joint educational and cultural programs with European countries, the involvement of European investments for the purpose of the post-war recovery of Ukraine through foreign programs.

**УКРАЇНА ТА ЄС. ПРОБЛЕМИ ТА ПЕРСПЕКТИВИ СПІВРОБІТНИЦТВА****Череп А.В., Руднік О.Р., Лепьохін О.В.***Запорізький національний університет**Україна, 69600, м. Запоріжжя, вул. Жуковського, 66***Ключові слова:**співробітництво,  
європейський союз, інтеграція,  
економіка, науковий потенціал,  
сталий розвиток

У статті розглядаються основні проблеми та перспективи співпраці України з країнами Євросоюзу, виокремлюються шляхи позитивного та негативного впливу Євросоюзу на формування конкурентоспроможності економіки України. Авторами розкривається масштабний вплив глобалізаційних процесів на формування зв'язків між країнами, досліджується процес інтеграції України та ЄС, аналізуються умови міжнародних відносин з країнами ЄС. Особливу увагу приділено перспективам України у співробітництві з ЄС. В роботі зазначаються основні проблеми інтеграційних відносин України з Європейським Союзом. У статті наводяться приклади позитивного та негативного впливу Євросоюзу на країни-члени організації та висувуються припущення щодо негативного впливу ЄС на деякі галузі господарства України. Результатом дослідження виступає розробка вектору подальшої співпраці України з Європейським Союзом, обґрунтування основних загроз які постають перед Україною як майбутнього члена ЄС та надання пропозицій щодо досягнення Україною європейських стандартів. Авторами розширюються напрями інтеграції з ЄС, які на відміну від існуючих доповнені залученням шкіл та вищих закладів освіти до розширення переліку спільних освітньо – культурних програм з країнами Європи, залученням європейських інвестицій з метою післявоєнного відновлення України через закордонні програми.

**Formulation of the problem**

Ukraine’s cooperation with the European Union cannot be considered unequivocally. There are certain conditions of entry and further cooperation, which are not always beneficial for the member state. The discovery of new opportunities can cause a global restructuring of the entire economic system of the country, provoke changes in the social and political life of society.

**Analysis of recent research and publications**

Many scientists were engaged in the study of the problems of Ukraine’s integration interaction with the European Union, in particular Y.A. Zhalilo, Ya.B. Bazylyuk [1], who studied the competitiveness of the Ukrainian economy in the conditions of globalization, I.M. Bezzub [2], who analyzed the current state and prospects of Ukrainian European integration, O.O. Fedoryshyn [3], which examined the main problems of Ukraine’s integration into the European Union and A.V. Todoshchuk. [4], which focused attention on the advantages of Ukraine joining the European Union.

**Formulation of goals**

For a detailed assessment of this problem, it is important to pay special attention to foreign experience. Namely: how EU membership can affect the country, what difficulties it faces now, what it will have to give up and sacrifice for successful economic integration, and finally, analyze what awaits an uncompetitive country in the process of active cooperation with leading countries within the European Union.

**Presentation of the main research material**

After the declaration of independence of Ukraine in 1991, the EU recognized it as its partner in international relations. The formation of a new stage in the development

of Ukraine’s integration relations with EU countries was ensured by the normative document – “Partnership and Cooperation Agreement”, which was signed on June 14, 1994 and entered into force on March 1, 1998. The main purpose of the agreement is to activate economic cooperation and support economic dialogue [8]. Taking into account the existing studies, we propose to supplement the directions of Ukraine’s integration into the European Union (Fig. 1)

The directions of cooperation between Ukraine and the EU listed above are caused by the desire of Ukrainian society to reach a modern level of development, to free itself from outdated methods of managing the economy, and to promote the expansion of economic and cultural borders. The reasons for the need for cooperation with the European Union can be divided into 4 blocks: economic, political, social and cultural, which are listed in the Table 1 [4].

Thus, the listed needs of Ukraine in the conduct of common economic, social and cultural policy condition adherence to new standards for the ability to maintain a competitive position in the European community. It is undeniable that the integration of Ukraine and the EU will have many positive consequences, because it becomes a stimulating factor for the modernization of the entire structure of the country’s management. I propose to consider the main advantages of cooperation with the EU, which were expanded and supplemented by us taking into account the globalization processes in the world (Fig. 2) [2].

We emphasize the importance of investment from the EU. It is worth noting that after the reforms regarding the protection of investors’ rights, Ukraine has become more attractive for international investment. According to the results of 2020, it ranked 64th in the world according to the “Ease of Doing Business” (“Index Doing Business”) [6]. In addition, European investors are no less attracted by:



Fig. 1 – Directions of integration with the EU

Source: improved by the author based on [8]

Table 1 – Directions for the formation of cooperation between Ukraine and the EU

Direction	Main goals
Economic	Modernization of the economic system Stimulation of technological development Expansion of international markets of goods and services Creation of new jobs Attracting foreign investments Using the experience of European countries in business methods
Political	Overcoming corruption in state power Ensuring peace among EU member states Development of diplomatic relations
Social	Development of democratic features of society Social security New educational opportunities for young people Possibility of internship abroad Development of new specialties
Cultural	Unification of society into a single entity Support of creative (creative) activity of the individual Activation of assistance to novice artists Expansion of cultural boundaries Willingness to follow modern standards and values

Source: improved by the author based on [4]

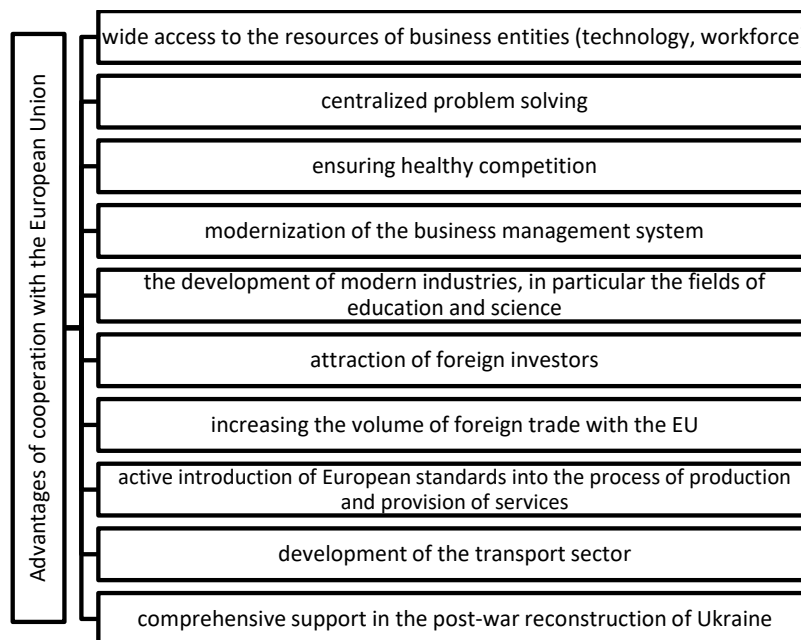


Fig. 2 – Advantages of cooperation with the EU

Source: improved by the author based on [2]

low labor costs; high qualification level of specialists; development of the domestic market; geographical position (main transport routes between Europe and Asia); growing number of tourists; scientific research potential.

As it was mentioned, cooperation with the EU cannot be unequivocally beneficial for all member countries. This process of global integration into European society can be called a challenge for the country, which it must accept in order to overcome the negative consequences and avoid future upheavals. Possible negative consequences for four spheres of life in Ukraine were finalized by us and presented in the Table 2 [4].

We have reason to assert that the accession to the European Union must be confirmed by a strong economic

and social base of the country. The countries that took this decisive step felt the influence of stronger countries and faced external risks that significantly affected the further functioning of the state.

The European Union takes an active part in the development of education in Ukraine, working on such goals as improving the level of education, increasing access to student academic mobility, rethinking the concept of education in modern conditions of development. Thus, within the framework of cooperation in this direction, it is worth noting the active involvement of Ukrainian representatives of education in the EU international cooperation program “Erasmus+”. No less relevant for improving educational methods is the “House of Europe”



Table 2 – Negative consequences of cooperation with the EU

Scope of activity	Negative consequences
Economic	Due to the large number of oligopolies and monopolies, free competition cannot exist for long Restrictions on conducting a nationally oriented economic policy Dependence on more developed countries and their economic system Reformatting of the farming system Destabilization of the financial sphere Shifting the production of labor-intensive types of products to developing countries, which deals a serious blow to the country's traditional industries
Political	Dependence on the political decisions of the representatives of the leading countries The dominance of a separate group of EU countries Developed TNCs put their interests above those of the state The role of states is weakening and management is passing to supranational organizations and associations
Social	Strengthening of migration movements Society's rejection of a large number of migrants Unemployment due to the replacement of traditional methods of production (use of modern technologies instead of manual labor)
Cultural	Contradiction between national ideas There is a desire of countries to preserve their uniqueness Adoption of the traditions of neighboring countries, which gradually supplant urban traditions
Ecological	It is possible to place harmful productions on the territory of Ukraine
Production	Reformatting of the sphere of production Loss of part of the capacities due to high competition in the European markets Closing a share of domestic enterprises and reformatting them into branches of foreign companies Displacement of domestic products from the market due to the formation of European TNCs on the territory of Ukraine
Transport	Dominance of European carriers and gradual displacement of domestic ones

Source: improved by the author based on [4]

program, which works in the following areas: Creative enterprise Ukraine, Creative business academy, Active citizens camps, European youth camps, International residences, University exchanges, Cultural leader academy, Literature for export, Extra sound [7].

As we can see, there are currently many scientific and cultural programs for the development of the scientific and creative potential of Ukrainian youth, which enable the modern generation to more actively integrate into the developed society and exchange experience. Many Ukrainian scientists present their work at the European level. At the moment, research into alternative sources of energy, national security, environmental protection, modern education standards, computer technologies and medicine are relevant areas of Ukrainian-European cooperation.

An equally important step towards the development of cooperation with the EU in the field of education and science can be the implementation of the following programs in Ukrainian schools and universities:

- “Creative business academy”, with the aim of forming basic knowledge in the field of creative industries and the basics of conducting business among students and schoolchildren;

- “Camps of European youth”, which will be expediently held in the summer for the purpose of socializing education seekers in the European space;

- “Literature for export”, which will make it possible to reveal creative potential among Ukrainian youth and provide an opportunity for further development in the field of writing;

- “Extra sound”, with the aim of attracting schoolchildren and students gifted in the field of music to show their potential in Europe.

Therefore, we can state the perspective of the development of youth educational programs and research developments of Ukrainian scientists in the space of the European Union.

In our opinion, alternative sources of energy can be a profitable area of cooperation between Ukraine and the EU. They are the ones who can bring Ukraine's energy sector closer to European standards. Ukraine has experience in using alternative energy sources. Since 2019, part of the Ukrainian business has purchased electricity at a “green” tariff, that is, at a special price at which electricity from natural sources (solar and wind energy, water energy, biofuel) is purchased. Unfortunately, the war caused damage to natural sources of electricity in Ukraine. But, despite this, thanks to experience and intellectual potential, Ukraine is able to restore bio-electric power plants, which can become a reason for effective and mutually beneficial cooperation between Ukraine and the EU.

To restore Ukraine after military aggression by the Russian Federation, it will be necessary to attract investment capital from foreign countries, mainly from the European Union. Joint projects on the reconstruction of Ukraine can be an effective manifestation of integration cooperation with the EU. By combining the efforts of Ukrainian and European construction companies, our country will be able to build European-style cities and attract foreign capital for their further development and operation. Regarding the search for funding sources that should be directed to post-war reconstruction, it would be no less effective to adopt Poland's experience in grant funding. An example of this approach to financing can be Poland, which in this way received 106 billion euros for agriculture and domestic

projects for 2014–2020 [10]. Poland used the experience of structural funds, which made it possible to bring the country's infrastructure to a high level of development. Such experience, including its shortcomings, can be used to plan the reconstruction of Ukraine after the war with the Russian Federation. Before joining the European Union, Poland received funding through three programs – funding instruments [10]:

- PHARE (assistance in the restructuring of the economies of Poland and Hungary);
- SAPARD (agricultural sector restructuring program and assistance to rural areas);
- ISPA (infrastructural projects in the fields of ecology and transport).

As for the distribution of funds, it remains a rather difficult issue, primarily due to the corruption of the Ukrainian government. In this case, when distributing funds, it would be advisable to use blockchain – technologies that will help build a transparent picture of the movement of funds within the country. Therefore, by focusing Ukraine's attention on cooperation with the EU and other partner countries, forming a strong social base within the state, defeating corruption in the government of Ukraine and working hard, using new approaches and technologies, the economic recovery of Ukraine after the war with the Russian Federation will proceed at an

intensive pace. at that time, strengthening the integration processes of Ukraine into a developed society.

### Conclusions

The article focuses on the priority areas of cooperation between Ukraine and the European Union, which can be divided into 4 blocks: economic, political, social and cultural. Basically, they are based on the introduction of new technologies in all spheres of production, democratization of society, overcoming the corruption of the authorities and improving the environmental situation in the world. It is concluded that the competitive positions of Ukraine are an integral element of cooperation with the EU, which includes many strong, technically developed countries, because only a country with a stable competitive base can maintain a decent position on the market of goods and services and get maximum benefits from economic relations. In our opinion, alternative energy sources, investments in post-war reconstruction, scientific and technical cooperation, and joint programs for the development of modern youth can be profitable areas of cooperation between Ukraine and the EU. Only by bringing the country closer to European standards can the vector of development of economic processes be changed and Ukraine established as a high-tech state. The available intellectual and scientific and technical potential gives reason to count on it.

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# FINANCE AND MONEY TURNOVER

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## THE IMPORTANCE OF FINANCIAL MONITORING DURING WAR

**Kolisnyk A.V., Kushnir S.O.***Zaporizhzhia National University**Ukraine, 69600, Zaporozhzhia, Zhukovsky str., 66*

ka323687@gmail.com, SvetlanaAK@ukr.net

ORCID: 0000-0002-1410-1887

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National Bank of Ukraine,  
economy, bank

Formation of a stable economy is one of the primary tasks of Ukrainian society. In connection with this, there is a need for constant control over financial transactions. That is why it became necessary to conduct an analysis of the state of financial monitoring in the conditions of war. The article analyzes today's situation regarding state control over financial operations of economic entities. It contains the main provisions related to the work of the State Financial Monitoring Service and the National Bank of Ukraine. The concept of financial monitoring, the main provisions according to the current legislation of Ukraine are given. Attention is focused on two levels of financial monitoring. The role of the state in financial monitoring is defined. The article examines the legislation related to financial monitoring and regulation during the war, since after the start of hostilities, it is even more difficult to track the illusory legalization of income. Moreover, since there is no perfect legislation on this issue yet, conducting your own research is expedient and relevant. It has been analyzed how many enterprises have received suspicion of money laundering and what is the total amount of assets that were tried to be legalized through banking systems. An analysis of the number of institutions under the control of the State Financial Monitoring Service was carried out. Measures to influence violators of current legislation in terms of financial monitoring have been identified. Measures to influence violators of current legislation in terms of financial monitoring have been determined. The research proposal provides an analysis of what laws have been proposed to stabilize the work of enterprises and provide them with the necessary financial reporting under the conditions of martial law. The expediency of strengthening control by the state and creating stricter control rules is substantiated.

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## ВАЖЛИВІСТЬ ФІНАНСОВОГО МОНІТОРИНГУ ПІД ЧАС ВІЙНИ

**Колісник А.В., Кушнір С.О.***Запорізький національний університет**Україна, 69600, м. Запоріжжя, вул. Жуковського, 66***Ключові слова:**фінансовий моніторинг,  
фінансові операції,  
доходи, легалізація,  
Державна служба фінансового  
моніторингу,  
Національний банк України,  
економіка, банк

Формування стабільної економіки є однією із першочергових задач українського суспільства. У зв'язку із чим виникає необхідність проведення постійного контролю над фінансовими операціями. Саме тому стало необхідним проведення аналізу стану фінансового моніторингу в умовах війни. В статті проаналізовано сьогоdnішню ситуацію щодо державного контролю над фінансовими операціями суб'єктів господарювання. В ній наведено основні положення, які стосуються роботи Державної служби фінансового моніторингу та Національного банку України. Наведено поняття фінансового моніторингу, основні положення згідно діючого законодавства України. Акцентовано увагу на, два рівні проведення фінансового моніторингу. Визначено роль держави у проведенні фінансового моніторингу. В статті досліджено законодавство, що стосується фінансового моніторингу, регулювання під час війни, оскільки після початку бойових дій, відстежити примарну легалізацію доходів ще важче. Тим паче, що досконалого законодавства з цього питання ще немає, провести власне дослідження є доцільним та актуальним. Проаналізовано, скільки підприємств наразі

отримало підозру у відмиванні коштів та якою є загальна сума активів, які намагались легалізувати через банківські системи. Проведено аналіз кількості установ, які перебувають під контролем Державної служби фінансового моніторингу. Виявлено заходи впливу до порушників чинного законодавства в частині фінансового моніторингу. Визначено заходи впливу до порушників чинного законодавства в частині фінансового моніторингу. У дослідницькій пропозиції наведено аналіз стосовно того, які закони було запропоновано задля стабілізації роботи підприємств та подання ними необхідної фінансової звітності в умовах дії воєнного стану. Обґрунтовано доцільність посилення контролю з боку держави та створення більш жорстких правил контролю.

### Statement of the problem

A stable economy of the country is one of the most important factors in the state's existence. The economic protection of the state from various types of risks consists of regular tracking, monitoring, and measures to combat corruption, money laundering, and other criminal schemes that can affect financial stability. Economic crimes not only destroy the economy but also violate the interests of businesses and citizens.

Ever since the annexation of Crimea and hostilities in the Donetsk and Luhansk regions, and even more so after the start of a full-scale war on February 24, 2022, this issue has become even more urgent. Thus, there is information about new corruption schemes related to humanitarian aid, fund-raising by various "philanthropists", schemes for the distribution of aid funds from foreign organizations, and so on. For example, some businesses continue to do business with the attacker despite ongoing hostilities. That is why financial monitoring during the war is a very urgent issue that needs urgent treatment.

### Analysis of recent studies and publications

Many scientists were engaged in the analysis of the issue of financial monitoring. M.V. Bormotova, I.G. Kozysts, A. Yu. Los, E.A. Mukhina, S. Popov, T.O. Chasova, B. Shyshkovsky, O. Shpak made a significant contribution to the study of the issue [1; 3; 4; 6; 10; 11] and other researchers. In their work, the new legislation related to the regulation of financial control on the territory of Ukraine and the issue of financial monitoring during the investigation of various types of crimes was investigated.

### Objectives of the article

However, during martial law, the study of issues of financial monitoring, as well as the analysis of the most typical cases of prosecution of those guilty of violating the law, require analysis and further processing.

### The main material of the research

High-quality financial monitoring in wartime directly affects the financial stability of our state.

Financial monitoring is a special form of control over financial transactions, thanks to which it is possible to establish information about a separate financial transaction, counterparties, the origin of funds, etc.

According to the Law of Ukraine "On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of

Proliferation of Weapons of Mass Destruction" dated December 6, 2019. No. 361-IX (hereinafter referred to as the Law): "Financial monitoring is a set of measures taken by financial monitoring entities in the field of prevention and countermeasures, which include state financial monitoring and primary financial monitoring" [7].

The law provides for the establishment of transparent and effective control mechanisms for operations with money and other assets that may be related to the legalization of proceeds of crime, the financing of terrorism, and the financing of the proliferation of weapons of mass destruction. In addition, the Law stipulates requirements for the storage of documents and information about transactions that may be related to the legalization of proceeds of criminal origin, within a certain period; implementation of a system of risk-oriented approach to fighting against the legalization of proceeds of crime and financing of terrorism, establishment of liability for violation of requirements provided for by law, including administrative, civil and criminal liability.

The mentioned Law is the latest in force, it was preceded by some previous legislative acts since 2001.

To prevent the possibility of legalization of criminally obtained income through the banking system of Ukraine, banks, the National Bank of Ukraine, and other entities defined by the Law carry out financial monitoring. This procedure includes conducting inspections of each client of the bank and analyzing their financial transactions. [5].

Financial monitoring, which consists in identifying transactions that may be related to the legalization of proceeds of crime, financing of terrorism, and financing of the proliferation of weapons of mass destruction, is carried out at two levels, the first of which is carried out by subjects of primary financial monitoring. Such subjects include, in particular, banks, insurers (reinsurers), unions, pawnshops, operators of payment systems, commodity, and other exchanges, professional participants of the stock market (securities market), postal operators, subjects of auditing activities, notaries, business entities that provide legal, advocacy and accounting services, business entities that conduct lotteries and/or gambling, providers of services related to the circulation of virtual assets and other designated financial institutions [8].

Subjects of primary monitoring must keep documentation and store information on transactions with cash and other assets that may be related to the legalization of proceeds of crime, financing of terrorism, and financing of the proliferation of weapons of mass destruction, within a certain period. They also have the right to stop operations

that are suspicious of money laundering or terrorist financing, and to report this to specially authorized bodies: subjects of state financial monitoring.

Following Articles 20 and 21 of the Law, transactions subject to financial monitoring include threshold financial transactions, which include financial transactions of politically significant persons, their family members and/or persons related to politically significant persons, payment transactions for the transfer of funds abroad (including to the states classified as offshore zones by the Cabinet of Ministers of Ukraine), financial transactions with cash (deposit, transfer, receipt of funds), financial transactions of an electronic resident (e-resident). Suspicious financial transactions also belong to transactions subject to financial monitoring. Financial transactions are considered suspicious if the subject of primary financial monitoring suspects or has sufficient grounds to suspect that they are the result of criminal activity or are related to or related to the financing of terrorism or the financing of the proliferation of weapons of mass destruction [8].

In the conditions of martial law, the issue of control of payments and receipt of income acquires an increased level of urgency. After all, despite the current situation, which greatly complicates the work of all enterprises and the state as a whole, many people are trying to find ways to legalize income obtained through criminal means. In addition to the sale of goods that do not pass through tax declarations and are not listed in any state database, problems such as the indication of the invalid value and the sale of products received as humanitarian aid also appeared. Since these products are supplied to Ukraine for free provision of the population, they cannot be sold.

Reporting on its activities, the State Financial Monitoring Service of Ukraine noted that during the period of martial law in 2022, there was a strengthening of control by the regulatory bodies of Ukraine. Today, the list of current legislative and regulatory documents, in addition to the Law of Ukraine, includes:

- The main directions of development of the system of prevention and countermeasures against the legalization (laundering) of proceeds obtained through crime, the financing of terrorism, and the financing of the proliferation of weapons of mass destruction in Ukraine for the period until 2023 and the plan of measures for their

implementation, approved by the Decree of the CMU dated 12.05.2021 No. 435-p.

- Action plan for improving the national system of financial monitoring based on the results of the 5<sup>th</sup> round of assessment of Ukraine by the MONEYVAL Committee of the Council of Europe.

- Strategic development programs of the State Financial Monitoring for the period until 2024.

- Priorities of State Financial Monitoring for the period of martial law agreed by the Ministry of Finance of Ukraine” [2].

Also, on the website of the State Monitoring Service of Ukraine, it is stated that control over the settlement of problems with financial transactions is carried out thanks to the support of the European Union. After adopting the course of integration into the EU, Ukraine began the process of gradually implementing the norms of control over financial transactions, which have been in force in the countries of the European Union for a long time.

According to the State Financial Monitoring Service, in 2022, 1.179.392 cases related to the illegal conduct of banking transactions were taken into account. Data for 2022 are shown in blue and data for 2021 in orange (Fig. 1).

Almost all institutions that currently carry out financial activities are under the control of the service. Of course, the first months of the war suspended the activities of all monitoring groups. However, from May to the end of 2022, the State Financial Control Service managed to record 928.471 reports.

So it can be seen that during 2022 procedures of constant financial monitoring were carried out, thanks to which several problems requiring consideration in court were identified. An approximate calculation based on materials related to money laundering showed that during 2022, the legalization of illegally obtained profits was carried out for approximately 7.7 billion hryvnias. Exact figures can be named after the completion of court proceedings [2].

This year, the National Bank of Ukraine has already managed to indict and terminate the work of three banks and eleven non-banking institutions due to violations of legislation in the field of prevention and countermeasures against the legalization (laundering) of criminal proceeds, financing of terrorism and financing of the proliferation of weapons of mass destruction [5]. Let’s consider examples of

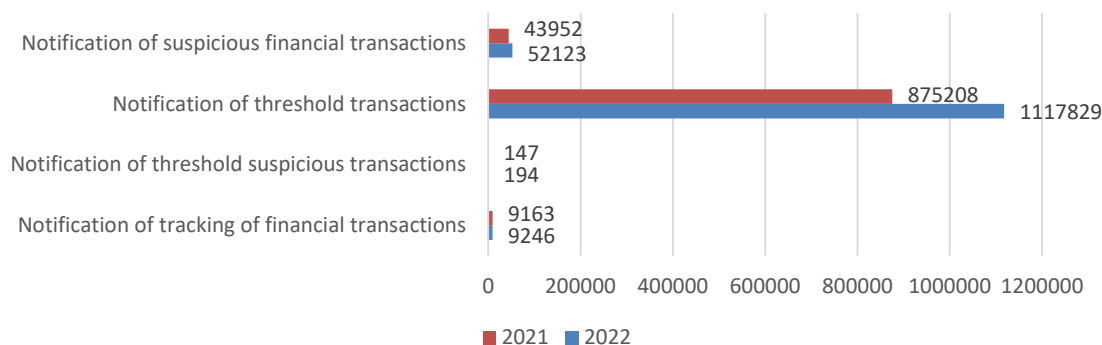


Fig. 1 – Number of subjects of primary monitoring taken into account due to financial transactions by category for 2021–2022

Source: compiled by the author based on [2]

the detection of violations of legislation and the application of appropriate influence measures by the NBU (Table 1).

Measures to influence violators of current legislation in terms of financial monitoring for the period from 01.01.2023 to 01.03.2023.

Such several violations were detected by the NBU only at the beginning of 2023, from which it can be concluded that financial monitoring in the conditions of martial law is a mandatory procedure since some entrepreneurs continue to conduct illegal activities and try to legalize illegally obtained funds with the help of payment systems. Currently, such procedures mainly concern the funds obtained through the illegal sale of arms and humanitarian aid. There are also cases of illegal transportation of cars and medicines across the border. Already in April 2022, the police of Ukraine solved some crimes that were connected with the illegal

sale of humanitarian weapons and medicines in the amount of more than 8 million hryvnias. Similar enterprises were also exposed in Lviv, Bukovyna [12], Cherkasy [5], Zaporizhzhia, and other regions of Ukraine.

Procedures for monitoring financial transactions can help in identifying the facts of such violations and preventing illegal activities in the future, forming the awareness of businesses and citizens about conducting legal activities, paying taxes and not hiding the real situation from the state and partners (Table 2).

Such measures can help create an additional security system and improve the overall state of the Ukrainian economy. They are directly assigned to work with money laundering and can help improve financial monitoring in Ukraine. The State Financial Monitoring Service constantly develops and implements the state policy in

Table 1 – Measures to influence violators of current legislation in terms of financial monitoring for the period from 01.01.2023 to 01.03.2023

№	Name of the institution	The essence of the violation	The influence measures applied
1	“IBOX BANK” JSC	The bank systematically violated the current legislation related to money laundering and counter-terrorism procedures. During the past year, the bank already received warnings and paid fines for improper performance of their duties, but they did not heed the advice	License revoked
2	“FC LEO” LLC	For failure to fulfill the obligation to carry out financial monitoring	Fine in the amount of UAH 73.556.600
3	“A-PAY” LLC	For not conducting the financial monitoring procedure	Fine in the amount of UAH 64.256.900
4	“UKRFINSTANDART” LLC	For failure to conduct primary financial monitoring	Fine in the amount of UAH 14.600.100
5	“FC “HUNTER”” LLC	For violating the requirements of Clause 15 of Part Two of Article 8 of Law No. 361-IX and Clause 41 of Chapter IV of the Regulations on the Procedure for Organization and Supervision in the Field of Financial Monitoring	Fine in the amount of UAH 340.000.00
6	LLC “MR. CASH” and PJSC “UFG”	Due to violation of clauses 4 and 6 of the Law on Financial Accounting	Fines in the amount of UAH 255.000. and UAH 50,000 in accordance
7	“Statuscapital” LLC, “ESCROW CAPITAL” LLC, “YURSPECFINANCE” LLC	For violation of the requirements of paragraph 1 of the second part of Article 8 of Law No. 361-IX, which consists in the improper fulfillment by institutions of the obligation to register with a specially authorized body as a subject of primary financial monitoring	Fines in the amount of UAH 1.700.00 for each institution
8	“POLIKOMBANK” JSC, “Raiffeisen Bank” JSC, “FINANCIAL WORLD” FC” LLC, “CONVERSIA” FC” LLC	For failure to conduct primary financial monitoring	Written warnings [2]

Table 2 – Financial monitoring measures for 2023–2024

Name	The essence
Strategic development programs of the State Financial Monitoring for the period until 2024	This program was prepared together with the EU Anti-Corruption Initiative in Ukraine. Its main provisions state: <ul style="list-style-type: none"> <li>The need to organize and carry out risk assessment at the national level to counter and prevent money laundering. <ul style="list-style-type: none"> <li>Carrying out digital transformation of the process. <ul style="list-style-type: none"> <li>Implementation of a set of additional reports.</li> </ul> </li> </ul> </li> <li>Increasing the level of qualification of those who deal with the issue of money laundering.</li> </ul>
Priorities of State Financial Monitoring for the period of martial law agreed by the Ministry of Finance of Ukraine.	<ul style="list-style-type: none"> <li>Conducting permanent financial monitoring in accordance with the Law of Ukraine. <ul style="list-style-type: none"> <li>Creation of stricter methods of controlling the work of enterprises. <ul style="list-style-type: none"> <li>Funding of additional measures to control money laundering.</li> </ul> </li> </ul> </li> </ul>

the field of financial monitoring, ensures the functioning and development of the financial monitoring system, and monitors compliance with the legislation on prevention and countermeasures against legalization (laundering) of proceeds obtained through crime, financing terrorism and financing the proliferation of weapons of mass destruction.

### Conclusions

Analysis of the issue of financial monitoring shows that this procedure helps control the legality of transactions of legal entities and individuals, preventing money laundering

and various types of illegal activities. In the conditions of the war in Ukraine, this issue has become even more urgent, which is why there is a need to strengthen control by the state and create stricter control rules.

As practice has shown, the most common violations are non-fulfillment or partial non-fulfillment of the financial monitoring procedure, for which primary monitoring subjects receive fines or are deprived of their licenses. Also, in 2023, it is planned to expand the system of measures for financial monitoring to improve the state of the current economy of Ukraine.

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DOI <https://doi.org/10.26661/2414-0287-2023-2-58-14>**IMPACT OF OFFSHORE ZONES ON TAX PLANNING OF ENTERPRISES:  
TYPES, FEATURES, MEASURES TO COUNTERACT TAX EVASION****Ohrenych Yu.O., Krasnoshchok Ya.V.***Zaporizhzhia National University*  
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66  
yuliashvets@ukr.net, yaroslav2029@gmail.com  
ORCID: 0000-0002-0294-1889**Key words:**offshore zones, tax planning,  
ukrainian companies, taxes,  
tax evasion,  
tax planning optimization

It is determined that in today's environment, many enterprises are interested in using tax benefits, obtaining confidentiality, and using offshore schemes to reduce the tax burden and increase profits. However, all this leads to a decrease in tax revenues to the budget, a decrease in expenditures, and this issue is relevant due to the desire of the Ukrainian government to bring the Ukrainian market out of the shadows. The article examines the existing approaches to defining the concept of «offshore zones» and considers special economic zones of Ukraine. The types of offshore zones, their location, and types of offshore banking centers are defined. Approaches to the interpretation of the definition of «tax planning» are analyzed, and the peculiarities of its use in offshore zones are determined. The tax burden on enterprises is analyzed and the methods of using offshore jurisdictions by enterprises to optimize taxation are studied. The author examines the harbor corporate tax index and the financial secrecy index, according to which the territories that are most attractive for capital withdrawal are identified. Representatives of offshore companies are considered and the level of the shadow economy in Ukraine is analyzed. The mechanisms of offshore tax planning (establishment of offshore companies, use of offshore bank accounts, double taxation treaties, free trade zones) are characterized. The advantages of offshore zones are identified, namely: reduction of tax liabilities; confidentiality; international expansion. The disadvantages of offshore zones are highlighted, in particular: reputational risks; legal difficulties; business risks; restrictions on operations; high costs; double taxation risks; and tax shortfalls. The author provides measures to prevent tax evasion by enterprises, such as: strengthening control over compliance with tax legislation; introduction of an electronic declaration system and electronic tax calculation; reduction of the tax burden on enterprises; development of international cooperation in the field of tax policy; development of alternative taxation methods. Ways to counteract offshoring have been formed: raising tax rates in the country; control over the operation of offshore companies; tax amnesty for companies returning from offshore; abolition of tax benefits for companies using offshore zones; control over the movement of capital and financial flows to offshore zones.

**ВПЛИВ ОФШОРНИХ ЗОН НА ПОДАТКОВЕ ПЛАНУВАННЯ ПІДПРИЄМСТВ:  
ВИДИ, ОСОБЛИВОСТІ, ЗАХОДИ ПРОТИДІЇ УХИЛЕННЮ ВІД СПЛАТИ ПОДАТКІВ****Огренич Ю.О., Краснощок Я.В.***Запорізький національний університет*  
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66**Ключові слова:**офшорні зони,  
податкове планування,  
українські підприємства,  
податки,  
ухилення від сплати податків,  
оптимізація податкового  
планування

Визначено, що в умовах сьогодення чимало підприємств зацікавлені у використанні податкових пільг, отриманні конфіденційності, застосуванні офшорних схем задля зменшення податкового навантаження та збільшення прибутків. Проте все це призводить до зменшення надходжень податків до бюджету, зниження видатків та дане питання є актуальним через бажання українського уряду вивести український ринок з тіні. Досліджено існуючі підходи до визначення поняття «офшорні зони», розглянуто спеціальні економічні зони України. Визначено види офшорних зон, місце їх дислокації, типи офшорних банківських центрів. Проаналізовано підходи до трактування дефініції «податкове планування», визначено особливості його використання



в офшорних зонах. Проаналізовано податкове навантаження на підприємства та досліджено методи використання офшорних юрисдикцій підприємствами з метою оптимізації оподаткування. Досліджено індекси корпоративного податкового індексу гавані, індекс фінансової таємниці, згідно з якими визначено території, які є найбільш привабливими до виведення на їх території капіталу. Розглянуто представників офшорних компаній та здійснено аналіз рівня тіньової економіки в Україні. Охарактеризовано механізми офшорного податкового планування (створення офшорних компаній, використання офшорних банківських рахунків, договорів про уникнення подвійного оподаткування, зон вільної торгівлі). Визначено переваги офшорних зон, а саме: зменшення податкових обов'язків; конфіденційність; міжнародна експансія. Виокремлено недоліки офшорних зон, зокрема: ризики для репутації; юридичні складнощі; ризики для бізнесу; обмеження для операцій; високі витрати; ризики подвійного оподаткування; неонадходження податків до бюджету. Наведено заходи щодо запобігання ухиленню від сплати податків підприємств, такі як: посилення контролю за дотриманням податкового законодавства; запровадження системи електронного декларування та електронного розрахунку податків; зменшення податкового навантаження на підприємства; розвиток інтернаціонального співробітництва в сфері податкової політики; розвиток альтернативних методів оподаткування. Сформовано способи протидії офшоризації: підвищення податкових ставок в країні; контроль за функціонуванням офшорних компаній; податкова амністія для компаній, які повертаються з офшорів; скасування податкових пільг для компаній, які використовують офшорні зони; контроль за рухом капіталу та фінансовими потоками в офшорні зони.

### Statement of the problem

The use of offshore zones for tax planning is widespread today, especially abroad, and this process leads to a reduction in tax revenues to the budget of countries. Reduced tax revenues lead to an imbalance in the country's financial system, have a negative impact on economic development and the competitive environment in which businesses operate.

There is a widespread practice of using offshore zones for tax evasion, which also leads to a reduction in tax revenues and a violation of the fairness of the tax system. In the context of economic globalization and international trade, the problem of using offshore zones for tax planning is becoming more urgent. In addition, military actions have led to difficult economic conditions for businesses, which has increased the need for tax benefits to resume operations. Accordingly, the issue of using offshore zones in tax planning is relevant and there is a need to develop measures to counteract tax evasion and ways to counteract offshoring.

### Analysis of recent studies and publications

The problem of functioning of offshore zones, operation of offshore companies, determination of their legal status has been studied in the works of scientists, namely: O.B. Hamuha [7], M.I. Karlin, O.A. Ivashko [14], I.M. Kobushko, I.V. Govorun, S.O. Panchenko [15], I.S. Komar [16], V.I. Franchuk, A.S. Pryshla [24], D.D. Kose [26].

Along with this, the issues of using offshore zones as a method of tax planning, providing economic benefits, ways to choose the most appropriate jurisdiction, tax planning, and studying the impact of offshore zones on the socio-economic development of countries

are covered in the works of scientists, in particular: O.V. Adamyk [5], L.M. Vasilieva [6], Y.S. Grinchuk, V.Y. Grinchuk [9], O.A. Ivashko [13], S.O. Koretska [17], Ya.V. Samusevych, A.V. Vysochyna [22], Z. Lutsyshyn, N. Yuzhanina, T. Frolova, M. Mazur, D. Perebyinis [23], G.O. Shamborovskyi [25].

However, the vast majority of works do not summarize the consequences of using offshore zones, nor do they consider the problem of offshore zones in the context of international tax competition, their impact on the global economy, nor do they identify the disadvantages of offshore zones, measures to prevent tax evasion by enterprises and ways to counteract offshoring. In the context of changing legislation, these issues are relevant for both companies and states.

### Objectives of the article

The purpose of the article is to study the impact of offshore zones on tax planning of enterprises and the specifics of using offshore zones in tax planning of enterprises; to determine the advantages and disadvantages of offshore zones for tax planning of enterprises; to formulate measures to counteract tax evasion and ways to counteract offshoring.

### The main material of the research

The impact of offshore zones on corporate tax planning is one of the most relevant and complex topics for many countries, including Ukraine. Every year, Ukrainian entrepreneurs withdraw millions of dollars to offshore zones, which negatively affects both the Ukrainian budget and Ukraine's ranking in the global market. Offshore zones are a popular tool for companies wishing to reduce their tax costs and minimize tax risks, as the use of offshore zones ensures an increase in profits and a reduction in tax revenues, which negatively affects the state of the

economy. In such circumstances, there is a need to develop measures to counteract tax evasion and ways to counteract offshoring. In addition, international competition in the market increases the pressure on companies to reduce costs, which necessitates effective tax planning.

In the light of international initiatives aimed at combating tax evasion, it is important to have a clear strategy that ensures an adequate level of tax revenues and fairness in society.

Offshore zones are widely used in business because of their effectiveness in minimizing tax costs, obtaining benefits, and promoting the growth of companies' profitability in the global market. These zones have attractive financial conditions, such as low or zero income tax rates, which are necessary for companies to operate. The analyzed approaches to defining the concept of "offshore zone" are presented in Table 1.

Thus, taking into account the existing approaches to the definition of "offshore zone", it can be noted that it is a territory with a special tax regime and preferential conditions that facilitates the investment of assets in these zones, the growth of profitability of enterprises, and the attraction of investment funds.

Ukraine does not have offshore zones, but there are special economic zones (SEZs) where companies can receive benefits and support from the state. SEZs are located on the territory of enterprises and have special conditions for taxation and wages. Companies located in SEZs may receive benefits (reduced income taxes, reduced land lease costs, customs privileges). Special economic zones include:

“Azov”, “Donetsk”, “Zakarpattia”, “Interport Kovel”, “Resortopolis Truskavets”, “Mykolaiv”, “Porto Franco”, “Port Crimea”, “Reni”, “Slavutych”, “Yavoriv” [18].

In accordance with European practice, offshore zones are divided into two categories: with full (complete exemption from reporting, payment of taxes at low rates) and tax offshoring (reduced tax rate, no exemption from accounting and reporting) [23].

In particular, there are three types of offshore banking centers (Table 2).

Conventionally, offshore zones can be divided into:

- “1) African (Seychelles, Liberia, Mauritius);
- 2) Asia-Pacific (Vanuatu, Cook Islands, Labuan, Nauru, Samoa, Tonga);
- 3) Caribbean (Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Bermuda, British Virgin Islands, Dominica, Cayman Islands, Grenada, St. Kitts and Nevis);
- 4) European (Andorra, Gibraltar, Liechtenstein, Monaco, Isle of Man, Channel Islands);
- 5) Middle East (Bahrain, Dubai, Lebanon)” [14, p. 12].

In modern conditions, the use of offshore zones in tax planning of enterprises is a popular issue, as it allows enterprises to reduce tax costs, minimize tax risks, increase profitability, and attract investment in development. At the same time, the use of offshore zones has negative consequences in the form of reduced tax revenues to the state budget and a negative impact on its rating in the global market.

Before studying the peculiarities of tax planning in offshore zones, it is necessary to analyze the existing approaches to the definition of “tax planning” (Table 3).

Table 1 – Definition of “offshore zone”

Author	Definition of the concept
Franchuk V.I., Pryshla A.S.	the territory of another country that has certain privileges in relation to taxation of foreign capital [24, p. 234]
Komar I.S.	is a part of the territory of the state where tax, customs, financial benefits are established for investors in order to attract additional investment funds to intensify production, trade, foreign economic and other activities [16]
Kobushko I.M., Govorun I.V., Panchenko S.O.	a specific tool for stimulating investment activity and increasing revenues to the budgets of depressed territories, the economic effect of which is based on the phenomenon of growth of state revenues due to the expansion of the tax base (using its special type of income received only from foreign economic activity) and minimizing the tax burden [15, p. 186]
Kose D.D.	one of the types of free economic zones. They are referred to as service free economic zones, the peculiarity of which is the creation of favorable monetary, financial and fiscal regimes for entrepreneurs, a high level of banking and commercial secrecy, and loyalty to state regulation [26]
Encyclopedia of Modern Ukraine	zone of favorable conditions for doing business [11]
Hamuha O.B.	the territory of a jurisdiction that provides tax benefits when establishing an offshore company, i.e. a company formed by non-residents and operating outside this territory of the state of registration [7, p. 445]

Source: compiled by the authors on the basis of [7; 11; 15; 16; 24; 26]

Table 2 – Types of offshore banking centers

Model name	Model description
New York model	Provides for agreements with financial centers (New York, Tokyo, Singapore). Separate accounts are established in these markets that are not subject to restrictions on domestic financial transactions, such as reserve requirements. Companies are subject to corporate taxation and local stamp duties [23, p. 77].
London model	In London and Hong Kong, financial transactions are free from restrictions. In such offshore zones, there is corporate taxation, as well as the possibility of taxation of business securities [23, p. 77].
Tax shelter	The markets of the Bahamas and the Cayman Islands are a type of offshore markets where transactions are concluded between non-residents and are not subject to taxation. In addition, there is no corporate taxation and no fees for business securities in these markets [23, p. 77].

Source: compiled by the authors based on [23]

Table 3 – Definition of “tax planning”

Author	Definition of the concept
Grinchuk Y.S., Grinchuk V.Y.	formation by the enterprise of such a tax policy that would provide the most optimal option for the placement of its assets to obtain the greatest profit by optimizing taxation [9, p. 48-49]
Samusevych Ya.V., Vysochyna A.V.	an element of tax management that forms the basis for making optimal management decisions in the field of taxation [22, p. 31]
Zagorodnyi A.G., Vozniuk H.L.	determination of the amounts of tax payments for the planning period, in particular: taxes attributed to production and circulation costs; tax payments attributed to the selling price of products (value added tax, excise tax, etc.); income taxes, total tax payments [12]
Koretska S.O.	an integral part of the financial and economic activities of both individuals and legal entities, and therefore it can be divided into individual (characteristic of both families and the unincorporated sector of the economy) and corporate [17]
Vasilieva L.M.	includes the systematized activities of tax authorities aimed at determining the potential amount of tax revenues to the budget for a specific period of time, taking into account the factors of socio-economic and political development of the country that affect the receipt of taxes and fees within a single budget and tax process [6, p. 34]

Source: compiled by the authors on the basis of [6; 9; 12; 17; 22]

Thus, taking into account the approaches considered, it should be noted that tax planning is the process of forming an optimal tax policy of an enterprise, systematizing the activities of tax authorities in order to optimize taxation, reduce the tax burden, determine the amount of tax revenues to the budget and increase them, formulate clear goals and optimal taxation parameters.

The peculiarity of tax planning in offshore zones is the low level of taxes or their absence [5]. Many companies prefer to register their subsidiaries in offshore zones in order to use tax benefits, reduce tax costs and increase profitability.

Taking into account the data in Fig. 1, it should be noted that in 2018, Ireland ranked first in terms of imports from offshore zones (its volume amounted to USD 70 million) and Morocco ranked last (its volume amounted to USD 22 million).

Table 4 shows that China is the leading country in terms of illegal capital outflows, as in 2021, capital worth USD656,3 billion was exported. This is the highest figure among all countries. As for other countries, capital outflows are much lower than in China. Nigeria has the lowest rate

of capital outflows. Illicit capital flight is a serious problem for many countries, as it can lead to reduced tax revenues and economic instability.

According to a study by the “Social Movement”, in 2020, the total number of companies that used offshore structuring was 66. “The largest share of these companies is held by holdings from the Netherlands (22 companies). Cypriot shareholders own 20 companies, Swiss shareholders – 5, and British shareholders – 4. At the same time, there are companies with owners structured in several offshore jurisdictions” [10]. In addition, there are Ukrainian companies with Dutch holdings among their shareholders: “PJSC “PRODUCTION COMPANY “UKRNEFTOBURINNIA”; JSC “DTEK ZAKHIDENERGO”; PJSC “MINE MANAGEMENT “POKROVSKE”; JSC “DTEK DNIPROENERGO”; PJSC “ZAPORIZHSTAL”; JSC “DTEK DNIPROVSKI ELECTRONIC NETWORKS”; PJSC “AZOVSTAL IRON & STEEL WORKS”” [10].

Quite often, Ukrainian enterprises use tax planning tools, i. e. offshore zones, to reduce the tax burden. The author

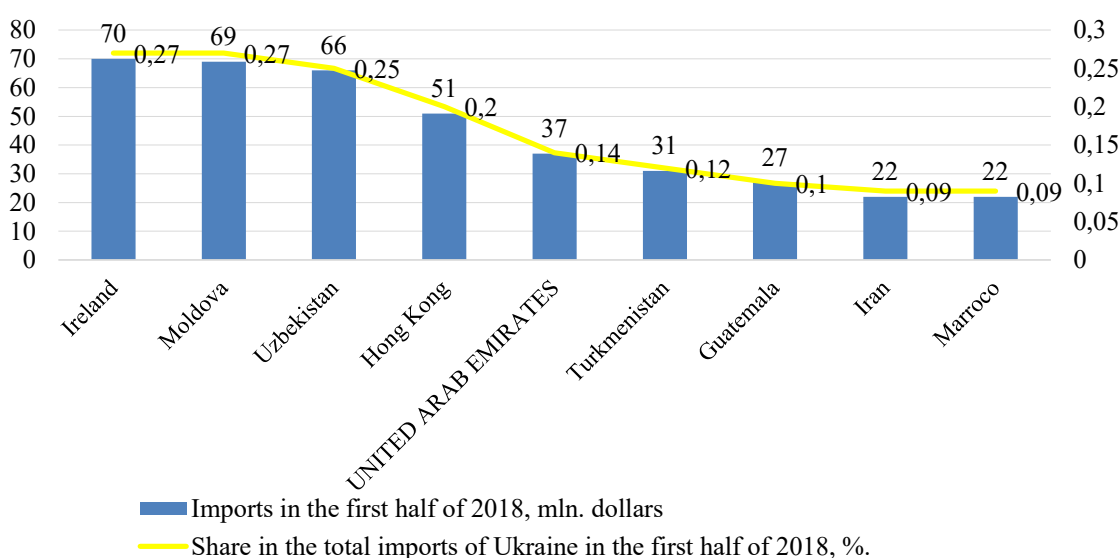


Fig. 1 – Top 10 “offshore” countries in terms of imports to Ukraine in the first half of 2018

Source: compiled by the authors based on [8]

Table 4 – Leading countries of the world by the volume of illegal export of capital in 2017–2021, billion USD USA

Countries	2017	2019	2021	Relative deviation. 2021 to 2019, %	Average annual volume
China	258.6	473.5	656.3	38.61	462.80
Mexico	67.5	63.3	73.7	16.43	82.93
India	70.3	85.6	92.9	8.53	68.17
Malaysia	62.1	50.4	47.9	-4.96	53.47
Brazil	30.8	31.3	28.2	-9.90	30.10
South Africa	24.6	23.0	26.1	13.48	28.17
Thailand	24.1	27.4	33.0	20.44	24.57
Indonesia	14.6	18.3	20.6	12.57	24.70
Nigeria	19.4	26.7	28.0	4.87	17.83

Source: compiled by the authors based on [3]

analyzed tax revenues to the budget of Ukraine by certain types of taxes (value added tax, personal income tax, excise tax, corporate income tax) and calculated the tax burden on Ukrainian enterprises using the following formula 1 [20]:

$$\text{Tax burden on enterprises} = \frac{\text{Total taxes}}{\text{Gross domestic product}} * 100. \quad (1)$$

According to table 5, it should be noted that in 2018 the tax burden was 19.16%, in 2019 it decreased by 1% and amounted to 18.09%. In 2020, the tax burden increased by 0.14% to 18.24%, and in 2021 it amounted to 18.03%, which is 0.21% less than in 2020. In 2022, the tax burden decreased by 10.79% compared to 2021.

Thus, the amount of taxes increased during 2018–2022, but the level of the tax burden remained generally stable

despite this change. Ukrainian companies did not have a high tax burden during the study period.

The study does not reflect the full tax burden, as more factors need to be taken into account to determine the full level of the tax burden. Therefore, to improve the quality of the analysis, we analyzed a study by the Ukrainian Institute for the Future, which states that in 2021 the tax burden was 40.8%.

This level of tax burden is quite high, but in many European countries it is at the same level (Fig. 2).

From Fig. 2 shows that in developed European countries, the level of tax burden is similar to the Ukrainian one, but for the Ukrainian economy, such burdens are more significant, so companies withdraw their equity to countries with lower taxation.

Table 5 – Tax burden in Ukraine, UAH thousand

Indicator	2018	2019	2020	2021	2022	Relative deviation of 2022 to 2021, %
Value added tax	374508.20	378690.20	400600.10	536489.20	467001.00	-12.95
Personal income tax	91741.80	109954.00	117281.30	137555.20	148427.30	7.90
Excise tax	118852.40	123357.90	138296.20	162451.20	102352.90	-36.99
Corporate income tax	96882.30	107086.30	108695.00	147751.70	117049.90	-20.78
Total taxes	681984.70	719088.40	764872.60	984247.30	834831.10	-15.18
GDP	3558706.00	3974564.00	4194102.00	5459574.00	5191028.00	-4.92
Level of tax burden	19.16	18.09	18.24	18.03	16.08	-10.79

Source: compiled by the authors based on [19]

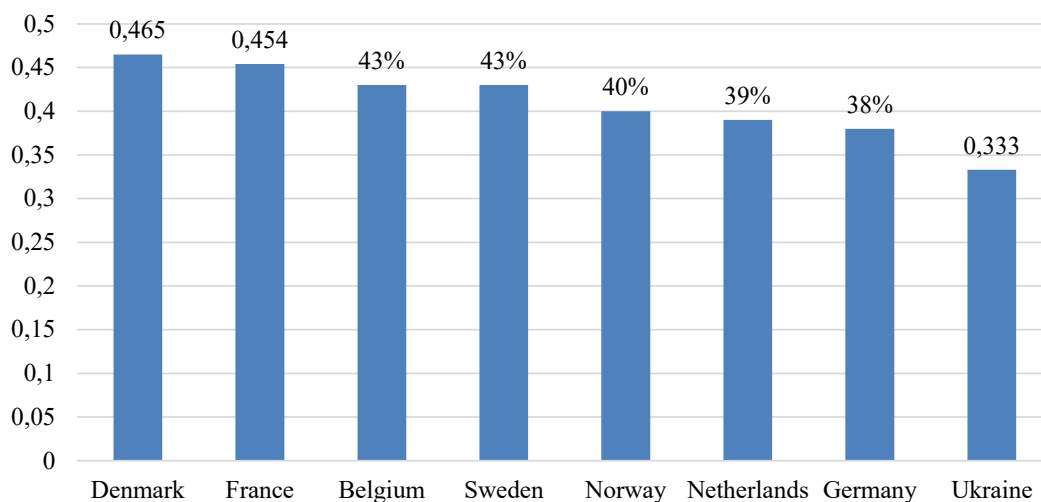


Fig. 2 – Tax burden in European countries in 2021

Source: compiled by the authors based on [21]

Offshore jurisdictions are used by companies to optimize taxation, reduce the tax burden, maintain confidentiality of information, attract investment, increase profits, and reduce tax risks [25].

There is a corporate tax harbor index and a financial secrecy index that determine the rating of offshore zones. “The corporate tax harbor index reflects the rating of jurisdictions that help multinationals to underpay income tax” (Fig. 3) [1].

According to fig. 1 British Virgin Islands, Cayman Islands and Bermuda have the most favorable conditions for business in terms of corporate taxation. The Netherlands, Switzerland, Luxembourg, Hong Kong and Singapore also have a rather low index, which indicates their attractiveness for business.

“The Financial Secrecy Index is a ranking of the jurisdictions that are most helpful to individuals in hiding their finances from the rule of law” [2].

From Fig. 4, we can conclude that the most closed and confidential financial systems are in the United States, Switzerland, and Singapore, as these countries have the largest capital outflows and can also be used for money laundering.

According to an analytical study in 2017 of companies in five regions of Ukraine with high business activity, it is Dnipro and Odesa regions that have the largest number of companies with owners and founders in offshore zones. “In 2017, they generated 32% of the total income of regional enterprises. Vinnytsia region ranked third with 29%, Lviv region – 11%, and Kharkiv region – 7%. In total, companies with offshore owners account for about 2% in each of the five regions. Cyprus is noted as the most popular offshore for 4 out of 5 regions, and Moldova and Turkey are also among the TOP-3 favorite offshore locations of Ukrainian companies” [4].

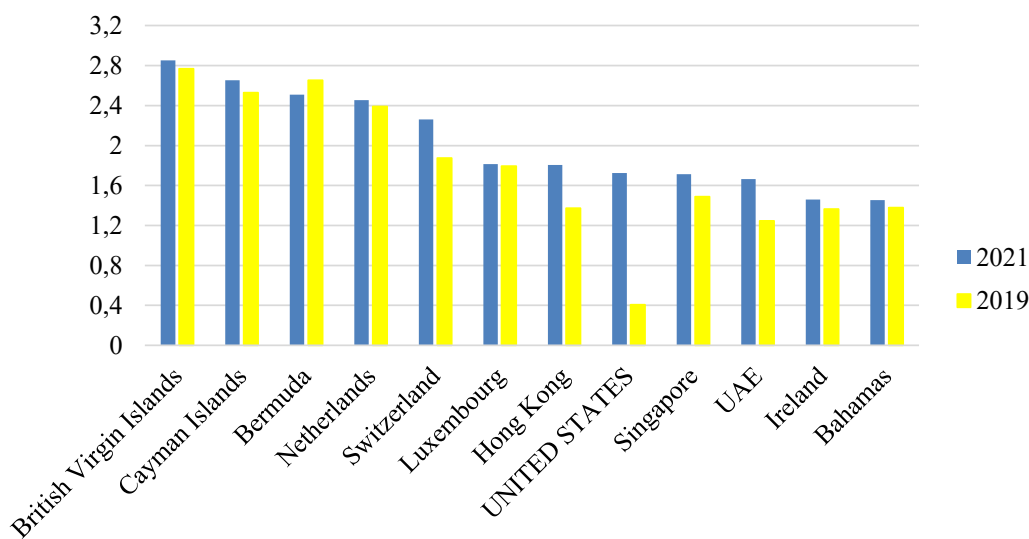


Fig. 3 – The values of the corporate tax index of the harbor in 2019 and 2021

Source: compiled by the authors based on [1]

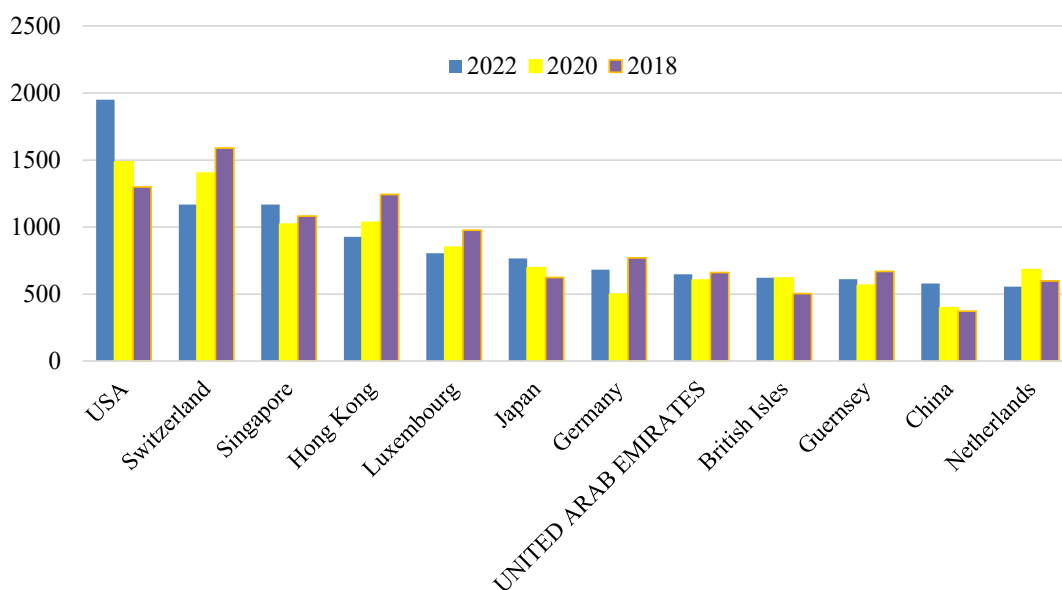


Fig. 4 – Ranking of countries by financial secrecy index for 2018, 2020 and 2022

Source: compiled by the authors based on [2]

The existence of offshore companies indicates a large level of shadow economy in Ukraine, which is a complex problem for the country’s economic development (Fig. 5).

According to Fig. 6, the level of Ukraine’s shadow economy has been on a downward trend over the past 11 years. The highest level was recorded in 2010 (36%), after which it began to decline and reached its lowest point in 2019 (28%). However, in 2020, the level increased again to 30% and slightly increased in 2021 to 31%.

Taking into account the data in figure 6, it should be noted that the main activities with the highest level of the shadow economy in 2020–2021 are transportation, warehousing, postal and courier activities, real estate transactions, mining, financial and insurance activities.

Today, the practice of tax optimization is widespread, which consists in the sale of goods at reduced prices by Ukrainian companies to their shell companies with offshore jurisdiction on the islands. The offshore companies continue to sell goods at higher world prices, earning profits that are not taxed in Ukraine. The problem with this optimization is that it leads to the withdrawal of capital from the country, a decrease in business attractiveness, tax revenues, and a deterioration in the economy. Ukrainian businesses can use the following offshore tax planning mechanisms to reduce their tax burden: setting up offshore companies,

which can be used to transfer profits abroad and receive tax benefits; using offshore bank accounts, which allows them to keep profits abroad, avoid taxation in Ukraine and receive interest on deposits; using double taxation treaties; and using free trade zones.

Offshore zones can have both positive and negative consequences for companies that use them for tax planning. In particular, the advantages of offshore zones for tax planning include the following: reduction of tax liabilities. Offshore zones provide an opportunity to reduce the tax costs of enterprises, as they offer low tax rates or may not tax certain types of income; confidentiality. Offshore zones allow businesses to keep their operations and financial data confidential; international expansion. The use of offshore zones can be an important step for international expansion of businesses, as it reduces tax costs and simplifies taxation procedures.

It is advisable to highlight the disadvantages of offshore zones for tax planning of enterprises:

1. Risks to reputation. The use of offshore zones may cause doubts and criticism from the public, which may view it as an attempt to evade taxes.
2. Legal complexities, the legislation on the use of offshore zones can be quite complicated.
3. Risks for business, namely exchange rate risks, changes in legislation and political risks.

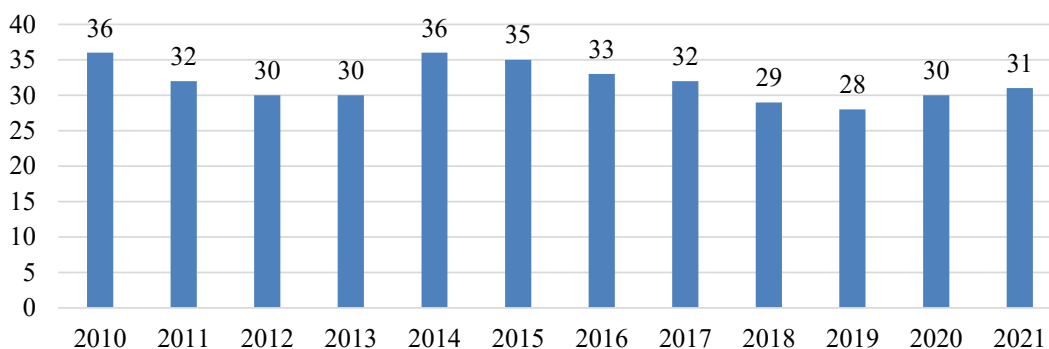


Fig. 5 – Shadow economy in Ukraine as a percentage of GDP

Source: compiled by the authors based on [18]

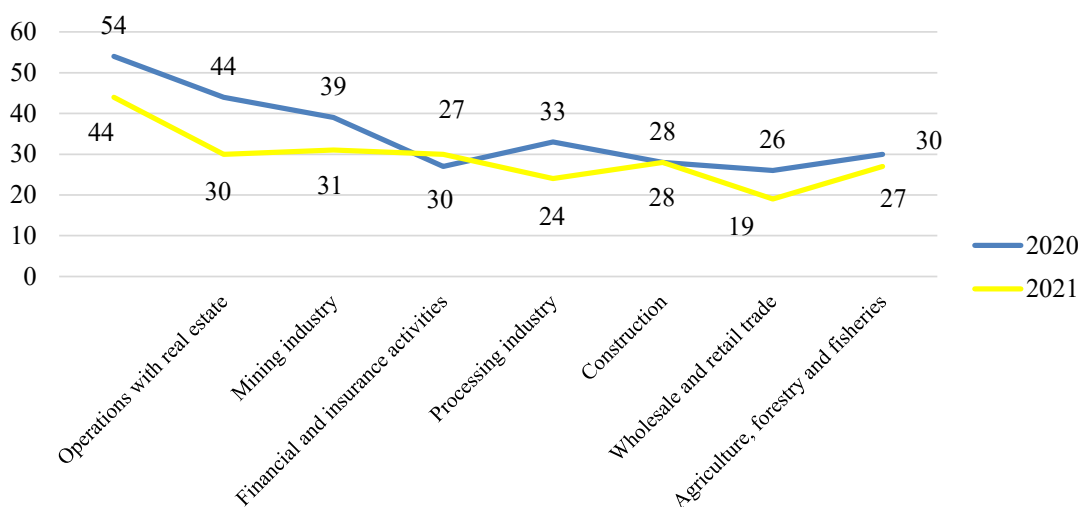


Fig. 6 – Level of the shadow economy by economic activities in% in 2020–2021

Source: compiled by the authors based on [18]

4. Restrictions on operations. The use of offshore zones may be restricted for certain types of transactions and activities of the enterprise due to limitations in the legislation and rules of offshore zones.

5. High costs, as the use of offshore zones may require high legal fees.

6. Double taxation risks, as countries may have different taxation requirements and rates.

7. Reduction of tax revenues to the state and local budgets, outflow of funds abroad.

8. Legal risk. The use of offshore zones may lead to violations of legal legislation, and companies may engage in tax evasion.

9. Deoffshorization in offshore zones, i. e. tax requirements in the countries where offshore zones are located may change.

In view of the above, it should be noted that offshore zones provide an opportunity to reduce tax costs, maintain confidentiality and simplify taxation procedures, which may be important for the international expansion of enterprises. However, the use of offshore zones can lead to reputational and business risks, legal complications, restrictions on operations, increased costs, double taxation risks, and tax shortfalls. Ukrainian companies often withdraw their funds to offshore companies, which leads to a significant outflow of capital, and therefore the Ukrainian government needs to develop means to counteract tax evasion.

Taking into account the results of the study, the following measures have been formulated to help prevent tax evasion:

1. Strengthening control over compliance with tax legislation, which is possible through regular inspections of companies' activities regarding the availability of cash registers, reporting, and income taxation.

2. Introduce a system of electronic declaration and electronic calculation of taxes, which will reduce the possibility of document forgery.

3. Reducing the tax burden on individuals and businesses will reduce the risk of tax evasion and increase the legitimacy of the tax system.

4. Development of international cooperation in the field of tax policy, which may include signing tax treaties and international agreements, cooperation between tax authorities of different countries, exchange of information on tax payments and assets located abroad.

5. Development of alternative taxation methods that may reduce the possibility of tax evasion.

6. Improvement of tax legislation and regulation of offshore companies.

7. Control over the use of tax benefits by enterprises and prosecution in case of violation of the law.

Thus, offshoring is becoming an increasingly widespread phenomenon that leads to a significant reduction in tax revenues to the state budget. In this regard, there are ways to counteract offshoring:

1. Increasing tax rates in the country may reduce the involvement of companies in offshore zones due to the reduction of benefits from taxation in other countries.

2. Control over the operation of offshore companies,

which can be achieved by requiring companies to submit detailed reports on their activities in offshore zones.

3. Tax amnesty for companies returning from offshore zones. This may reduce the motivation of companies to use offshore zones and encourage the return of business to their home countries.

4. Abolition of tax incentives for companies using offshore zones.

5. Introduce additional restrictions on investments in offshore zones. For example, restrictions could be imposed on investments in offshore financial instruments or the possibility of using funds from offshore accounts to pay taxes could be excluded.

6. Introduce effective mechanisms to control capital flows and financial flows to offshore zones. This can be achieved through the use of the latest technologies and monitoring tools, as well as cooperation with international organizations and specialized financial institutions.

7. Adjustment of double taxation treaties.

Thus, offshore zones can provide companies with advantages in terms of tax planning, confidentiality, and international expansion. However, they also pose reputational risks, business risks, double taxation risks, reduced tax revenues, and tax evasion. In order to prevent tax evasion, it is advisable to strengthen control over compliance with tax legislation, introduce electronic tax returns and payment systems, reduce the tax burden on individuals and businesses, promote international cooperation in tax policy, improve tax legislation, and control the use of tax benefits.

## Conclusions

Thus, offshore zones are quite often used by Ukrainian companies for tax planning, which leads to a decrease in tax revenues to the budget. There is a demand for companies to reduce their tax burden through tax planning in offshore zones. According to the study, in 2021 the tax burden was 40.8%, and a similar level is observed in many European countries, but for Ukrainian companies this level is quite high. Ukraine has a significant level of shadow economy, which is a complex problem for the country's economic development, and it is growing in transport, postal and courier activities, mining, financial and insurance activities.

The advantages and disadvantages of offshore zones are considered and it is established that the advantages include the possibility of legal tax planning and reduction of tax payments. However, offshore zones can be used for money laundering and other criminal activities, as well as for tax evasion.

It has been established that refusal to use offshore zones may deprive enterprises of the opportunity to take advantage of the benefits provided by this tool, and combating the use of offshore zones for capital outflow may help reduce the shadow market and increase confidence in business in the country. It is necessary to control the activities of companies and their transactions in order to counteract the use of offshore zones for criminal activities. It is also necessary to implement taxation reforms and reduce administrative barriers for business.

Measures to prevent tax evasion and ways to counter offshoring have been developed, aimed at domestic tax

reform and encouraging companies to return their assets to Ukraine, reducing money laundering and shadowing of the economy. The use of offshore zones is a complex issue that requires a comprehensive approach, a balanced strategy, the need to take into account possible consequences, timely response and measures to prevent tax evasion.

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# LABOUR ECONOMICS, PERSONNEL MANAGEMENT AND MARKETING

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## ASSESSMENT OF THE ECONOMIC EFFICIENCY OF THE PROJECT TAKING INTO ACCOUNT THE INCREASE OF PERSONNEL POTENTIAL AT THE PRODUCTION ENTERPRISE

**Bekhter L.A., Bekhter S.O.**

*Zaporizhzhia National University*  
*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*  
behter2018@ukr.net, kyz924@ukr.net  
ORCID: 0000-0001-9931-9780

**Key words:**

personnel potential, project,  
personnel, production technology,  
cost, profit

It is noted that the most significant indicators of economic activity of any enterprise are those characterizing the efficiency of their activities, i. e., the ratio of the result obtained to the costs incurred. It is found that performance indicators are influenced by many factors that depend on industry specifics, territorial, marketing and management systems. The task of each enterprise in the context of efficient management is to reduce costs and obtain higher financial results, while taking into account the risks of the enterprise. It is determined that improving the personnel potential of a manufacturing enterprise cannot be solved without assessing the economic efficiency of the project. Assessing the economic efficiency of a project is one of the most important stages of project development and analysis. In turn, the assessment must be carried out following a certain sequence of actions that involve the qualitative preparation of initial information, calculation of financial indicators, calculation of the impact of inflation, and consideration of uncertainty and risk factors. The article considers the problems that the researched enterprise LLC "Progress Mashbud" will have to face in the process of assessing the economic efficiency of the proposed project, taking into account the increase in personnel potential. The peculiarities of the economic activity of the manufacturing enterprise are studied. The efficiency of the proposed economic project is evaluated. A possible direction for improving the personnel potential of the studied enterprise is proposed.

## ОЦІНКА ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ПРОЄКТУ З УРАХУВАННЯМ ПІДВИЩЕННЯ КАДРОВОГО ПОТЕНЦІАЛУ НА ВИРОБНИЧОМУ ПІДПРИЄМСТВІ

**Бехтер Л.А., Бехтер С.О.**

*Запорізький національний університет*  
*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

**Ключові слова:**

кадровий потенціал,  
проект, персонал,  
технологія виробництва,  
собівартість, прибуток

Зазначено, що найбільш вагомими показниками господарської діяльності будь-якого підприємства є показники, що характеризують ефективність їх діяльності, тобто співвідношення отриманого результату до понесених витрат. Виявлено, що на показники ефективності чинять вплив безліч факторів, які залежать від галузевих особливостей, територіальних, маркетингових та системи менеджменту. Завдання кожного підприємства в контексті ефективного господарювання полягає у скороченні витрат і отриманні вищих фінансових результатів, при цьому враховуючи ризики функціонування підприємства. Визначено, що підвищення кадрового потенціалу виробничого підприємства неможливо вирішувати без оцінки економічної ефективності проекту. Оцінка економічної ефективності проекту – це один із найголовніших етапів розробки та аналізу проекту. У свою чергу, оцінювання необхідно виконувати, дотримуючись певної послідовності дій, які передбачають якісну підготовку вихідної інформації, розрахунок фінансових показників, розрахунок впливу інфляції, облік факторів невизначеності та ризику. Розглянуто проблеми, з якими доведеться зіткнутися досліджуваному підприємству ТОВ «Прогрес Машбуд» у процесі оцінювання економічної ефективності запропонованого проекту

з урахуванням підвищення кадрового потенціалу. Досліджено особливості господарської діяльності виробничого підприємства. Проведено оцінку ефективності запропонованого економічного проєкту. Запропоновано можливий напрямок підвищення кадрового потенціалу для досліджуваного підприємства.

### Formulation of the problem

The enterprise is an integral part of the economic and social system of the state with its own economic, scientific and technical, production and social goals. In turn, personnel potential is the main part of the management system of the production enterprise and a decisive condition that allows to ensure the achievement of the enterprise's goals and maintain its stability on the market. The study of approaches to increase the personnel potential of the past periods at the investigated enterprise allows us to assert that a person has always been considered as an auxiliary, secondary factor of production. And the modern view of personnel potential defines the employee as the most important, main resource and value of the enterprise.

The main condition for assessing the economic efficiency of the project, taking into account the increase in personnel potential in modern economic conditions for the enterprise under study, is the ability of the personnel to adapt in a timely manner in a dynamic market environment. Therefore, one of the primary tasks for the proposal, calculation and implementation of the project for the enterprise under study is the formation and assessment of its potential capabilities (personnel, material, physical). Of all the elements of the company's potential, only the personnel component is capable of active and independent response to dynamic changes in the external environment. Therefore, a mandatory element of the proposal for the implementation of any economic project at a production enterprise is the assessment of its economic efficiency, which is impossible without taking into account the personnel potential.

### Analysis of recent research and publications

The study of assessing the economic efficiency of the project and the role of personnel potential in the growth of competitiveness of enterprises in modern conditions is devoted to the works of many scientists and scholars, including: S.K. Bogomolova [1], O.V. Podolska [1], T.V. Bilorus [2], V.A. Hontyuk [3], O.M. Kovaleva [4], O.V. Skoruk [5], O.G. Cherep [6, 7], O.I. Gaidai [6], L.V. Shostak [8], E.O. Boloban [8], Y.R. Yasinska [9].

### Formulation of goals

The aim of the article is to assess the economic efficiency, taking into account the increase of personnel potential for the production enterprise LLC "Progress Mashbud".

### Presentation of the main research material

Nowadays, high results of economic activity during the implementation of an economic project are obtained if the employees of the enterprise are sufficiently qualified, have the necessary skills and competences. Therefore, an important place in increasing personnel potential should be occupied by professional training of personnel. To achieve the goals of the organization, personnel development should

be considered as an investment in the future of the enterprise. That is why the personnel potential of the enterprise is an important strategic factor, because as a result, it determines the success of its activity. One of the components of the personnel potential of the enterprise is personnel training. Therefore, staff training is an activity aimed at staff development in order to maintain their professional skills at the appropriate level and increase their competitiveness.

Let's consider the assessment of economic efficiency, taking into account the increase in personnel potential at the production enterprise LLC "Progress Mashbud".

The company was founded in 2004 and for more than 19 years has been engaged in the production and supply of products for the railway industry, namely signaling, centralization, blocking (SCB) and road management equipment. The products of this enterprise are bought by all railways of Ukraine and abroad on a regular basis, including enterprises that have their own railway business. Working on the market since 2004, the company constantly expands the range of its products as much as possible and improves their quality due to the introduction of new technologies into production. Qualified specialists with experience and practical skills in this field work at the enterprise.

At the investigated enterprise, production is certified, both in the UkrSEPRO system and in the ISO 9001 system. All new products pass, and those that are produced have already passed certification and meet all the strict standards presented to them.

The company under study produces the following products:

- dwarf lens traffic lights;
- mast lens traffic lights;
- crossing traffic lights;
- automatic barriers for single and multi-track sections of the "ASHMR-U" type;
- electric traction rail butt welded connectors;
- cable branching boxes;
- track branching boxes;
- choke and inter-choke jumpers;
- universal cable couplings (UKM-12, UPM-24);
- cable branching couplings (RM-4, RM-7, RM-8);
- mast and dwarf lens sets;
- "Melentyeva" locks (to block unauthorized switching of switches on the railway track).

At this enterprise, until 2011, the mast traffic light body, regardless of its size, was made of cast iron castings, and since 2012, it has been made of stamped-welded aluminum billets. In 2018, Ukrainian railways began to receive requests in tender procurements for the supply of traffic lights with mandatory plastic (SMS) body material. Taking into account Ukraine's compliance with EU requirements for railways in terms of traffic safety and reduction of maintenance costs for the operation of mast traffic lights, the management of the relevant structural units of the railway decided to reduce the procurement of mast traffic

lights with nonplastic material in 2018–2021, and starting from 2022 this condition is mandatory for all suppliers to Ukrainian railways, but this condition does not apply to enterprises that have their own railway facilities. The use of a plastic mast traffic light housing has a higher level of anti-vandalism and reduces maintenance costs.

According to statistical data on the market for railways and third-party buyers, the volume of orders for traffic lights masts of various importance made of plastic material on average by year in pieces was as follows:

- 2019–480 pcs. (average price – UAH 54,000/pcs);
- 2020–560 pcs. (average price – UAH 56,700/pcs);
- 2021–645 pcs. (average price – UAH 61,236/pcs).

According to statistical data on the market for railways and third-party buyers, the volume of orders for traffic lights masts of various importance made of plastic material on average over the years in pieces was as follows:

- 2019–223 pcs. (average price – UAH 48,000/pcs);
- 2020–150 pcs. (average price – UAH 49,920/pcs);
- 2021–44 pcs. (average price – UAH 52,400/pcs).

From the above, it can be seen that the number of orders for mast traffic lights made of plastic material is increasing, while the number of orders for metal traffic lights is decreasing, and it can also be seen that the price of a traffic light made of plastic is higher, which is mainly due to the higher cost of the plastic material itself (SMS). The fact is that the requirements for a plastic body are strict, namely non-flammability, UV resistance, durability, resistance to negative temperatures, and so on.

The analysis found that suppliers purchase ready-made traffic light housings abroad, then complete them with brackets, ladders, connecting hoses, clamps, locks, fasteners, lens kits, and more.

Therefore, we consider it necessary to offer the owners of LLC “Progress Mashbud” to invest in setting up the production of mast-mounted traffic lights with a plastic body, taking into account that the specialization of traffic lights is one of the main areas of activity of the company under investigation.

Improving the personnel potential will give the company’s employees the opportunity to master the very technology of plastic case production, including the opportunity to learn how to work on new equipment.

The assessment of the economic effect will make it possible to understand what profit (or loss) the company will be able to receive in a 3-year perspective from the transition of production of the body from die-welding

aluminum billets to plastic and how much money should be involved for the implementation of such a project. The calculations are given in the Table 1 and 2.

The owners of the studied enterprise need to pay attention to increasing personnel potential by training staff to work with new equipment, including to maintain the share of profits, which, when analysed in 2019, began to decline significantly in terms of mast traffic lights, to find funds and switch to the technology of manufacturing plastic products.

This will allow the company to continue to make a profit and maintain the share of these products in the production of the entire enterprise. It should also be borne in mind that only 30% of the market for these products (in Ukraine) was considered in the calculations. If the quality of the goods and the price are appropriate, and given that this company has long been in the market of signalling, centralisation and blocking (SCB) products and given Ukraine’s strong European integration aspirations, it may be possible to supply these products abroad (Eurozone countries).

### Conclusions

Increasing personnel potential is an important component of the development of any enterprise. This article examines the economic efficiency of implementing the project by increasing the personnel potential for its employees to undergo appropriate training on new equipment. In the course of the study, the feasibility of the decision-making by the owners of the researched production enterprise LLC “Progress Mashbud” regarding the implementation of the technology for the production of plastic housings for mast traffic lights was considered, and a financial and economic analysis of the project’s indicators was made, which was accompanied by certain difficulties. Overcoming them requires engineering and technical workers (to establish the production of traffic light housings made of plastic of appropriate quality and cost, and managers to complete the task of occupying at least 30% of the market share of orders per year for the corresponding products on the railway. Given that the process of implementing the economic project takes a significant period of time, its efficiency is affected by the uncertainty of both the internal and external environment of the enterprise under study. In view of this, when evaluating the economic efficiency of the project taking into account the increase in personnel potential at LLC “Progress Mashbud”, it was important not only to determine the expected level of the main indicator – the planned profit, but also to establish how likely it is to achieve it.

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Table 1 – Processes and analytical calculations for the studied enterprise

№	Processes	Number of employees, persons	Cost, UAH	Total, UAH	Period	Note
1	Training of the Chief/engineer	1	30 000	30 000	3 weeks	Training is possible at the company of the manufacturer of the automatic press (all the technology of work on the press itself + maintenance)
2	Training of a production master	1	30 000	30 000	3 weeks	Training is possible at the company of the manufacturer of the automatic press (work on the press itself + maintenance)
3	Locksmith for mechanical assembly works	2	20 000	40 000	1 week	Training is possible at the company of the manufacturer of the automatic press (direct control of the press itself)
4	Purchase of a press machine	–	–	1 200 000	1 week	Domestic manufacturer
5	Delivery of the press machine	–	–	60 000	3 days	Third-party transport
6	Installation of equipment in a production premises	–	–	40 000	1 week	On our own resources
7	Connecting and setting up the press	–	–	15 000	2 days	On our own resources
8	The cost of the form (production + delivery)	–	–	140 000	4 weeks	Domestic supplier, local
9	Processing the purchase of the main material, the purchase of the material itself, delivery + experimental work	–	–	14 000	1 week	Domestic supplier
10	Development of technical conditions (TC)	–	–	75 000	4 weeks	Third-party performer
11	Cost of certification + permission from SE Ukrzaliznytsia for supply	–	–	80 000	4 weeks	Third-party performer
12	Cost of economic calculations (Full)	–	–	30 000	1 week	Third-party performer
13	TOTAL capital investments	–	–	1 754 000	2 months	–
14	Planned cost price (full including overhead costs, without a share of capital investments to account for inflationary processes) of a 3-digit mast traffic light with an inviting signal assembly – 1 pc. by years	–	46 193	–	2024	–
		–	48 503	–	2025	–
		–	50 928	–	2026	–
15	Estimated number of possible procurement volumes in pieces (taking into account the number of procurements in previous years with a market share of 30% of the annual procurement volume, after the end of hostilities) by year	144 pcs.	–	–	2024	2019 year – 480 pcs. × 30%
		168 pcs.	–	–	2025	2020 year – 560 pcs. × 30%
		194 pcs.	–	–	2026	2021 year – 645 pcs. × 30%
16	The share of capital investments calculated on the 3 (36 months) annual volume of forecasted purchases by year, hryvnias/pc. (The calculation was carried out from 506 units of the forecast volume of implemented traffic lights with n-digit masts and the calculated amount of capital investments of only UAH 1.754.000.)	–	3 466	–	2024, 2025, 2026	3.407 UAH/pcs. in addition to the full cost price for each of the 506 pcs. sold traffic lights

Table 2 – Estimation of cost-effectiveness

Financial and economic indicators				Plan. sales, num.	Plan. price including inflation	Total sales, amount	Plan. total cost of sales including investment capital	Total from sales for the plan. cost price	Planned profit	
№	Name of the product	years	Meas.	pcs./year	UAH/pcs.	UAH/year	UAH/pcs.	amount, UAH/year	UAH by years	%
1	Lens mast n-digit traffic light on a reinforced concrete mast	2024	pcs.	144	61 236	8 817 984	49 659	7 150 954	1 667 030	23.31
		2025	pcs.	168	64 298	10 802 030	51 969	8 730 801	2 071 229	23.72
		2026	pcs.	194	67 513	13 097 462	54 394	10 552 472	2 544 990	24.12
2	In general	–	–	506	–	32 717 476	–	26 434 227	6 283 249	23.77

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## MANAGEMENT OF THE COMPANY'S MARKETING ACTIVITIES AND DIRECTIONS FOR ITS IMPROVEMENT

**Dashko I.M., Malyz V.V.**

*Zaporizhzhia National University*

*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*

*irina.znu@i.ua, ma.viktorija@ukr.net*

ORCID: 0000-0001-5784-4237, 0000-0002-3863-6456

### Key words:

marketing, marketing activity,  
market size, market needs,  
products

The content of marketing activity management and its importance under current conditions are considered. Marketing trends in Ukraine are defined. The areas of management of marketing activities at the enterprise are disclosed, in particular: formation of the marketing mix, management of the marketing service, internal marketing. The stages of development of marketing potential at the enterprise are disclosed and substantiated. Approaches to marketing activity management are analyzed. The basic principles of marketing activities are revealed, namely: innovative approach, program-targeted management, demand orientation, combination of methods of quantitative and qualitative market analysis, unity of information and physical marketing, total marketing management, electronic marketing, logical organization models, turning marketing into a profit center, priority staffing, etc. It has been researched that in the concepts of marketing management the process that includes: analysis of marketing opportunities, development of marketing strategies, planning of marketing programs (development of system tools), organization of implementation and control of marketing work is of paramount importance. The methods of marketing research and actions in the system of management of the enterprise's marketing activities are allocated. The methods for evaluating the effectiveness of marketing at an enterprise are analyzed. Directions for improving the marketing activity under current conditions are proposed.

## УПРАВЛІННЯ МАРКЕТИНГОВОЮ ДІЯЛЬНІСТЮ ПІДПРИЄМСТВА ТА НАПРЯМИ ЇЇ ВДОСКОНАЛЕННЯ

**Дашко І.М., Малтиз В.В.**

*Запорізький національний університет*

*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### Ключові слова:

маркетинг,  
маркетингова діяльність,  
місткість ринку, потреби ринку,  
продукція

Розглянуто сутність управління маркетинговою діяльністю та її значення за сучасних умов. Окреслено риси маркетингу в Україні. Розкрито напрямки управління маркетинговою діяльністю на підприємстві. Розкрито та обґрунтовано етапи розвитку маркетингового потенціалу на підприємстві. Проаналізовано підходи до управління маркетинговою діяльністю. Розкрито основні принципи маркетингової діяльності. Досліджено, що у концепціях управління маркетингом переважає процес, що включає: аналіз маркетингових можливостей, розроблення маркетингових стратегій, планування маркетингових програм (розроблення системних інструментів), організацію виконання та контроль маркетингової роботи. Виокремлено методи маркетингових досліджень та дій у системі управління маркетинговою діяльністю підприємства. Проаналізовано методи оцінки ефективності маркетингу на підприємстві. Запропоновано напрями удосконалення маркетингової діяльності за сучасних умов.

### Formulation of the problem

Modern business operates in a difficult environment of instability and unpredictability. Such a situation requires constant diagnostics, analysis, and monitoring of the current conditions. Analysis of the company's marketing activities

plays an important role in the study of the conditions of its functioning. Ensuring the proper management of the company's marketing activities is important, as it represents the target orientation of the enterprise's market activity, which is related to the satisfaction of the needs of the society

and individuals. In addition, it is important to research and evaluate the market, its potential, size, conditions, demand, consumer behavior, enterprise opportunities, competition, etc. An important aspect in managing the company's marketing activities is the evaluation of its effectiveness, which is manifested in the organization of the technical process from the product design to its consumption, etc.

### Analysis of recent research and publications

In addition to the problems of managing marketing activities, its improvement in modern conditions are studied by M.V. Volkova, H.M. Huzenko, I.M. Kovbac, M.A. Konopliannykova, I.V. Mociichuk and others. For example, I.V. Mociichuk in his research considered the peculiarities of managing the marketing activities of enterprises in Ukraine studies theoretical and methodological approaches to assessing the effectiveness of marketing activities of enterprises in modern conditions. The concepts, principles and approaches to managing marketing activities are considered by M.A. Konopliannykova, H.M. Huzenko and M.V. Volkova study the problems of management and directions for improving the marketing activities of the enterprise. A significant number of publications emphasizes the relevance of the topic and, accordingly, outlines a certain range of discussion issues that require further resolution of this issue.

### Formulation of the goals of the article

The purpose of the article is to investigate the integrity and management of the company's marketing activities, to identify the problem and to justify the direction of improvement.

### Presentation of the main research material

The development of the Ukrainian economy directly left its mark on the development of marketing and, accordingly, caused its current problems, namely: the low level of the ability to pay and awareness of the domestic consumer; the low level of domestic production competition, which makes it unnecessary to use the marketing concept; strong pressure on distribution structures, which leads to an unjustified increase in prices; formation of the professional marketers is in its nascent stage; the mentality of the domestic consumer creates distrust in advertising campaigns, sales promotion, etc.; non-regulation of the legislative framework on the protection of consumer rights,

advertising, unfair competition, registration of patents and inventions, registration and protection of rights to marks for goods and services [6, p. 284–285].

Marketing, as a business function, has gone through four stages of development, such as distribution functions, organizational concentration (concentration on sales functions), separation of the own marketing service and transformation of marketing into the main function of enterprise management [5, p. 333]. The marketing activity of the enterprise is aimed at setting current and, most importantly, long-term (strategic) goals, taking into account market demands, quite reasonably, ways to achieve them and real sources of economic activity resources, determine the range and quality of products, their priorities, the optimal production structure and the desired profit [5, p. 333].

The company manages its marketing activities in three areas:

- 1) formation of the marketing mix;
- 2) management of the marketing service;
- 3) internal marketing.

Therefore, the model of management of the enterprise's marketing activities is a set of certain subjects, objects, tools and management methods, which in the process of interaction with each other is aimed at effective management of the enterprise's marketing activities [5, p. 333]. The implementation of marketing activities and the formation of marketing potential involves the implementation of certain stages of the process. The main stages are:

- structural analysis of the current period and assessment of the dynamics of changes;
- identification of key market positions and strategic movement vectors;
- collection, analysis and processing of information flows in order to form a system of information support for the process of forming the company's marketing potential;
- actual formation of the basic elements of the marketing potential [4, p. 261].

Today, there are already different approaches to managing marketing activities. Changing conditions of state support require improvement of existing and development of new approaches to managing marketing activities based on the coordination of marketing management tasks and consumer preferences. The economic literature has systematized and identified the most commonly used approaches, which are presented in Table 1 [5, p. 335].

Table 1 – Approaches to managing marketing activities

№	Approach	The essence of the approach
1	Systemic	The implementation of the systematic approach involves the creation of an abstract-conceptual model of marketing management at an enterprise, which is a certain structural and logical construction, the purpose of which is to serve as a tool for understanding, describing and optimizing the management of marketing activities, connections and correlation of its elements
2	Processual	Marketing management is focused on optimizing internal information flows related to the collection, processing, storage and use of marketing information, which is carried out with the help of information technology
3	Comprehensive	Activities aimed at identifying target markets, studying the needs of consumers in these markets, developing products, setting their prices, choosing ways to promote and distribute products, and exchanging information among interested groups
4	Organizational	A system of management of marketing activities of enterprises based on the principles of social and ethical marketing and aimed at timely adaptation to the conditions of a changing marketing environment, to meet the needs of consumers and ensure long-term commercial success on this basis

Today, there are a number of marketing management principles on the basis of which commercial and non-commercial organizations carry out their activities, in particular: strategic marketing, competitive rationality, maximization marketing, marketing management, etc. Evolution of the concept of labeling management, which includes the concepts of production concept, product concept, and the concept of integration of commercial efforts, the need to find such a “recipe” for the portioning of systemic tools of marketing management, which would provide the subject with a sustainable competitive advantage and, accordingly, a position in the market, was largely determined [1, p. 281].

The effectiveness of marketing management largely depends on compliance with the principles of marketing activities. The basic principles of marketing activities are as follows: innovative approach, program-targeted management, demand orientation, combination of methods of quantitative and qualitative market analysis, unity of information and physical marketing, total marketing management, electronic marketing, logical organization models, turning marketing into a profit center, priority staffing, etc.

It is important to emphasize that the concept of marketing management is dominated by the process, which includes:

- analysis of marketing opportunities;
- development of marketing strategies;
- planning of marketing programs (development of system tools);
- organization of execution;
- control of marketing work [1, c. 282].

In the marketing management system, the company distinguishes the following methods of marketing studies and actions:

- study of the external environment;
- study of existing and planning of future products;
- planning of movement and sales of goods;
- ensuring the formation of sales and stimulation of the position;
- ensuring the pricing policy of the enterprise;
- development of strategic plans;
- developing, monitoring and quantifying and evaluating results;
- ensuring the required level of safety of the use of goods, environmental protection, requirements for consumer properties of goods [6, p. 292–293].

Scientists distinguish a large number of methods for assessing the effectiveness of marketing and generalization, according to the selected methods, are presented in Table 2.

Based on the above material, we will provide ways to improve and increase the effectiveness of marketing, which can be presented in the form of a goal tree, but there is no doubt that all areas of improvement should be implemented systematically and comprehensively:

1. Creation of an integral, efficient, flexible marketing system that would be adaptive and responsive to consumer demand, market changes (conditions, etc.), marketing innovations, current service and international business. The system provides for the unity and high scientific and technical level of functional subsystems that form its integrity.

2. Rationalization of the marketing functional organization, which ensures a clear division of job functions between management and production employees. Consolidation of functions with the marketing department and with other employees of the sphere of management and production, which creates opportunities for programmatic marketing. It is also necessary to improve the coordination and regulation of the process of performance of marketing functions.

3. Improvement of the organizational mechanism of marketing by expanding the cooperation of marketing functions within the framework of the merger of different enterprises. Rationalization of the management structure, which involves improving the regulation, standardization and control of the marketing process.

4. Improvement of the personnel policy. Training and professional development of marketers, generalists and managers, internships at universities, leading enterprises, abroad, as well as various kinds of conferences, experience exchange, seminars, etc.

5. Mechanization, computerization and automation of marketing activities, which implies the widespread use of technical means in the work of marketing information systems, marketing management systems, software, organizational and technical equipment. The creation of automated labeling management systems (ALMS -marketing) in large industrial formations is promising.

6. Implementation of science-based marketing technologies.

7. Improvement of marketing management – creation of marketing management systems, scientific substantiation

Table 2 – Methods for assessing the effectiveness of marketing at the enterprise

№	Assessment methods	Essence of the methods
1	Quality	Involves the use of a marketing audit (analyzing the goals, strategies and results of the company's activities to identify problems in order to improve marketing activities and develop an effective marketing plan)
2	Quantitative	Comparison of marketing costs with gross profit and advertising costs with sales. Quantitative methods for assessing the effectiveness of marketing activities characterize the financial performance of the enterprise
3	Informational	It involves the use of special computer programs (“Marketing Expert”, “Clientele”, “Fin Expert marketing”, “BEST-marketing” and others), and various analyzes are used, such as: GAP-analysis, SWOT-analysis, STEP-analysis, “4R” method, etc.
4	Sociological	Conducting marketing research; surveys of managers; planning and marketing specialists on the state of the marketing system at the enterprise; evaluation of marketing communications, namely: the effectiveness of advertising, PR; analysis of sales promotion and personal selling



of its subsystems (functional and those that provide) and organization of their rational functioning [1, c. 284]. In addition, it is important to improve the activities of the marketing department through the factors influencing the management of marketing activities, namely: justification of the marketing strategy and its impact on the activities of the company's divisions, in accordance with operational changes; assessment of the sales market capacity and promptness of response to its changes in accordance with the needs of consumers; systematic and continuous research of the level of competitiveness of products; regulation of pricing policy; prompt assessment of the structure of sales channels and immediate response to changes in the distribution system; continuous development and improvement of advertising activities, etc.

### Conclusions

Management of the enterprise's marketing activities brings the state enterprise to a new level of functioning in the market environment. There is a targeted reorientation of the enterprise's market activities, which is aimed at

meeting the needs of society and individuals. Increasing the efficiency of marketing activities significantly affects the organization of the technical process from product design to consumption. It is important for the management of marketing activities to analyze the market size, its potential, conditions, demand, consumer behavior, business opportunities, competition, etc. An effective communication policy is based on such measures as planning and organizing business communication, advertising, sales promotion, brand promotion, public relations and personal selling.

Improving the quality of management of marketing activities will provide a number of advantages, namely: it will lead to a clear coordination of the enterprise's directions, stimulate ongoing forward thinking, clearly outline the enterprise's strategy, tasks of its compliance, etc. Improving approaches to managing marketing activities will increase the level of competitive ability of the enterprise, the level of its investment attractiveness, which will contribute to the increase in the competitiveness of products and consolidate the company's position in the market.

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## INTERVIEW AS AN EFFECTIVE TOOL FOR PERSONNEL SELECTION AT THE ENTERPRISE

**Dashko I.M., Cherep O.G., Mykhailichenko L.V.**

*Zaporizhzhia National University*

*Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66*

*cherep.av.znu@gmail.com, anatoliycrome@gmail.com*

ORCID ID: 0000-0001-5253-7481, 0000-0002-8718-3836

### Key words:

interview, personnel,  
enterprise, selection tools,  
personnel management, selection

The place of the interview as one of the effective tools for personnel selection is determined. Two effective systems of personnel management – American and Japanese – are analyzed. The purposes of a meeting or interview with a candidate are investigated. The methods of personnel selection at the enterprise are considered. The purpose of the interview meeting is investigated. The principles of conducting interviews are considered, in particular, that: there are no bad or good candidates and that the interview should resemble the signing of a partnership agreement, in this case – an employment agreement. The purpose, principles, goals, and tools for conducting an interview are explored. The stages of selection and the process of interviewing candidates are revealed. The main problems in the selection of personnel are investigated. The necessity of introducing modern interviewing tools in the selection of employees in organizations is substantiated. The concept, features and stages of employee interviews are analyzed: preliminary preparation; creating an «atmosphere of trust»; the main part; completion and evaluation. The importance of the process of interviewing employees in the organization is proved and the main methods are presented. The importance of introducing modern automation methods during the interview of employees at the enterprise is analyzed. Recommendations on the appearance for the interview are described. Examples of the most popular interview questions and candidate qualities are considered. internal influences that complicate the interview, namely: first impressions, stereotypes, contrast effect.

## СПІВБЕСІДА ЯК ЕФЕКТИВНИЙ ІНСТРУМЕНТ ВІДБОРУ ПЕРСОНАЛУ НА ПІДПРИЄМСТВІ

**Дашко І.М., Череп О.Г., Михайліченко Л.В.**

*Запорізький національний університет*

*Україна, 69600, м. Запоріжжя, вул. Жуковського, 66*

### Ключові слова:

співбесіда, персонал,  
підприємство,  
інструменти відбору,  
управління персоналом, відбір

Визначено місце співбесіди, як одного з ефективного інструменту для відбору персоналу. Досліджено цілі співбесіди з кандидатом. Розглянуто методи відбору персоналу на підприємстві. Розглянуто принципи проведення співбесід. Досліджено мету, принципи, цілі та інструменти для проведення співбесіди. Розкрито етапи проведення відбору та процес проведення співбесіди з кандидатами. Досліджено основні проблеми при відборі персоналу. Обґрунтовано необхідність впровадження сучасних інструментів співбесіди при відборі працівників в організаціях. Проаналізовано поняття, особливостей та етапів співбесіди працівників. Доведено важливість процесу співбесіди працівників в організації та наведено основні методи. Проаналізовано важливість впровадження сучасних методів автоматизації під час співбесіди працівників на підприємстві. Розглянуто приклади найпопулярніших запитань на співбесіді та якості кандидатів, внутрішні впливи, які ускладнюють співбесіду.

### Formulation of the problem

Most managers understand that the success and prosperity of an organization largely depends on its

employees. In fierce competition, the one with the best team wins. That is why managers pay a lot of attention to the issues of effective management of employees, their

motivation, training and development. However, without the selection of quality personnel, any work with personnel is doomed to failure.

The interview is the most important stage in the personnel selection process. There are many types and types of interviews, and the choice directly depends on the personnel policy, the specifics of recruiting personnel in one or another company, as well as on the decisions and experience of the manager himself.

The effectiveness of personnel selection depends on how well the interview method is chosen. For example, if we are talking about mass selection, you can use a structured group interview, and if we are talking about managerial positions, it is better to conduct panel and serial interviews to create the most complete picture of the specialist.

### **Analysis of recent research and publications**

The works of V. Antoniuk, A. Kolot, M. Korolchuk, I. Petrova, V. Petiukh and others are devoted to the formation of high-quality personnel selection at an enterprise, and the study of topical issues regarding the principles of interviewing is carried out by G. Babiak, A. Kovalynska, O. Martsinkovska and others, but the study of the interview as an effective tool for personnel selection at an enterprise requires further research.

### **Formulation of the goals of the article**

The purpose of this article is to study the meaning and features of the interview as a key method of personnel selection.

### **Presentation of the main research material**

As you know, there are two effective personnel management systems in the world – American and Japanese. When using the American system, a vacancy profile is drawn up, which shows the criteria and requirements for the candidate – professional qualities and personal characteristics of the future employee.

The employer is looking for a person who meets the specified requirements as closely as possible, i. e. the “ideal candidate”. This is the complexity of the choice. A candidate may not fit some parameters, but may have one or two characteristics or qualities that make up for the lack of others. For example, the candidate does not have a higher education, but has received the necessary work experience for this vacancy, insufficient experience can be compensated by the ability to learn quickly and a good memory instead of “office” courses for a secretary – knowledge of work experience, English and good appearance, not knowing any registrar cash operations – the ability to quickly count, etc.

The Japanese system is characterized by the use of multi-stage adaptation measures, mentoring, expert guidance and internships. Taking into account the “baggage” of the candidate, his education, knowledge, abilities, skills and aspirations, he finds a place for himself in the enterprise or organization. In Ukraine, such a system can be found in educational, medical institutions, and budget organizations, but in any case, the characteristics of the candidate, his biographical data, compliance of the

characteristics or competencies of the future employee with the work processes taking place at the enterprise, functional responsibilities, compliance with goals are checked and the company’s values, management style, the degree of development of the organization, as well as the suitability of the candidate, his ingenuity, stress resistance, quick reaction, sense of humor can be checked in the company building or at a face-to-face meeting, that is, at an interview.

Compliance with the criteria, the presence of experience is not yet a guarantee of 100% effectiveness of the candidate at the workplace. If a candidate has done a particular job before, it does not mean that he or she will do it now. And vice versa. If they didn’t have experience in the past, they won’t be able to do it now. A candidate’s biography will tell you a lot about them if you know how to read between the lines. But all of these will be assumptions that can be confirmed or denied in an interview.

Thus, the goals of a meeting or interview with a candidate are as follows:

1. Getting to know the candidate (pay attention to punctuality, style of dress, behavior, language).
2. Company introduction, location, and working conditions.
3. Presentation of the candidate.
4. Clarification of biographical data and a quick review of experience (possibly a questionnaire).
5. Verification of the powers and personal qualities of the candidate.
6. Determination of financial expectations.
7. Professional testing.
8. Psychological test.
9. Clarification of functional tasks and characteristics of cooperation.
10. Answers to the candidate’s questions.
11. Determination of further actions.

The main purpose of a meeting with a candidate is to get answers to questions:

- Does the candidate meet the requirements of the organization?
- Do the company’s location, schedule and working conditions, compensation, company goals suitable for the candidate?
- Will he be able to? Want to? Will the candidate be able to work effectively in this organization?

Principles of interviewing:

- there are no good or bad candidates. There is a specialist who is or is not suitable for a particular vacancy;
- the interview should resemble the signing of a partnership agreement, in this case, an employment agreement. Where one party, the candidate, offers his or her time, knowledge, and skills, and the other party, the employer, is ready to pay for the services of the partner.

Recruitment is an important aspect of the personnel management. The quality of the company’s future operations will depend on the course of the recruitment process and the employees who are hired.

Personnel selection involves analyzing the professional qualities of an employee applying for a vacant position. A high-quality personnel selection process ensures the

selection of competent employees (within the position) with positive personal qualities and knowledge in various fields [2, p. 52]. In view of this, when starting a job search, it is necessary to create a competent, bright and clear resume that will not leave any employer indifferent.

An important stage in the selection of potential employees is the interview, i. e. the assessment of the candidate's personal and professional qualities. The interview includes the following stages:

- preliminary preparation;
- to create an “atmosphere of trust”;
- main part;
- completion and evaluation [1].

The way a person performs at an interview determines whether they get the job. Therefore, the candidate's task is to present themselves in the best possible way, because the candidate whose skills and abilities best meet the organization's requirements will be able to get the position.

There are several types of interviews, the most common of which are:

- individual interview, which is conducted by a manager or person responsible for personnel, its disadvantage is subjectivity;
- group interview, which can be conducted in two ways:
  - 1) one interviewer talks to several candidates to compare their skills;
  - 2) several employees of the institution interview the candidate to test their knowledge;
- preliminary interview (telephone, face-to-face, written) to familiarize with the candidates for the initial selection;
- selection interview – a continuation of the mandatory meeting between the employer and the candidate [4].

M.I. Murashko divides interviews into:

- biographical – based on the candidate's profile data and questions related to his previous work or education;
- situational – based on acting out a professional model of problem solving;
- criterion-based – consists in asking a job candidate questions about future professional activities and comparing the answers with the established criteria [5].

However, all the types of interviews discussed above have drawbacks, so elements of all types should be used to effectively interview candidates.

So, the purpose of the interview is to convince the employer that the candidate's skills, knowledge and experience are the best match for the position he or she is applying for. Thus, during the interview, the candidate must confirm that he or she is aware of his or her choice, knows the future profession and the industry to which the organization belongs, and demonstrates a desire to work in it. With this in mind, it is important to prepare for the interview in advance.

First, a potential employee should find out as much information as possible about the company he or she is interviewing for and the people he or she plans to meet. This will allow you to better understand the specifics of the institution and answer questions about it freely. They should also conduct self-analysis and prepare answers to the questions of the future interviewer.

Very often, employers gather additional information about a candidate before the interview. To do this, they can call the candidate's previous place of work, talk to the candidate's friends, or analyze their personal page on social media. This will help the company better understand the qualities of the person applying for its position.

Sometimes the interview can start already in the reception room, when the director's secretary constantly asks to wait, arguing that the management is busy or absent. It is clear that this is done in order to test the candidate: if he can control himself, be patient and calmly wait for the manager.

The employer will always have “sensitive” questions that will be very difficult to answer. The employer asks such questions to identify the candidate's personal qualities and way of thinking. Thus, he needs to navigate an unexpected situation [2]. The more efficiently and naturally a job applicant can answer the questions, the more likely he is to get the job.

Scientists have identified more than 400 questions that are often asked during an interview. However, in practice, an interview is often reduced to 10–20 standard questions and a few additional questions depending on the specifics of a particular vacancy [4].

Let's consider examples of the most popular interview questions and the qualities of candidates that these questions evaluate:

- Tell us about yourself (a list of priorities in the applicant's life).
- Name your shortcomings, weaknesses (self-criticism; in no case should you answer such questions honestly, it is best to answer neutrally: “I have shortcomings, but they do not affect my work in any way”).
- Name the desired minimum and maximum salary (determining the level of honesty and modesty). You can name an amount that is 10–15% higher than your previous salary).
- What is your attitude to work overload (ability to work under difficult working conditions)?
- How long do you plan to work in our company (how serious is the candidate)? [6, c. 221]
- Why do you want to work for us (commitment and motivation)?
- Who is a successful employee for you (process-oriented or result-oriented)?
- What have you heard about our company (presence or absence of thorough preparation for the interview, inclination to analyze information)?
- Tell us about the most difficult work situation or the biggest mistake you made at your previous job (how you solved the problem, overcame difficulties).
- Your life goals. Where do you see yourself in 10 years (realistic vision of the world)?
- Describe your first day at work (activity/passivity).
- What were your achievements at your previous job (modesty, level of training, professionalism)?
- Why did you leave your previous job (honesty, conflict)?
- Disclosure of the previous employer's database (good manners, loyalty, confidentiality).
- Tasks for intelligence [4].

Answers to these questions should be clear, balanced, competent, polite, reasoned, and most importantly, not nervous. The answer should make it clear that the candidate has the necessary qualifications for the position they are applying for.

Undoubtedly, an interview is about catching a candidate off guard, making them answer without preparation, sincerely. It is often too difficult to answer the employer's questions: "Rate on a scale of one to ten how weird you are?"; "Develop an evacuation plan for Ternopil?"; "How many golf balls can a school bus hold?"; "How many times a day do the hands of a clock cross?"; "How many people in the world tune a piano?"; "Explain what a database is in three sentences, as your 8-year-old nephew would"; "If you could become one of the superheroes, who would you be?"; "How hard do you throw a baseball?"; "Describe yourself in one word", etc. [6].

The main thing for an applicant is not to get confused when hearing such questions, to think carefully about the content of what he or she has heard and confidently, without rushing, and if there is no answer, to turn everything into a joke, smile easily and continue on to the next question.

Also, during the interview, the applicant must provide information about himself:

- past (about past work and achievements);
- present (thoughts, opinions, lifestyle, etc);
- future (tasks, intentions, plans).

There are five main behavioral taboos to keep in mind during an interview:

- 1) never be late, but rather arrive at the appointed place 20 minutes early;
- 2) lying (even exaggerating) is strictly prohibited, because your lie will be easily revealed at the first opportunity;
- 3) you should not demonstrate a clear intellectual superiority over the interviewer (even if it is true), and should always remain a tolerant and restrained person;
- 4) it is forbidden to use a cell phone, it is recommended not to take it even to the interview, but you should warn in advance about the expectation of an emergency call;
- 5) no complaining – you should not complain about the shortcomings of your previous work [7].

Appearance is the first step to success for an applicant who meets the employer's expectations.

In order to make a good impression at an interview, according to scientist M.D. Prischak, when choosing clothes, you should remember the following facts:

- unity of style;
- minimization of the color scheme ("the rule of three colors");
- matching the style to a specific situation;
- compatibility of material texture;
- acceptable use of accessories [1, p. 128].

Properly selected work clothes are not the only manifestation of body language that creates a positive or negative impression of you.

Other non-verbal means also play an important role: facial expressions, intonation, gestures, postures, and smells. Scientists believe that nonverbal means convey two-thirds of all information about a person.

During the interview, body language experts advise both parties:

- walk naturally, because the employer forms the first impression of a potential employee in the first 10 seconds of the meeting, so you should straighten your shoulders, stretch your neck, and walk easily;
- be comfortable – at first, sit comfortably, leaning on the back of the chair, which will allow the interlocutor to understand the frankness of the person before him;
- avoid constant eye contact, the gaze should stop at a point between the interlocutor's eyes;
- watch your gestures, if you don't know what to do with your hands, put them on the table;
- show your palms, open palms indicate honesty and willingness to cooperate;
- deep breathing – this is one of the ways to calm your nerves, when the interlocutor asks a question, you need to breathe and answer breathing;
- nodding during the conversation – this will make the interlocutor understand that he or she is being listened to and understood;
- speaking for a long time, 2–3 minutes is the maximum length of an answer [2].

Examples of negative interview behavior include impatience, interrupting the interviewer, loud tone, rude gestures, chewing gum, constant use of the phone, crude and vulgar jokes, etc.

There are internal influences that make the interview difficult:

1. First impressions. Interviewers often make a judgment about the candidate's personality within a few minutes at the very beginning of the conversation. The rest of the time they collect information to confirm the first impression. This is when a person "hears only what he wants to hear" and makes an unwise choice.
2. Stereotypes. Some respondents believe that certain groups of people have special traits (e. g., men with beards lack self-confidence, while women with glasses are smart). Edge effect (primacy – novelty). Information presented at the beginning of a conversation is given more attention than later. This can be explained by the properties of memory or the power of the first impression.

3. Contrast effect. The interviewer's opinion of the candidate depends on his or her opinion of the previous applicants. This means, on the one hand, that the best ones will be selected, and on the other hand, that they are compared to each other, evaluated in relation to each other, not to the requirements of the work.

Interviewers must clearly understand the requirements for a particular profession and must not have a conflict of interest with the candidate. For example, interviewers should not have any family or other personal relationships with any candidate, as these can lead to bias, positive or negative evaluation bias, and bias in the candidate's unconscious responses. To ensure a fair assessment and to take into account different opinions, it is necessary to have both male and female interviewers.

Thus, the interview is the final stage of data collection related to the evaluation of candidate

qualities. The interview process requires a potential employee to demonstrate their strongest professional and personal qualities. The disadvantage of the interview is the subjectivity in assessing the candidate's qualities and characteristics.

### Conclusions

The interview is the main and final stage of data collection related to the evaluation of candidates' qualifications. The interview process requires a potential employee to reveal his positive qualities. Success or failure at work depends not only on professional characteristics

(education, experience, qualifications, etc.), but also on how the candidate presents himself at the interview.

Effective mastery of the art of self-presentation provides the ability to comprehensively evaluate and coordinate external information, posture, gait, behavior, communication style, future profession, social status, age, harmoniously combine, adjust and improve external and internal advantages, image, identify and emphasize potential opportunities and individual psychological characteristics.

In general, the problem of personnel selection in the modern information society is relevant today and requires additional scientific research.

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DOI <https://doi.org/10.26661/2414-0287-2023-2-58-18>**DEVELOPMENT OF NEW PRODUCTS AT ENTERPRISES CONFECTIONERY INDUSTRY****Kharchenko V.V., Lynenko A.V.***Zaporizhzhia National University**Ukraine, 69600, Zaporizhzhia, Zhykovsky str., 66*

harchenkovlad897@gmail.com, konf.econom.znu@gmail.com

ORCID: 0009-0005-8520-7100, 0000-0001-6473-6074

**Key words:**innovation,  
confectionery industry,  
marketing strategy, new product,  
unique selling proposition

The transformation processes in Ukraine's economy, first associated with the pandemic, then with the full-scale Russian-Ukrainian war and the global trend towards digitalization, are putting forward new requirements for restructuring the market structure with a focus on innovation. Therefore, the development of new products is one of the most important strategies for companies in any industry. This is especially important in the confectionery industry, as the industry itself is dynamic and rapidly developing, and consumers are constantly looking for new flavors and shapes of products. Developing new products requires not only considerable effort, but also creativity and innovative approaches. In view of this, the confectionery industry in Ukraine is characterized by a high level of competition, in terms of new product launches. Successful development and promotion of new products requires a thorough market analysis, study of demand and market acceptance of the new product. However, these measures are necessary to maintain and gain more favorable market positions in today's fierce competition. This research article examines the process of developing new products at Ukrainian confectionery enterprises and substantiates the main stages of this process. Today, most confectionery products are at the stage of maturity in their life cycle, so enterprises in this sector of the economy need to constantly develop new products, updating their assortment, satisfying the most demanding consumers to maintain their competitive position and ensure sustainable economic development.

**РОЗРОБКА НОВИХ ТОВАРІВ НА ПІДПРИЄМСТВАХ  
КОНДИТЕРСЬКОЇ ПРОМИСЛОВОСТІ УКРАЇНИ****Харченко В.В., Линенко А.В.***Запорізький національний університет**Україна, 69600, м. Запоріжжя, вул. Жуковського, 66***Ключові слова:**інноваційна діяльність,  
кондитерська промисловість,  
маркетингова стратегія,  
новий товар,  
унікальна торгова пропозиція

Трансформаційні процеси в економіці України, пов'язані спочатку з пандемією, потім із повномасштабною російсько-українською війною та загальносвітовою тенденцією до діджиталізації, висувають нові вимоги до перебудови ринкової структури з орієнтацією на інноваційний напрям розвитку. Тому розробка нових товарів є однією з найважливіших стратегій підприємств у будь-якій галузі. В кондитерській промисловості це особливо важливо, оскільки сама галузь є динамічною зі швидкими темпами розвитку, до того ж, споживачі постійно шукають нові смаки та форми продуктів. Розробка нових товарів потребує від підприємства не лише значних зусиль, але й креативності, інноваційних підходів. Зважаючи на це кондитерська промисловість України характеризується високим рівнем конкуренції, зокрема щодо впровадження нових товарів. Успішна розробка та просування нових продуктів вимагають від підприємства ретельного аналізу ринку, вивчення попиту та здатності ринку прийняти новий продукт. Але ці заходи необхідні для втримання та завоювання більш вигідних позицій на ринку в умовах сьогоденної жорсткої конкурентної боротьби. В цій науковій статті досліджено процес розробки нових товарів на підприємствах кондитерської промисловості України й обґрунтовано основні етапи цього процесу. Адже сьогодні більшість товарів кондитерської промисловості знаходяться на етапі зрілості в їхньому життєвому циклі, тому підприємствам цієї галузі економіки для збереження своїх конкурентних позицій і забезпечення сталого економічного розвитку необхідно постійно розробляти нові товари, оновлюючи свій асортимент, задовольняючи найвибагливіших споживачів.

### Statement of the problem

In recent years, confectionery companies have faced serious challenges due to global changes, the pandemic, and the Russian-Ukrainian war. The economic and political crises in the country have led to a drop in demand for products and, as a result, a decrease in production and sales. In this environment, competition between confectionery manufacturers is becoming increasingly fierce. Therefore, companies need to respond flexibly and quickly to changes in the market situation, create, and maintain their competitive advantages. All of this determines the special role of innovative marketing in the activities of companies in this industry. Innovative marketing consists in the introduction of product innovations, creation of new more efficient distribution channels, and use of new methods of product promotion [1]. The development of new products in the process of marketing activities enables an enterprise to apply a strategy of differentiation or diversification, strengthen its position in existing and enter new market segments, and increase customer loyalty.

### Analysis of recent studies and publications

The rapid development of the confectionery market, COVID-19 and the Russian-Ukrainian war have stimulated the expansion of the product range of confectionery companies. Today, there are many interesting studies related to the analysis of the confectionery market. Among the domestic works, we note the works of A. Zagrychanska and V. Golyuk, who studied the market participants in detail [2]. G. Razumova and O. Oskoma focused on the prospects for the development of the confectionery industry [3]. L. Satyr, V. Kepko and L. Stadnik studied this topic even more thoroughly, investigating commodity expertise in the trade of flour confectionery products [4]. O. Vlasenko studied marketing technologies for identifying the consumer profile in the confectionery market [5]. I. Savchuk analyzed the activities of the main players in the confectionery market [6]. General aspects and trends in the development of the confectionery market of Ukraine were revealed by A. Smagliuk, A. Nadochiy [7] and O. Tobolin [8], as well as many other researchers.

The availability of so many works in this area allows us to conclude that the confectionery market requires constant study and justification of development prospects. The issue of introducing new products to the confectionery market of Ukraine during a pandemic and full-scale war is still insufficiently studied.

### Objectives of the article

The article is aimed at defining the peculiarities of modern innovations in the process of developing new products in the confectionery industry market on the example of PrJSC "Kyiv Confectionery Factory "Roshen".

### The main material of the research

Confectionery products are sweets with high nutritional value, striking visual design and unique flavor. The main raw material to produce confectionery is sugar and its substitutes. Among the general identifiers of the range

and quality characteristics of confectionery products, organoleptic characteristics play an important role, including appearance (color, shape, surface texture), taste and smell, internal structure (appearance when cut, torn, porosity, bulge, etc.) and texture. All of this affects demand within the confectionery market and necessitates a detailed study of this topic.

Restrictions on trade with the Russian aggressor, which used to be one of the most attractive foreign markets, have led to a decline in confectionery exports. Prices for confectionery products continue to rise because of rising energy costs and imported raw materials due to the devaluation of the national currency. The confectionery industry in Ukraine is also affected by other factors, which are described below (Figure 1).

High costs of research and development of new products. For example, the development and introduction of new technologies and products may require significant expenditures on research and development, market analysis, prototyping, etc.

Competition. The confectionery industry in Ukraine is highly competitive, and it is difficult for relatively small businesses to compete with large players in this market. Marketing challenges. Not all new products can be successful in the market, sometimes a new product may not appeal to consumers or find its place among existing products. Seasonality. The confectionery industry has seasonal fluctuations in demand for products, which can make it difficult to introduce new products.

Lack of qualified personnel. The introduction of new technologies and products may require qualified personnel, which is currently lacking in the confectionery industry, and many specialists have left the country since the start of the full-scale Russian-Ukrainian war.

Important issues today are related to the analysis of the confectionery market during the COVID-19 pandemic and the full-scale Russian-Ukrainian war. The number of participants in the Ukrainian confectionery market varies from 200 to 800 business entities [7]. In order to maintain or increase the level of sales at an enterprise, it is necessary to replace old products with new ones, i. e. to develop and introduce them into production. Enterprises that could create new products to meet new needs have significant advantages in order to win in a competitive environment. A new product is a product that has entered the market and differs from existing products of a similar purpose by any change in consumer properties [2].

The decision to develop new products by an industrial enterprise depends mainly on the innovation culture, the role of top management, communication and technological trends, involvement of middle management in the evaluation process, systematic study of the need for innovation and technology, and proper allocation of resources.

Active innovation activity of business entities is an essential prerequisite for ensuring their competitiveness. At the same time, it is important to ensure synchronization of the process of introducing product and process innovations, especially in the consumer goods market (business to customer sector) [8]. Excessive enthusiasm for minor product improvements without changes in the



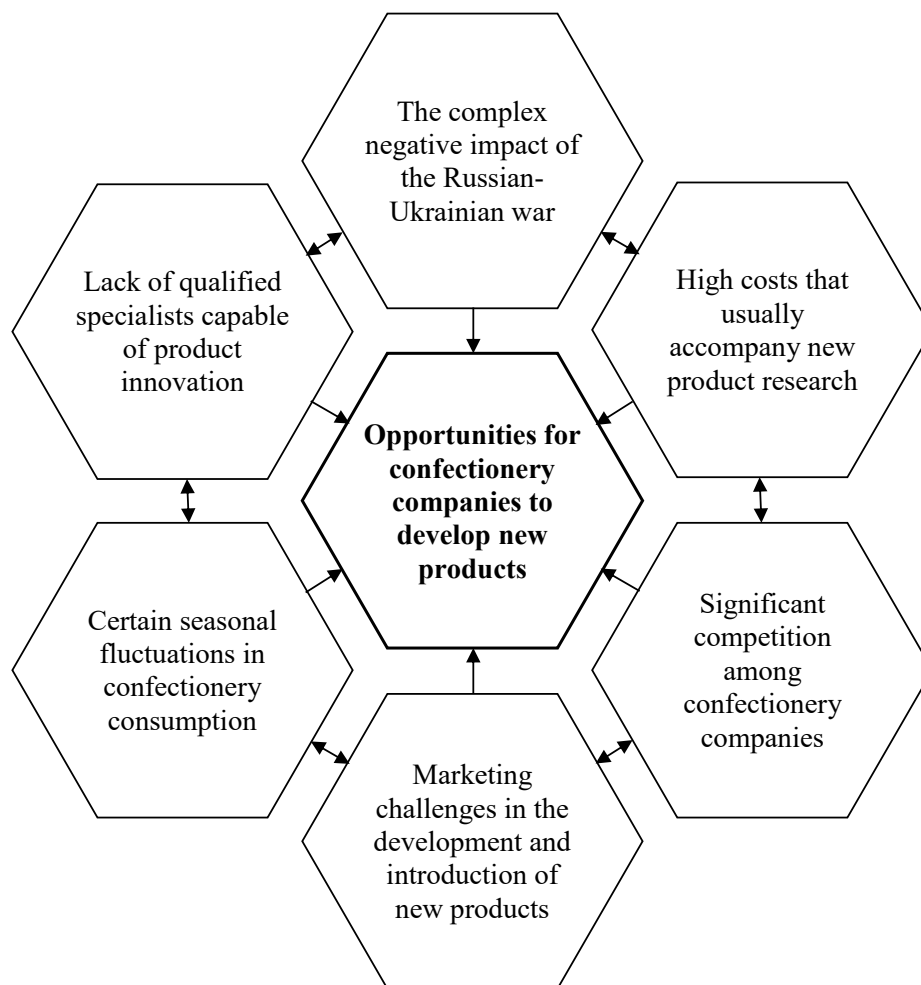


Fig. 1 – Unfavorable factors affecting the ability of Ukrainian confectionery companies to develop new products

technological base of the enterprise may ultimately lead to a loss of consumer confidence, as in most cases they are unable to objectively feel the “incremental” improvements in consumer properties of the product mentioned in advertising messages, especially when it comes to organoleptic properties (aroma, taste, etc.).

The current structure and conditions of the domestic confectionery market indicate that there are prerequisites for adjusting the culture of consumption of the relevant products. We are talking about bar chocolate, as until today there was no Ukrainian school of chocolate making – all Soviet-era “unified recipes” were developed in a sectoral research institute of union significance. At the same time, from the point of view of European traditions, “Soviet bar chocolate” can only be described as a type of sweet dessert, given the ratio of ingredients in the recipe [9].

Given the situation in the domestic confectionery industry, PrJSC “Kyiv Confectionery Factory “Roshen” has been working for a long time to improve both the technology and the range of chocolate products manufactured at the company’s production facilities. The general goal of the R&D process was to launch the production of domestic import-substituting products that would simultaneously consider both the classical principles of forming a flavor bouquet of chocolate bars from leading

European manufacturers and the taste preferences of the Ukrainian population [4].

Analyzing the state of the confectionery market in Ukraine, it is worth noting the broad prospects for the development of the domestic chocolate industry, as the current level of per capita consumption in the country has great potential for growth (with the future improvement in the welfare of the population because of the post-war economic recovery). The latest technologies to produce finished products provide a strong competitive advantage in the food industry. This makes commodity (product) and process (technological) types of innovation development the most effective for companies in this industry. These two types of innovations ensure the growth of company profits and efficiency.

At the same time, product innovations affect the growth of sales, while technological innovations significantly save production costs. However, the innovative development of a company should be considered in conjunction with marketing innovations and innovations in the field of intellectual and infrastructural development [6].

It is interesting that the relevance of investment development is manifested both in conditions of stability and prosperity of the country and in the conditions of financial crisis. It should be noted that the innovative

development of an enterprise should be defined as a process of directed and natural change in the state of an enterprise, which depends on the innovative potential of this enterprise and is driven by innovations that create qualitatively new opportunities for further activities of the enterprise in the market through the implementation and ability to find new solutions and ideas because of inventions. Innovations are created by the majority of enterprises in the global economy. However, a small number of them can be called truly innovative [10].

The main difference between innovative enterprises is that they focus on changes that become the norm for their activities. For its development and necessary strategy, an innovative enterprise focuses in advance on the search for constant work on new goods and services, i. e. simultaneously with the production of new products, there is a planned preparation of future novelties.

The development of a new product in the confectionery industry is a complex and multi-stage process that involves analyzing the market and competitors, creating a new product concept, developing a recipe and experimental testing, testing the product on the market, defining a marketing strategy and analyzing sales results.

Successful development of a new product in the Ukrainian confectionery industry requires considering consumer needs, taste preferences and trends in the confectionery market. In addition, it is important to study competitors and their products to differentiate yourself from them and determine your place in the market. The development of new products can be an important element of a company's development and ensure its success in the market. However, to achieve this, it is necessary to invest time, effort, and resources in the process of developing and marketing new products.

### Conclusions

Thus, according to the study, innovations in the development of new products are of particular importance in the context of high competition and limited purchasing power of the target markets for confectionery products, which is also an important factor in the competitiveness of confectionery enterprises in Ukraine. The development of new product innovations is a complex, multi-stage process that begins with an assessment of innovation needs based on an analysis of target market expectations and the nature of competition.

Assessment of the innovative potential of the enterprise and its individual components is also important in the process of managing innovative marketing. Planning innovative marketing activities is closely linked to the strategic development of the enterprise. Innovative marketing has long been an integral part of the development of companies in the confectionery industry. Companies with sufficient innovative potential are constantly updating their product range, expanding, and introducing new sales channels, and using a variety of product promotion tools.

Active production and promotion of new food products is possible only because of innovation, including scientific substantiation of new products, improvement of equipment, technological resources, and forms of production organization. Innovation is one of the most effective ways to succeed in business in a fiercely competitive environment.

By creating a new product category, you can become a leader in this segment. In this regard, the production of products with unique advantages, which include innovative food products, requires capturing and retaining new market segments, identifying needs, and developing products that are in demand in the consumer market. An innovation must bring added value to the customer, be necessary and useful to him or her.

To this end, it is necessary to develop a communication model of interaction with the customer. To create an innovative product, a company does not necessarily need to have large financial resources. Innovative ideas are possible and necessary not only in the field of production, but also in the methods of promotion, especially when launching new products. New products should be attractive to consumers and have unique advantages over their analogues. Effective promotion methods include digital technologies (search engine optimization, referral marketing, content marketing, social media marketing, online advertising, SMS-mailing), advertising (online advertising, in-store advertising, outdoor, TV and radio advertising), as well as direct and indirect means of promotion.

Prospects for further research lie in identifying effective methods of promoting innovative food products for specific target segments of the confectionery industry in Ukraine. The development of the concept of innovative development of confectionery industry enterprises requires further research.

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## ВИМОГИ ДО ОФОРМЛЕННЯ СТАТЕЙ У ФАХОВОМУ НАУКОВО-ПРАКТИЧНОМУ ЖУРНАЛІ «ФІНАНСОВІ СТРАТЕГІЇ ІННОВАЦІЙНОГО РОЗВИТКУ ЕКОНОМІКИ»

З № 2(42) 2019 року фаховий науково-практичний журнал «Фінансові стратегії інноваційного розвитку економіки» виходить лише англійською мовою. **Стаття подається до розгляду в редакцію українською мовою. Після проходження внутрішнього рецензування – обов’язкове надання перекладу статті англійською мовою.** Переклад має бути професійним, у жодному разі не використовуючи інтернет-перекладач.

До друку приймаються наукові статті обсягом від 10 сторінок, що відповідають тематиці серії видання й містять нові наукові результати, не опубліковані раніше. Виклад матеріалу статті має бути послідовним, логічно завершеним, із чіткими формулюваннями, що виключають подвійне тлумачення або неправильне розуміння інформації; мова тексту має відповідати літературним нормам, бути професійною і лаконічною. Автор зобов’язаний забезпечити високий науковий рівень викладеного матеріалу, повноту і системність висвітлення питання, достовірність результатів і даних, що наводяться, правильність цитування та посилань на літературні джерела. Редакційна колегія приймає до друку статті, які характеризуються оригінальністю, високою мірою наукової новизни і практичною значущістю.

### 1. МАКЕТ СТОРІНКИ

**Для оформлення статті автор використовує формат А4 з полями з усіх боків – 2 см. Порядок абзацу виділяється відступом 1,25.**

☞ *До уваги авторів:* У разі необхідності для шрифтових виділень у таблицях і рисунках дозволяється застосовувати шрифт Courier New (наприклад, для ілюстрації текстів програм для ЕОМ). Для стилістичного виділення фрагментів тексту слід вживати начертання *курсив*, **напівжирний**, *напівжирний курсив* зі збереженням гарнітури, розміру шрифту та інтервалу абзацу.

### 2. ТИПОГРАФСЬКІ ПОГОДЖЕННЯ ТА СТИЛІ

Текст статті, яка подається до розгляду та рецензування українською, має бути побудований за такою схемою:

- індекс УДК у верхньому лівому кутку аркуша (Times New Roman, 14 пт., звичайний);
- назва статті великими літерами (по центру, Times New Roman, 14 пт., напівжирний);
- ПІБ авторів (по центру, Times New Roman, 14 пт., звичайний);
- назва ЗВО (по центру, Times New Roman, 14 пт., курсив);
- повна адреса ЗВО або місця роботи автора (по центру, Times New Roman, 14 пт., курсив);
- адреса електронної пошти;
- ORCID (обов’язково);
- анотація (200–250 слів), яка містить стисле формулювання змісту статті (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., звичайний);
- ключові слова (до 10 слів) (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., курсив).

Після цього з абзацу викладається основний текст статті (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., міжрядковий інтервал 1,5).

#### Структура основної частини рукопису українською мовою:

**I. Постановка проблеми** в загальному вигляді та її зв’язок з важливими науковими чи практичними завданнями.

**II. Аналіз останніх досліджень і публікацій**, у яких започатковано розв’язання даної проблеми і на які спирається автор (з обов’язковими посиланнями в тексті на використану наукову літературу!!!), виділення не вирішених раніше частин загальної проблеми, котрим присвячується стаття.

**III. Формулювання цілей статті** (постановка завдання).

**IV. Виклад основного матеріалу дослідження** з повним обґрунтуванням отриманих наукових результатів.

**V. Висновки і перспективи подальших досліджень** у даному напрямку.

**VI. Література.** Оформлюється відповідно до вимог Національного стандарту України ДСТУ 8302:2015.

**ЛИШЕ ПІСЛЯ ПРОХОДЖЕННЯ ВНУТРІШНЬОГО РЕЦЕНЗУВАННЯ  
АВТОР НАДАЄ ПЕРЕКЛАД СТАТТІ АНГЛІЙСЬКОЮ МОВОЮ.**

Схема побудови англomовної статті аналогічна українському варіанту:

- UDC у верхньому лівому кутку аркуша (Times New Roman, 14 пт., звичайний);
- назва статті великими літерами по центру (Times New Roman, 14 пт., напівжирний);
- ПІБ авторів (по центру, Times New Roman, 14 пт., звичайний);
- назва ЗВО (по центру, Times New Roman, 14 пт., курсив);
- повна адреса ЗВО або місця роботи автора (по центру, Times New Roman, 14 пт., курсив);
- адреса електронної пошти (по центру, Times New Roman, 14 пт., звичайний);
- анотація англійською мовою розширена (1800 знаків) (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., звичайний);
- ключові слова (key words) – до 10 слів – (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., курсив).

☞ *До уваги авторів:* після ключових слів англійською мовою необхідно надати цей блок інформації (крім УДК) також українською, вимоги до оформлення зберігаються.

Структура основної частини статті англійською мовою

(вирівнювання – по ширині сторінки, Times New Roman, 14 пт., міжрядковий інтервал 1,5)

**I. Statement of the problem** (Постановка проблеми).

**II. Analysis of recent studies and publications** (Аналіз останніх досліджень і публікацій).

**III. Objectives of the article** (Формулювання цілей статті).

**IV. The main material of the research** (Виклад основного матеріалу дослідження).

**V. Conclusions** (Висновки).

**VI. References** (Література), оформлюється за міжнародним бібліографічним стандартом. Приклади оформлення: <http://journalsofznu.zp.ua/References.pdf>

**ВАЖЛИВО!** Кожен рисунок включається до тексту у вигляді одного графічного об'єкта (положення об'єкта «В тексті»).

**ДЛЯ ОПУБЛІКУВАННЯ СТАТТІ АВТОРУ НЕОБХІДНО:**

*надіслати на електронну пошту редакції збірника [konf.econom.znu@gmail.com](mailto:konf.econom.znu@gmail.com)*

1. Текст статті, оформлений відповідно до встановлених вимог.
2. Витяг із протоколу засідання кафедри з рекомендацією статті до друку (скан. копію).
3. Рецензію доктора або кандидата наук із відповідної галузі науки, завірену відповідним підписом та печаткою установи, яка є зовнішньою по відношенню до ЗНУ та установи, де працює автор (автори) статті (скан. копію).
4. Відомості про автора (авторів) у вигляді таблиці (бажано у файлі формату .xls):

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Кожній статті, починаючи з № 4 2018 року, присвоюється DOI.

*Адреса редакції фахового науково-практичного журналу «Фінансові стратегії інноваційного розвитку економіки»:* Україна, 69600, м. Запоріжжя, МСП-41, вул. Жуковського, 66.

***Довідки за телефонами:***

*(096) 485-31-99 – відповідальний за випуск, технічний редактор – заступник декана з наукової роботи економічного факультету ЗНУ Линенко Андрій Володимирович,*

*(061) 228-76-41 – відповідальний редактор – д.е.н., проф. Бабміндра Дмитро Іванович,*

*(061) 228-76-13 – головний редактор – д.е.н., проф. Череп Алла Василівна (V корпус, кімн. 116).*

Збірник наукових праць

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Видавництво і друкарня – Видавничий дім «Гельветика»  
69063, Україна, м. Запоріжжя, вул. Олександрівська, 84, оф. 414  
Телефони: +38 (095) 934 48 28, +38 (097) 723 06 08  
E-mail: [mailbox@helvetica.com.ua](mailto:mailbox@helvetica.com.ua)  
Свідоцтво суб'єкта видавничої справи  
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